

# MAINSTREAMING BIODIVERSITY IN PRACTICE

A STAP Advisory Document

**Scientific and Technical Advisory Panel**

An independent group of scientists which advises the Global Environment Facility





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Section 1 was prepared on behalf of the Scientific and Technical Advisory Panel (STAP) of the Global Environment Facility (GEF) by Kent H. Redford (Archipelago Consulting).

Section 2 was contributed to by participants of STAP's "Mainstreaming Biodiversity in Production Landscapes" workshop in October 2013, and was compiled by Brian J. Huntley (Past STAP Biodiversity Panel Member, and Former CEO of the South African National Biodiversity Institute).

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The contents of this publication are believed, at the time of publication, to accurately reflect the state of the art on mainstreaming biodiversity. Nevertheless, the STAP accepts responsibility for any errors remaining. This publication was prepared for the STAP by the authors and workshop participants, serving as independent experts. The views and positions contained herein do not necessarily reflect the views of their affiliated institutions.

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## ABOUT STAP

The Scientific and Technical Advisory Panel comprises eight expert advisers supported by a Secretariat, which are together responsible for connecting the Global Environment Facility to the most up to date, authoritative and globally representative science.

The Global Environment Facility (GEF) unites 183 countries in partnership with international institutions, civil society organizations (CSOs), and the private sector to address global environmental issues while supporting national sustainable development initiatives. An independently operating financial organization, the GEF provides grants for projects related to biodiversity, climate change, international waters, land degradation, the ozone layer, and persistent organic pollutants.

<http://www.stapgef.org>



# FOREWORD

The challenges confronting the conservation of the planet's richness of life threaten to overwhelm our collective efforts to limit species loss and degradation of ecosystems and the services that they deliver. The fundamental building blocks of biodiversity conservation for well over a century have been protected areas (PAs), but they are increasingly vulnerable to land use changes taking place around them.

In response to these trends, conservationists and international organizations have developed and actively supported a new biodiversity conservation paradigm: biodiversity mainstreaming. It is the process of embedding biodiversity considerations into policies, strategies and practices of key public and private actors to promote conservation and sustainable use of natural resources. As a newly emerging paradigm, biodiversity mainstreaming is a conservation approach that has not yet developed full traction. It is not yet routinely embedded into the work of conservation practitioners nor into key sectors relevant to biodiversity preservation.

The Scientific and Technical Advisory Panel (STAP) of the Global Environment Facility (GEF) convened workshops in Cape Town, South Africa, in September 2004 and October 2013 to review the concept of biodiversity mainstreaming, to promote best practices in GEF projects focused on production landscapes and seascapes, and to assess the effectiveness of such interventions. The product of the 2004 workshop served to guide the GEF in the framing of its GEF-4 and GEF-5 strategies and their implementation.

In October 2013, at the request of the GEF and partner agencies, STAP convened a follow-up workshop, also in Cape Town, which brought together 35 senior project implementers and researchers with field experience in over 80 countries. This workshop's principal objective was to assess lessons learned following investments totaling over US\$ 1.6 billion made since 2003 by the GEF in 327 mainstreaming projects in 135 countries. The 2013 workshop upheld the principles and guidelines recommended by the 2004 workshop. However, based on the rich experience of both successful and less successful projects over the previous decade, it is clear that greater care needs to be brought to the design, implementation, and assessment of mainstreaming projects.

This technical paper presents three workshop products. First, the 2004 workshop was informed by a critical review of the evidence base on biodiversity mainstreaming project outputs and outcomes, as published in peer-reviewed journals (Section 1). Second, the workshop discussions were synthesized around 11 key determinants of successful biodiversity mainstreaming (Section 2). Abstracts of papers presented at the workshop are presented in **Appendix 1**.

Two conclusions from the workshop, in particular, deserve emphasis:

- Mainstreaming is not a controlled experiment, but rather a social experiment in changing the value structures of institutions and individuals with vital consequences for the natural world and the humans who rely on it. Therefore, while mainstreaming may not prove amenable to rigorous testing, it does deserve more systematic inquiry.
- Good governance and strong institutions are key determinants of project success or failure. A balance needs to be struck between working in countries and sectors where there is sufficiently strong governance capacity for mainstreaming outcomes to have a good chance of success, and tackling the most pressing mainstreaming challenges in situations where globally valuable biodiversity is threatened but capacity is often lacking.

It is hoped that this paper will facilitate better understanding of the concept of biodiversity mainstreaming, as well as implementation challenges and opportunities, and will thereby strengthen the delivery of global environmental benefits – the persistence of species richness and the sustainability of ecosystems and the goods and services they provide to humanity – for the long term.



**Rosina Bierbaum**  
STAP Chair



**Sandra Diaz**  
STAP member

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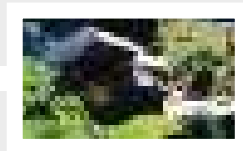
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# LIST OF ACRONYMS

<b>ABS</b>	Access and benefit sharing	<b>EIA</b>	Environmental impact assessment
<b>ACCA</b>	Association of Chartered Certified Accountants	<b>EPA</b>	Environmental Protection Agency (United States)
<b>BBOP</b>	Business and Biodiversity Offsets Programme	<b>EU</b>	European Union
<b>CBD</b>	Convention on Biological Diversity	<b>FAO</b>	Food and Agriculture Organization of the United Nations
<b>CDM</b>	Clean Development Mechanism (Kyoto Protocol)	<b>FSC</b>	Forest Stewardship Council
<b>CEO</b>	Chief Executive Officer	<b>GEBs</b>	Global environmental benefits
<b>CGF</b>	Consumer Goods Forum	<b>GI</b>	Green infrastructure
<b>CIFOR</b>	Center for International Forestry Research	<b>GSI</b>	Global Salmon Initiative
<b>CITES</b>	Convention on International Trade in Endangered Species of Wild Fauna and Flora	<b>ICMM</b>	International Council on Mining and Metals
<b>COCOBPD</b>	Ghana Cocoa Board	<b>IFC</b>	International Finance Corporation
<b>COP</b>	Conference of the Parties	<b>IIED</b>	Institute for Environment and Development
<b>CSO</b>	Civil society organization	<b>IPBES</b>	International Platform for Biodiversity and Ecosystem Services
<b>CSP</b>	Country Strategy Paper	<b>IPIECA</b>	International Petroleum Industry Environmental Conservation Association International
<b>DEFRA</b>	Department for Environment, Food and Rural Affairs (United Kingdom)	<b>IUCN</b>	International Union for Conservation of Nature
<b>DJSI</b>	Dow Jones Sustainability Index		
<b>ECIS</b>	Europe and the Commonwealth of Independent States		



<b>LAC</b>	Latin America and the Caribbean	<b>REDD/REDD+</b>	Reducing Emissions from Deforestation and Forest Degradation (United Nations collaborative program)
<b>M&amp;E</b>	Monitoring and evaluation		
<b>MBI</b>	Market-based initiative		
<b>MDGs</b>	Millennium Development Goals	<b>SANBI</b>	South African National Biodiversity Institute
<b>MSC</b>	Marine Stewardship Council	<b>SEA</b>	Strategic environmental assessment
<b>NBSAP</b>	National Biodiversity Strategies and Action Plan	<b>SEEA</b>	United Nations System of Environmental and Economic Accounts
<b>NCD</b>	Natural Capital Declaration		
<b>NGO</b>	Non-governmental organization	<b>SIDS</b>	Small Island Developing States
<b>NSW GGAS</b>	New South Wales Greenhouse Gas Reduction Scheme (Australia)	<b>STAP</b>	Scientific and Technical Advisory Panel of the GEF
<b>NZ ETS</b>	New Zealand Emissions Trading Scheme	<b>TEEB</b>	The Economics of Ecosystems and Biodiversity
<b>OECD</b>	Organisation for Economic Co-operation and Development	<b>UNDP</b>	United Nations Development Programme
<b>PA</b>	Protected area	<b>UNEP</b>	United Nations Environment Programme
<b>PES</b>	Payment for ecosystem/ environmental services	<b>UNESCO</b>	United Nations Educational, Scientific and Cultural Organization
<b>PIF</b>	Project Identification Form	<b>UNHCR</b>	United Nations High Commissioner for Refugees
<b>PMIS</b>	Project Management Information System	<b>WAVES</b>	Wealth Accounting and the Valuation of Ecosystem Services
<b>PPP</b>	Public-private partnership	<b>WCMC</b>	World Conservation Monitoring Centre (UNEP)
<b>PRSP</b>	Poverty Reduction Strategy Paper	<b>WTO</b>	World Trade Organization



Photo: CIFOR



## EXECUTIVE SUMMARY

### The workshop objective

The objective of the three-day workshop on mainstreaming biodiversity, which took place in Cape Town, South Africa, in October 2013, was to review experience and lessons learned during a decade of investment in biodiversity mainstreaming projects in production landscapes and seascapes around the world. Experience was drawn principally from GEF projects, but also from the projects of other agencies, organizations and governments. Participating in the workshop were 35 senior project implementers and researchers with field experience in over 80 countries.

The concept of biodiversity mainstreaming was defined by the workshop as follows:

*“Biodiversity mainstreaming is the process of embedding biodiversity considerations into policies, strategies and practices of key public and private actors that impact or rely on biodiversity, so that it is conserved and sustainably used both locally and globally.”*

The workshop was informed by a comprehensive review of the literature on biodiversity mainstreaming (Section 1), and by field experience with projects reported in plenary sessions by 23 participants (Section 3). The plenary sessions were introduced by syntheses of experience from the GEF, the United Nations Development Programme (UNDP) and the literature review, and by presentations structured around the mainstreaming of intervention

types: policy and planning; production practice; and financing mechanisms. A final plenary covered future opportunities in a changing world

Parallel working groups integrated findings around four themes: the mainstreaming concept; project design and implementation; linkages to the CBD Aichi Targets for 2020; and indicators and measuring instruments.

In synthesizing the workshop outputs following the workshop, collective experience was reduced to 11 key determinants of mainstreaming success and seven key messages on the practice of biodiversity mainstreaming. In essence, these reflect the “state of the art” of mainstreaming (Section 2).

### Key findings of the literature review

The literature review synthesized the thinking, structure and content of biodiversity mainstreaming interventions, and the evidence base of mainstreaming investments and their effectiveness as reported in peer-reviewed journals as well as (to a limited extent) in GEF databases. The literature review presents the “state of the science” of mainstreaming. Its conclusions can be summarized in the following key findings:

- With more than 80% of the earth’s surface never likely to be managed within legally designated protected areas (PAs), biodiversity conservation interventions across all landscapes and seascapes are vital. Mainstreaming addresses this need.
- Mainstreaming biodiversity has been given priority at the highest levels of international policy (e.g. by the Convention on Biological Diversity) and of conservation investment (e.g. by the Global Environment Facility).
- Between 2004 and 2014 the GEF supported a total of 327 biodiversity mainstreaming projects, totaling US\$ 1.6 billion in GEF funding and US\$ 5.2 billion in co-financing.
- Mainstreaming characteristics and considerations reported in the literature include: integration/internalization/inclusion of biodiversity goals in development models, policies and programs; and simultaneously achieving positive biodiversity and development outcomes; and modifying human behavior to increase sustainability.

- Various typologies are used to mainstream intervention types, sectors and approaches – varying according to institutional business models – including incorporation of biodiversity and ecosystem service values and sustainability into accounting frameworks; policy and regulatory frameworks; production practices; financing mechanisms; and sustainable use. Other intervention opportunities include behavioral change, ecosystem restoration, ecosystem-based adaptation, and health.
- Mainstreaming interventions by the GEF are directed at *biodiversity* and include *ecosystem services*. The relationship between these two terms is not at all straightforward despite the common assumption that ecosystem services programs will conserve biodiversity, and that conserving biodiversity will secure ecosystem services.
- A great deal more has been written about how and why mainstreaming should be carried out than about what has been learned from mainstreaming practice, based on testable and replicable evidence.
- There is little evidence that the mainstreaming projects funded through GEF have produced peer-reviewed articles by the project implementers or others. Project implementers – very often the real “champions” of such projects – are generally not writers.
- In practice, most apparent win-win programs involve trade-offs between desired conservation outcomes and desired social outcomes. Because these trade-offs are not expected and are therefore not negotiated for at the commencement of projects, the results can often lead to disappointment.
- Due to the heterogeneity of methods, and lack of clear experimental design and data collection, very little can be concluded about the effectiveness of tools such as payments for environmental services (PES). In general, the evidence base supporting the mainstreaming model is weak.
- Greater attention needs to be given to the design, implementation and assessment of mainstreaming projects, as well as to the need to use these to inform policy-making and to develop learning networks at regional and global scale.
- A program of research is needed to measure how program impacts vary according to socio-political and bio-physical contexts, to track economic and

environmental impacts jointly, to identify spatial spillover effects in untargeted areas, and to use theories of change to characterize causal mechanisms that can guide data collection and the interpretation of results.

- Mainstreaming is not a controlled experiment, but rather a social experiment in changing the value structures of institutions and individuals – with vital consequences for the natural world and the humans who rely on it. While mainstreaming may not prove amenable to rigorous testing, it does however deserve more systematic inquiry.

### Key messages from the workshop

The following key messages from the workshop are directed principally to the GEF, partner organizations, and project initiators and implementers:

- A maturing body of experience in biodiversity mainstreaming has provided significant results and established a robust global community of practice, building on and expanding the principles and guidelines identified at the Scientific and Technical Advisory Panel (STAP) workshop on biodiversity mainstreaming in 2004. This community of practice has not been integrated into any formalized structure. Opportunities exist for the GEF to lead the accelerated development of learning communities and innovation processes that effective mainstreaming processes demand.
- An adequate collective knowledge base is now available for the development of theories of change for biodiversity mainstreaming, effectively linking interventions to desired outcomes within overarching hypotheses, and the development of common indicators and measurement approaches to provide evidence to test these hypotheses.
- Mainstreaming is a complex, costly process that takes a long time – decades or even a generation – to achieve impact at scale and across sectors. Transaction costs can be high, and in some cases greater investment in design, monitoring, evaluation and publication of results will be needed.

- Strong and detailed science-based biophysical and socio-economic data and knowledge at appropriate spatial scales have underpinned successful mainstreaming interventions. Investment in such foundational knowledge is essential to program success, but such data and knowledge collection should be policy relevant to achieve cost-effective impact.
- Few biodiversity mainstreaming project results have been published in peer-reviewed journals, but it is likely that significant progress has been made in developing the evidence base on successful interventions. Projects whose purpose is mainstreaming do not lend themselves to replicable experimental design. Further investment in developing a stronger evidence base on project outcomes is desirable.
- Communicating the right message to the right audience at the right time has proven to be of paramount importance. Making a business case for biodiversity requires skills that lie outside the expertise of most mainstreaming implementers. It indicates the need for closer partnership with the private sector and, in particular, use of successful business models for marketing.
- Good governance and strong institutions are key determinants of project success or failure. A balance needs to be struck between working in countries and sectors where there is sufficiently strong governance capacity for mainstreaming outcomes to have a good chance of success, and tackling the most pressing mainstreaming challenges in situations where globally valuable biodiversity is threatened but capacity is often lacking.





Photo: Muzaffar Bukhari

## 1. SCOPING PAPER: Mainstreaming Biodiversity Conservation

Kent H. Redford

*“The most important lesson of the last ten years is that the objectives of the Convention [on Biological Diversity] will be impossible to meet until consideration of biodiversity is fully integrated into other sectors. The need to mainstream the conservation and sustainable use of biological resources across all sectors of the national economy, the society and the policy-making framework is a complex challenge at the heart of the Convention.*

- The Hague Ministerial Declaration from the Conference of the Parties (COP 6) to the Convention on Biological Diversity, 2002

*“Our core message is that there can be no separation between development and environment, as they are co-dependent. Healthy ecosystems are essential to secure human health, food, energy and water, and ultimately sustainable development. It is startling, however, that such ideas have yet to be fully mainstreamed and that their adoption continues to be*

*hampered by tough barriers in the political decision-making process. This is where the GEF comes in as a champion of the global commons.*

- Time for Transformational Change. The Role of the GEF. Vision Statement of Dr. Naoko Ishii, GEF Chief Executive Officer (CEO) and Chairperson (GEF 2012b)

### 1.1. Introduction

Humans evolved with a keen appreciation of their dependence on natural resources, but with little appreciation of the impacts this dependence has on nature. As complex civilizations arose, people developed powerful institutions that structured and constrained their behaviors. Many of these institutions and the people they influenced focused directly on commerce, law and government and were not informed by the continued human reliance on nature and ecosystem services.



It was not until the 19<sup>th</sup> century that it became apparent to many people that human actions were bringing about broad-scale impacts on nature. This growing realization led to the development of scientific practices to manage species and ecosystems of direct interest to humans, most notably forests for timber and game species for recreation and food. In general, these management institutions were effective in ensuring continued streams of the target species.

However, as the 20<sup>th</sup> century progressed it became increasingly clear that management practices were having unexpected and negative impacts on the species and ecosystems themselves as well as on other parts of the natural world. These unanticipated impacts were joined by a larger set of impacts caused by the dramatic increase in human populations and their direct and indirect impacts on the natural world. Appreciation of these impacts, and the need to limit them, led to the growth of the protected area approach to conservation – setting aside areas of land and water where human actions were strictly restricted.

For decades the conservation community concentrated on extending and strengthening the protected area estate out of a conviction that this would be sufficient to maintain the earth's biological diversity. However, beginning around the 1980s research showed that protected areas were necessary but not sufficient to maintain biodiversity. Not only did they lose species from within their boundaries, but these boundaries did not prevent encroachment of threats from outside a protected area such as fire, disease, and hunting. Concern about impacts such as these was exacerbated by a growing understanding of the actual and projected impacts of climate change and the realization that species were going to need to be able to move in order to survive.

It became clear that to conserve biodiversity, conservation work had to extend beyond protected areas and into the matrix – the production landscapes and seascapes surrounding protected areas – and influence the production and political regimes that shape them. Work in these areas would require active engagement with the institutions that directly and indirectly govern what happens there. These same institutions have developed with little to no understanding of and no interest in their impacts on the natural world.

To succeed, biodiversity conservation will require the twin actions of i) creating and strengthening protected areas; and ii) working outside protected areas on the social, political and economic institutions that affect biodiversity. With less than 20% of the earth's surface ever likely to be managed as officially declared protected areas, conservation work outside such areas is vital. This requires engagement with national-level policies, production practices, financing mechanisms and sustainable use, among other things, to incorporate biodiversity conservation and sustainable use into dominant social institutions and to modify their practices so as to internalize environmental costs. That approach has come to be called "biodiversity mainstreaming".

The Convention on Biological Diversity (CBD) and the Global Environment Facility (GEF) have recognized that supporting biodiversity mainstreaming activities is essential. In the ten years between 2004 and 2014 the GEF has funded some 327 biodiversity mainstreaming projects with US\$ 1.6 billion in GEF funding and US\$ 5.2 billion in co-financing. This investment has been significant, but relatively little acknowledged in the broader conservation and development community. The mainstreaming expenditures may be compared with the GEF's 21-year total of US\$ 11.5 billion direct investment and US\$ 57 billion in co-financing and protected area expenditures of US\$ 3.3 billion direct investment and US\$ 5.5 billion in leveraged funds (GEF, 2013).

## 1.2. Mainstreaming

"Mainstreaming" is often used as a verb (to mainstream) and has been applied to a wide range of domains from music to politics. One dictionary definition is "to cause (someone or something) to be included in or accepted by the group that includes most people". Application of this term to conservation and development has stemmed from the need to influence dominant institutions with the values and practices of those with less political influence. Mainstreaming as used in conservation and development can be directed at the incorporation of a variety of issues such as climate change (Klein *et al.*, 2007; Roe and Mapendembe, 2013), gender (UN Women, 2014), disaster management (IUCN, 2006), refugee settlement (UNHCR, 2002), and education and learning (UNESCO, 2009). Mainstreaming can also involve



a process of layering multiple objectives into a single activity. This calls for mainstreaming integrated issues such as poverty and environment into development planning (UNDP and UNEP, 2008) or national forestry legislation (World Bank, 2010). The sector that mainstreaming activities are designed to affect is often not clearly specified, though it usually seems to refer to economic development policies and practices.

Mainstreaming biodiversity was developed as a means of addressing the fact that biodiversity conservation goals are viewed as distinct from, and sometimes even contradictory to, the goals of development and economic growth. The higher priority put on development means that biodiversity work does not receive the political, social and financial support it needs to succeed (UNDP and UNEP, 2008). Though mainstreaming has been referred to as “integrating” biodiversity into development, it has the added meaning of modifying that into which it is integrated (e.g. changing the focus of development policies and interventions toward incorporating the values of biodiversity).

Modifying larger development strategies by incorporating biodiversity goals through mainstreaming needs to be understood as good for both development and conservation. Economies and societies are dependent on biodiversity for clean water, soils, biomass, food, and other ecosystem goods and services (TEEB, 2013). Both are harmed by, for example, air and water pollution and climate change (Dalal-Clayton and Bass, 2009). Conservation of natural ecosystems should be seen as a core part of development, as it provides valuable and cost-effective support to the development process, especially with respect to the poor (Kosmus et al., 2012). Consequently, there is a strain of mainstreaming directed at integrating biodiversity and poverty alleviation, given momentum by the CBD’s 2004 call (Decision VII/2) to mainstream biodiversity into poverty reduction strategies (Roe and Mapendembe, 2013).

The great extent to which humans rely on ecosystem services was the major finding of the Millennium Ecosystem Assessment (2005), leading to the development of a program entitled The Economics of Ecosystems and Biodiversity (TEEB) (TEEB, 2014). For biodiversity mainstreaming, TEEB (2010) has articulated six major target sectors:

- economic, trade and development policies;
- transport, energy and mining activities;
- agriculture, fisheries and forestry practices;
- corporate strategies and operations;
- development policies and planning at local, regional and national levels;
- public procurement and private consumption.

Mainstreaming biodiversity then has as its objective the integration of biodiversity conservation and related sustainable use principles into policies, plans, programs and production systems where the primary focus has previously been on production, economic activity and development, rather than on biodiversity conservation (Petersen and Huntley, 2005). The focus of this framing paper is on mainstreaming biodiversity. Biodiversity is defined by the CBD as “the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species, and of ecosystems” (CBD, 2014b).

To assess patterns in the use of the term “mainstreaming” in the published literature, a search of web and journal sources was conducted in February 2013. Searching the term “mainstreaming” produced fewer than 500 citations per year between 1991 and 1999, with a steady climb to 9678 in 2008. This was followed by big annual jumps in the next four years, with 163,141 in 2012. In most of these citations “mainstreaming” was not modified by the words “conservation”, “biodiversity” or “environment.” “Mainstreaming conservation” was only cited 116 times in 2012, “mainstreaming biodiversity” 266 times, and “mainstreaming environment” 493 times. Clearly the term “mainstreaming” is most often used alone or with words other than these three. Within those circles in which the term “biodiversity mainstreaming” is commonly used, it is almost always shortened to “mainstreaming.”

The concept of mainstreaming was included in article 6(b) of the Convention on Biological Diversity, which called on the Parties to the Convention to “integrate, as far as possible and as appropriate, the conservation and sustainable use of biological diversity into relevant sectoral or cross-sectoral plans, programs



and policies” (p. 6 in CBD, 2003). Mainstreaming also contributes toward fulfilling article 10(a), which calls on the Parties to “integrate consideration of the conservation and sustainable use of biological resources into national decision-making” (p.11 in CBD, 2003) (Petersen and Huntley, 2005).

Mainstreaming biodiversity has no single agreed upon definition, though most definitions are quite similar to that of Petersen and Huntley (2005): “to internalize the goals of biodiversity conservation and the sustainable use of biological resources into economic sectors and development models, policies and programmes, and therefore into all human behavior.”<sup>1</sup>

The STAP/GEF Cape Town expert meeting on mainstreaming biodiversity in October 2013 brought together mainstreaming professionals who developed the definition used in this paper:

*“Biodiversity mainstreaming is the process of embedding biodiversity considerations into policies, strategies and practices of key public and private actors that impact or rely on biodiversity, so that biodiversity is conserved, and sustainably used, both locally and globally.*

Mainstreaming biodiversity can take place in different settings. Perhaps the most common setting is in biodiversity priority landscapes where natural resource-based industries such as agriculture, forestry and wildlife are influencing biodiversity. The primary framework for the CBD is the “ecosystem approach”, targeted at such areas, in which there is “a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way” (CBD, 2014a). Within this context, mainstreaming is often pursued at the landscape scale, incorporating protected areas and production landscapes and seasces (Cadman *et al.*, 2010, Sayer *et al.*, 2013). The landscape approach is being heavily promoted as a means of addressing food insecurity, climate change, poverty and water scarcity (GLF Committee, 2013), which creates the opportunity to further expand the reach of biodiversity mainstreaming.

Biodiversity mainstreaming can focus on enabling environments at local, national or global levels. It can also focus on development policy, legislation, land-use planning, finance, taxation, economic incentives, international trade, capacity building, research, and technology. In addition, it can focus on commodity chains and certification of major natural resources. Mainstreaming can be pursued by a wide range

<sup>1</sup> This definition comes from the Merriam-Webster Dictionary. Other definitions include: “The systematic integration of biodiversity in development processes is called ‘biodiversity mainstreaming’. The overall goal of biodiversity mainstreaming is to have biodiversity principles included at every stage of the policies, plans, programmes and project cycles, regardless whether international organisations, businesses or governments lead the process” (CBD 2010 in Kosmus *et al.* 2012). The word “mainstreaming” can be used synonymously with “inclusion.” Mainstreaming means integrating or including actions related to conservation and sustainable use of biodiversity in strategies relating to production sectors, such as agriculture, fisheries, forestry, tourism and mining. Mainstreaming might also refer to including biodiversity considerations in poverty reduction plans and national sustainable development plans (CBD and UNEP, 2008).

of actors, from conservation NGOs to industries, governments or even communities (Petersen and Huntley 2005). Moreover, it can focus on particular ecosystems (Russi *et al.*, 2013). For example, a program explicitly designed to mainstream “drylands” was established by the UN Development Programme (UNDP) in 2001 (UNDP, 2014).

The CBD-mandated National Biodiversity Strategies and Action Plans (NBSAPs) are the major national-level instrument for delivering biodiversity mainstreaming (CBD and UNEP, 2008). As of 2011, 172 of 193 countries had adopted their plans or equivalent instruments. National level plans and legislation are becoming more common due to the requirement for reporting via NBSAPs. Pittock *et al.* (2012) review Australia’s experience with national level plans focused on ecosystem services. Uganda has had experience in mainstreaming the environment and natural resources across the government sectors of agriculture, health, water and sanitation, roads and works, justice, law and order, and local government (Keizire and Mugenyi, 2006). Brazil has a national level mainstreaming project (REDD Desk, 2014). The Philippines has reviewed its practices in environmental mainstreaming (Antonio *et al.*, 2012), as have Zambia (Aongola *et al.*, 2009) and Viet Nam (Bass *et al.*, 2010b). South Africa has had extensive national level experience mainstreaming biodiversity into land-use planning and decision-making processes and has found that systematic biodiversity planning has provided a powerful platform for mainstreaming biodiversity in planning and decision-making across a range of sectors, including agriculture and other production sectors, urban and rural development, municipal development planning and environmental assessment (Cadman *et al.*, 2010). The United Kingdom (UK) has completed a National Ecosystem Assessment, which is an analysis of the country’s natural environment in terms of the benefits it provides to society and continuing economic prosperity (UK NEA, 2014). The UK’s Department for Environment, Food and Rural Affairs (DEFRA) runs a program to mainstream biodiversity into European Union policies (JNCC, 2014).

However, national strategies have not been fully effective in addressing the main drivers of biodiversity loss and only a few countries have used their plans as a means of mainstreaming biodiversity. Countries have been revising their NBSAPs to include a greater focus on mainstreaming by 2014 (Prip and Gross, 2010;

UNEP, 2012). Roe and Mapendembe (2013) provide a state of the knowledge review for mainstreaming biodiversity and development into efforts such as National Biodiversity Strategies and Action Plans.

### 1.3. Mainstreaming by other names

As noted above, the concept of mainstreaming is found in many sectors and academic fields. However, application of this term to biodiversity appears to be known largely in the multilateral, bilateral and aid communities and their associated treaty and implementation bodies. It is not widely used outside these communities and is unknown by many who work in conservation areas that might be called “mainstreaming” but are not.

Much that has been written about mainstreaming biodiversity, including unpublished documents written by project implementers, is not clear about what components or attributes of biodiversity are the targets of the mainstreaming work (Redford, 2005). Rarely is a clear objective detailed in the descriptions of projects and programs. Therefore, there is a large, ill-defined set of practices that may be mainstreaming biodiversity, mainstreaming conservation or mainstreaming the environment. Mainstreaming the environment is most frequently used by development organizations (e.g. Antonio *et al.*, 2012), as would be expected given the anthropocentric nature of the term “environment”.

Programs with objectives and approaches that are, or overlap with, biodiversity mainstreaming but do not use the term “mainstreaming” include:

- offsets in general (McKenney and Kiesicker, 2010; DEFRA, 2013; Pilgrim *et al.*, 2013);
- business and biodiversity offsets (PricewaterhouseCoopers, 2010; BBOP, 2012a; BBOP, 2012b);
- the Equator Principles (Equator Principles, 2014);
- natural capital (Daily *et al.*, 2011);
- Green Economy (ten Brink *et al.*, 2012, UNEP, 2014);
- Green Accounting (World Bank, 2014);
- green growth (OECD, 2014);



- the Netherlands' program for ecological engineering, called "Building with Nature" (van den Hoek *et al.*, 2012); and those the United States Environmental Protection Agency (US EPA, 2014a) and New York City (Plan NYC, 2012);
- agri-environmental schemes as practiced in the European Union (Pilieneringer *et al.*, 2012, *Business@ Biodiversity*, 2010);
- the hydropower industry's Hydropower Sustainability Assessment Protocol (Tollefson, 2011);
- the United Nations System of Environmental and Economic Accounts (SEEA), a system for organizing statistical data for the derivation of coherent indicators and descriptive statistics to monitor interactions between the economy and the environment and the state of the environment to better inform decision-making (UN Statistics Division, 2014);
- the Wealth Accounting and the Valuation of Ecosystem Services (WAVES) program, a partnership which promotes sustainable development by ensuring that the national accounts used to measure and plan for economic growth include the value of natural resources (WAVES, 2014). Its implementing partners include Botswana, Colombia, Costa Rica, Madagascar and the Philippines.

There is also substantial peer-reviewed literature on issues that are an integral part of mainstreaming work, though also not referred to as mainstreaming. These issues include:

- achieving conservation outcomes through working in production landscapes (e.g. Fischer *et al.*, 2006; Wilson *et al.*, 2010);
- payments to farmers for environmental services (e.g. Baylis *et al.*, 2008);
- water funds (Goldman-Benner *et al.*, 2012);
- payments to communities for wildlife services (e.g. Frost *et al.*, 2008, Dinerstein *et al.*, 2012);
- integrating poverty alleviation and ecosystem service delivery (e.g. the Working for Water Program in Turpie *et al.*, 2008).

Another field in which mainstreaming-like activities for ecosystem services and sustainability are talked about, though the term "mainstreaming" is not used, is financial services. For example, Waage and Kester (2013) cite several financial instruments that incorporate ecosystem services in mainstreaming-like ways:

- The Dow Jones Sustainability Index (DJSI) takes into consideration whether or not companies in some industries have processes in place to understand their impacts and dependencies on ecosystem services (DJSI, 2014);

- The International Finance Corporation (IFC) evaluates due diligence based on a range of factors, including impacts and dependencies on ecosystem services (IFC, 2012);
- Seventy-eight global financial institutions referred to as Equator Banks are factoring ecosystem services impacts and dependencies into due diligence practices through programs and initiatives such as Biodiversity for Banks (Equator Principles, 2014);
- Forty-one financial institutions, as well as the global Association of Chartered Certified Accountants (ACCA), have signed the Natural Capital Declaration to “demonstrate our commitment to the eventual integration of Natural Capital considerations into private sector reporting, accounting and decision-making, with standardization of measurement and disclosure of Natural Capital use by the private sector” (NCD, 2014).

Two International Union for Conservation of Nature (IUCN) categories of protected area, Categories V and VI, have the implementation of mainstreaming as part of their definitions though they are not referred to as such. Category V is reserved for those in which the interaction of people and nature over time has produced an area with a distinct character where safeguarding the integrity of this interaction is vital. Category VI protected areas conserve ecosystems and habitats, together with associated cultural values and traditional natural resource management systems (Dudley, 2008). Two of the IUCN protected areas governance types (those owned by Indigenous Peoples and local communities, and those that are privately owned) could also be considered a means of mainstreaming biodiversity conservation into the private sphere.

Finally, in an unexpected way all protected areas themselves have been proposed for biodiversity mainstreaming. In a comprehensive review, Lopoukhine *et al.* (2012) present evidence for the role that protected areas can and are playing in adaptation to climate change, crop germplasm conservation, climate services and natural disaster mitigation. Protected areas have also been discussed with respect to their contributions to human health (Stolton and Dudley, 2010). Accounting for the services provided by protected areas is another type of mainstreaming.

## 1.4. PES, REDD+, eco-certification and climate change adaptation are also mainstreaming

Four significant approaches that have captured a great deal of attention are not usually referred to as “mainstreaming” but meet the definition and are considered as such by those in the mainstreaming community:

- payment for ecosystem services (PES);
- Reduced Emissions from Deforestation and Forest Degradation (REDD+);
- environmental certification;
- climate change adaptation.

### 1.4.1. Payment for ecosystem/ environmental services

Ecosystem or environmental services are a subset of biodiversity, defined as the direct and indirect contributions of ecosystems to human well-being (Braat and de Groot, 2012). Interest in accounting for ecosystem services in terms of their impact on human endeavor began with the introduction of environmental impact assessment (EIA) and, later, strategic environmental assessment (SEA). Much attention has been given to payment for ecosystem services (PES) in the last several years, and these services have been adopted in both high and low income countries (Ferraro, 2011).

There are a variety of definitions of PES. For the GEF, the PES concept has been about arrangements between buyers and sellers of environmental goods and services in which those that pay are fully aware of what it is that they are paying for, and those that sell are proactively and deliberately engaging in resource use practices designed to secure the provision of the services (GEF, 2010). The Biodiversity Focal Area Strategy of GEF-5 makes explicit reference to PES as a revenue mechanism to support biodiversity conservation in PAs and to compensate resource managers for off-site ecological benefits associated with land-use practices that are compatible with biodiversity conservation (GEF, 2010; Wunder, 2013). PES programs clearly fall into biodiversity mainstreaming activities.



The practice of PES has included numerous policy prescriptions, such as integrating PES into business performance systems with a tool called the Corporate Ecosystem Services Review aimed at integrating PES into systems such as corporate strategy development procedures (CESR, 2012); product design guidelines; environmental management systems; environmental impact assessments; environmental and social impact assessments; environmental audits; and sustainability reporting (Hanson *et al.*, 2011). Systematic mainstreaming of ecosystem services has also been suggested for multilateral banks (Ranganathan *et al.*, 2009; and see Waage and Kester, 2013, referred to above).

### 1.4.2. Reduced Emissions from Deforestation and Forest Degradation (REDD+)

The GEF has examined payment for ecosystem/environmental services (PES) and environmental certification in the context of its mainstreaming work (GEF, 2010; Wunder *et al.*, 2010), and considers REDD+ (Reducing Emissions from Deforestation and Forest Degradation) to be an example of PES.<sup>2</sup>

REDD+ is a form of PES that offers rents to countries that contribute positively to the balance of forest carbon at a global level (Buttoud, 2010). It is primarily a mechanism for ensuring that carbon sequestered in forests stays out of the atmosphere through avoiding deforestation and forest degradation. The concept has undergone major changes, including shifts in focus from just carbon to include multiple objectives - and from national-level to sub-national and project levels. After 2005 both protecting biodiversity and reducing poverty were added as REDD+ objectives, with even more co-benefits appended later (Angelsen and McNeill, 2012).

REDD+ offers significant promise to deliver biodiversity conservation outcomes, but only if care is taken to ensure that projects provide ways to incorporate biodiversity into project design and monitoring (Gardner *et al.*, 2012). It can be considered a layered mainstreaming program. There is a family of forest carbon payments, of which REDD+

is one. Peters-Stanley and Yin (2012) review other forest carbon activity in compliance carbon markets, including the Kyoto Protocol's Clean Development Mechanism (CDM), the New Zealand Emissions Trading Scheme (NZ ETS), the New South Wales Greenhouse Gas Reduction Scheme (NSW GGAS) and, in Canada, British Columbia's Carbon Neutral Government directive – as well as voluntary carbon markets including voluntary over-the-counter (OTC) market and country-specific voluntary programs worldwide.

### 1.4.3. Environmental certification

Sustainable certification, eco-certification and environmental certification are all terms that refer to initiatives to certify that commercial producers adhere to predefined environmental and social welfare production standards (Blackman and Rivera, 2010). There are hundreds if not thousands of different schemes that offer certification from timber to food to cosmetics to beer. Examples include:

- tourism (Rainforest Alliance, 2014);
- mining (ICMM 2006, Thompson *et al.*, 2010);
- oil and gas development (Carter *et al.*, 2006);
- commercial forestry (Primmer, 2011; Nasi *et al.*, 2012);
- transportation (e.g. France Nature Environnement and Réseau Ferré de France, 2012);
- infrastructure (Quintero, 2007);
- agricultural development (Pagiola *et al.*, 1998, Smith *et al.*, 2012);
- watershed payments (Bennett *et al.*, 2013).

The United Nations Environment Programme's World Conservation Monitoring Centre (UNEP-WCMC) (2011) conducted a review of 36 biodiversity standards in certification schemes across eight industrial sectors (agriculture, biotrade, carbon offset, finance, fisheries, forestry, mining, and tourism). It found a striking lack of similarity in the definitions used, the components of biodiversity included and the approaches required. It is clear that such differences make comparisons and cross-sector learning very difficult (see also Van Dam *et al.*, 2010).

<sup>2</sup> Reducing Emissions from Deforestation and Forest Degradation (REDD) is an effort to create a financial value for the carbon stored in forests, offering incentives for developing countries to reduce emissions from forested lands and invest in low-carbon paths to sustainable development. REDD+ goes beyond deforestation and forest degradation. It includes the role of conservation, sustainable management of forests, and enhancement of forest carbon stocks (see <[www.un-redd.org/AboutREDD/tabid/102614/Default.aspx](http://www.un-redd.org/AboutREDD/tabid/102614/Default.aspx)>).

A STAP study (Blackman and Rivera, 2010) looked at environmental certification projects in the GEF portfolio which certify that commercial producers will adhere to predefined environmental and social welfare production standards – a form of mainstreaming. The study identified four main threats to the effectiveness of eco-certification: i) weak certification standards; ii) noncompliance with certification standards; iii) limited participation, which can stem from supply-side or demand-side factors; and iv) adverse self-selection, whereby actors already engaged in, or intending to engage in, innovative or environmentally friendly practices disproportionately participate in the program. It also found that very few other studies had attempted to measure environmental or socio-economic impacts and concluded that “the evidence base provides, at best, weak evidence for the hypothesis that certification has positive socio-economic or environmental impacts.”

#### 1.4.4. Climate change adaptation

Climate change adaptation has been the subject of considerable investment and analysis, and attention has been paid to how to mainstream it into development practice (Klein *et al.*, 2007, Kok and de Coninck, 2007). Both the Convention on Biological Diversity (CBD, 2014c) and the GEF (GEF, 2014a) have programs to help countries develop climate change adaptation measures. Countries are conducting national level reviews of climate adaptation patterns and actions (e.g. in the United States, Staudinger *et al.*, 2012; in Europe, Climate-Adapt, 2014; in Australia, CSIRO, 2014). A variety of sectors are also developing approaches to the incorporation of climate change adaptation, including agriculture, forestry, transportation, water resources, urban planning, coastal zone management, energy and human health (US EPA, 2014b).

Biodiversity has been considered in climate change adaptation and development practice through an approach called “ecosystem-based adaptation” (Pérez *et al.*, 2010). Examples of ecosystem-based adaptation include developing coastal defenses against sea level rise through maintenance and restoration of coastal vegetation, wetlands, eelgrass beds and coral reefs - and conserving and restoring

of forests to stabilize slopes and regulate water flows to prevent floods and landslides under heavier and more intense rainfall regimes (Munroe *et al.*, 2011). As pointed out by Munroe *et al.* (2011), this approach is not novel but builds on traditional practices in natural resource management and agro-ecology that pre-date policy interest in climate change. Biodiversity can be mainstreamed into a variety of sectors through ecosystem-based adaptation. Of particular interest, following recent heavily publicized natural disasters, are approaches to climate change adaptation such as “green infrastructure” (EC, 2013; US EPA, 2014a).<sup>3</sup>

## 1.5. Mainstreaming at the GEF

Because of its importance in the Convention on Biological Diversity, biodiversity mainstreaming became a significant target for support by the Global Environment Facility. GEF-6 (2014b) states that affecting the drivers of biodiversity loss will require a combination of protection, sustainable use, and mainstreaming. GEF support has allowed the development of many different types of mainstreaming projects, in addition to stimulating other agencies and governments to support their own mainstreaming work.

The GEF-6 Programming Directions (2014b) states that:

“Biodiversity mainstreaming is the process of embedding biodiversity considerations into policies, strategies, and practices of key public and private actors that impact or rely on biodiversity. Mainstreaming enables biodiversity to persist across entire landscapes and seascapes. The societal failure to adequately price the economic value of biodiversity has undermined the long-term sustainability of mainstreaming efforts, which have often focused too narrowly on threat mitigation and palliative attempts to offset biodiversity loss. GEF support to biodiversity mainstreaming actions that addresses this systemic failure is paramount.

Mainstreaming is complementary to GEF direct support for the sustainability of protected areas. This work takes place in landscape and seascape mosaics that include protected areas and a variety

<sup>3</sup> “There are now hundreds of examples of GI projects in Europe, many of which are not necessarily labelled as GI. Key initiatives include the French ‘trame verte et bleue’, the German ‘Wiedervernetzungsprogramm’, the UK ‘room for nature’ initiative, the Dutch ‘room for the river’ initiative, the Estonian and Dutch ecological networks or the South-East European Lower Danube Green Corridor...” (p. 3 in EC, 2013).

of other land and resource uses outside of these protected areas.

GEF-6 supports work in the following four suites of activities:

- developing policy and regulatory frameworks that remove perverse subsidies and provide incentives for biodiversity-friendly land and resource use that remains productive but that does not degrade biodiversity;
- spatial and land-use planning to ensure that land and resource use is appropriately situated to maximize production without undermining or degrading biodiversity;
- improving and changing production practices to be more biodiversity friendly, with a focus on sectors that have significant biodiversity impacts (e.g., agriculture, forestry, fisheries, tourism, extractive industries);
- piloting an array of financial mechanisms (e.g., certification, payment for environmental services, access and benefit sharing agreements) to help incentivize actors to change current practices that may be degrading biodiversity.

Mainstreaming activities supported by the GEF promote the reduction of negative impacts that productive sectors have on biodiversity. Biodiversity-dependent production sectors and those with large ecological footprints that impact biodiversity-rich areas are targeted, including agriculture (Clay, 2011; Leibel, 2011), fisheries, forestry, tourism, and the major extractive industries of oil and gas and mining. The GEF's strategy to support biodiversity mainstreaming focuses on the role and potential contribution of both the public and private sectors.

GEF investments in mainstreaming directly support efforts to meet the CBD Strategic Plan for Biodiversity and Aichi Targets. The principal strategic goal supported by these investments is Strategic Goal A: "Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society", with its four targets. But, targets under all five of the Strategic Goals are relevant to the GEF mainstreaming portfolio (GEF, 2012a).

Not all possible mainstreaming projects are eligible for GEF support, as the GEF only provides funding to meet the agreed incremental costs of measures to achieve agreed upon global environmental benefits (GEBs). In addition, to be eligible for GEF support a biodiversity mainstreaming project must satisfy the following general criteria, among others:<sup>4</sup>

- the participating country is eligible (for definitions of eligibility see: GEF, 2014c) and the project is endorsed by the GEF operational focal point;
- Resources are available for the project;
- The project is consistent with the recipient country's national biodiversity strategy and action plan;
- Global environmental benefits are identified;
- The project aligns with GEF's biodiversity strategy.

The GEF has undertaken mainstreaming projects beginning in GEF-3 (2004-2006) through GEF-5 (2010-2014).<sup>5</sup> A total of 327 biodiversity mainstreaming projects were funded over this period, totaling approximately US\$ 1.6 billion in GEF funding and US\$ 5.2 billion in co-financing. The median GEF funding per project was about US\$ 3.6 million, with a median of US\$ 12.1 million in co-financing (Table 1).

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<sup>4</sup> For the full list, see "GEF Secretariat Review for Full/Medium-sized Projects", <[www.thegef.org/gef/sites/thegef.org/files/gef\\_prj\\_docs/GEFProjectDocuments/Biodiversity/Argentina%20-%20\(5112\)%20-%20Governance%20Strengthening%20for%20the%20Management%20and%20Pr/5112-2013-02-21-153102-GEFReviewSheetGEF5.pdf](http://www.thegef.org/gef/sites/thegef.org/files/gef_prj_docs/GEFProjectDocuments/Biodiversity/Argentina%20-%20(5112)%20-%20Governance%20Strengthening%20for%20the%20Management%20and%20Pr/5112-2013-02-21-153102-GEFReviewSheetGEF5.pdf)>

<sup>5</sup> In GEF-4 and GEF-5, biodiversity mainstreaming was a specific objective within the biodiversity strategy under which projects could be classified as "mainstreaming". Projects most commonly focused on agriculture, forestry (including Sustainable Forest Management), fisheries and tourism. For GEF-3, biodiversity projects were categorized as mainstreaming by reviewing each biodiversity project, as mainstreaming was not as formally defined in the GEF-3 strategy as it was in GEF-4 and GEF-5. Complicating this analysis is the fact that not all GEF-5 projects have yet to come back for CEO endorsement (see note \*\* in Tables 1 and 2). This results in lower figures for the CEO endorsement phase. In addition, GEF-5 is ongoing and thus we cannot directly compare across the three phases. To address these issues, project values (in dollars) were calculated from the values provided in the Project Management Information System (PMIS) at the Project Identification Form (PIF) stage. Typically, these values are the same or very close to the project value at CEO endorsement or approval. Another strategy to overcome data gaps was to focus on the number of projects or median values rather than their total monetary value.



The GEF biodiversity mainstreaming portfolio is divided into regions and a global category. The largest number of projects was in Asia (97), closely followed by Latin America and the Caribbean (LAC) (92) and Africa (AFR) (80) (Table 2). Europe and Central Asia (ECA) had 36 and the Global region 22.

overall funding levels. While there were few global projects, these projects were larger on average because of their work across countries. For regional projects, the median funding level (including co-financing) was the highest for Africa, followed by LAC, ECA and Asia.

**TABLE 1. GEF BIODIVERSITY MAINSTREAMING PORTFOLIO STATISTICS FROM GEF-3 TO 5.**

TOTAL (in million USD)					
	Number of Projects	GEF Project Grant PIF Stage	CEO endorse/ approval	Co-finance PIF Stage	Co-finance CEO Endorse Stage
GEF-3	111	\$520.0	\$478.1	\$2,229.8	\$2,129.1
GEF-4	125	\$459.0	\$441.2	\$2,193.0	\$2,210.1
GEF-5	91	\$652.7	\$67.3**	\$5,367.2	\$910.6**
ALL	327	\$1,631.7	\$986.5	\$9,790.0	\$5,249.7
MEDIAN (in million USD)					
	Number of Projects	GEF Project Grant PIF Stage	CEO endorse/ approval	Co-finance PIF Stage	Co-finance CEO Endorse Stage
GEF-3	111	\$3.8	\$5.0	\$9.0	\$12.1
GEF-4	125	\$3.0	\$3.1	\$7.4	\$12.0
GEF-5	91	\$4.4	\$5.3**	\$17.3	\$20.8**
ALL	327	\$3.6	\$4.0	\$10.3	\$12.1

\*\*Missing values from >50% of projects and are only for reference.

Values may not add up due to rounding.

Latin America and the Caribbean had the highest Examining the GEF biodiversity mainstreaming

**TABLE 2. GEF BIODIVERSITY MAINSTREAMING PORTFOLIO STATISTICS DIVIDED INTO GEOGRAPHIC REGIONS.**

TOTAL (in million USD)					
Region	Projects	GEF Project Grant PIF Stage	CEO endorse/ approval	Co-finance PIF Stage	Co-finance CEO Endorse Stage
AFR	80	\$421.0	\$245.4	\$3,260.2	\$1,539.6
Asia	97	\$426.0	\$257.9	\$3,376.2	\$1,988.5
ECA	36	\$100.2	\$74.0	\$309.9	\$251.4
Global	22	\$172.9	\$116.3	\$549.7	\$316.2
LAC	92	\$511.5	\$293.0	\$2,293.9	\$1,154.0
Total	327	\$1,631.7	\$986.5	\$9,790.0	\$5,249.7
MEDIAN (in million USD)					
Region	Projects	GEF Project Grant PIF Stage	CEO endorse/ approval	Co-finance PIF Stage	Co-finance CEO Endorse Stage
AFR	80	\$3.8	\$4.2	\$9.1	\$13.2
Asia	97	\$3.2	\$3.3	\$10.2	\$10.4
ECA	36	\$2.2	\$3.4	\$5.9	\$12.7
Global	22	\$5.6	\$5.5	\$13.0	\$13.7
LAC	92	\$4.2	\$4.3	\$12.2	\$12.9
Total	327	\$3.6	\$4.0	\$10.3	\$12.1

Values may not add up due to rounding.

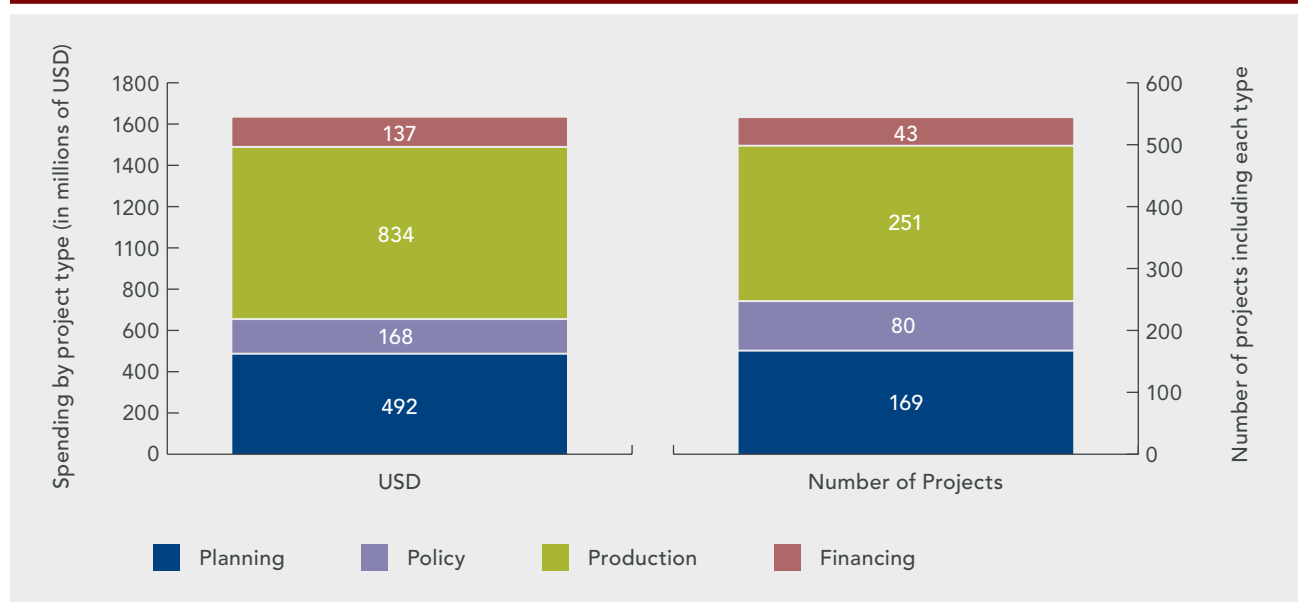
portfolio at country level shows that 16 countries have no national or regional mainstreaming projects; 46 countries are involved in one or more regional, but no national mainstreaming projects; 39 countries have one project; 35 countries have two to four projects; and 15 countries five or more projects for a total of 122 projects. This final category includes: in Africa - Cameroon, Kenya, South Africa and Tanzania; in Asia - China, India, Indonesia, Jordan and Viet Nam; in Europe and Central Asia - the Russian Federation; and in Latin America and the Caribbean - Argentina, Brazil, Colombia, Ecuador and Mexico. The four countries with ten or more projects are China (19), Brazil (12), and India and the Russian Federation with ten each.

Further analysis of the GEF mainstream portfolio was carried out looking at “type” and “sector”.<sup>6</sup> “Type” was defined as the type(s) of intervention used to create change and included: i) Policy – national government (or large state government) policy development or assistance and capacity building; ii) Planning – sustainable land-use planning/management and local capacity building around it; iii) Production – on-the-ground work focused on shifting production practices (e.g. agriculture, forestry); and iv) Financing – substantive efforts supporting payments for ecosystem services or REDD.

“Sector” was defined as the practice(s) being changed or systems developed to support mainstreaming and included: agriculture; forestry; agrobiodiversity; non-timber forest products (including all wild harvested products); mining; oil and gas; fisheries; tourism; PES; REDD+; international certification – support toward meeting the standards of internationally recognized certification systems such the Forest Stewardship Council (FSC), Marine Stewardship Council (MSC) and Rainforest Alliance; and national certification – support toward meeting standards or developing standards for nationally based certification systems. Production is the largest project type, in terms of the number of projects and financing, followed by planning, policy and financing (Figure 1).

Table 3 shows the number of projects that used different types of interventions by GEF phase. Many projects had significant components of more than one intervention type (e.g., a project that works on changing production practices and the policies that regulate them). Thus, the table shows how these interventions are and are not mixed within mainstreaming projects. There has been more emphasis on planning in Africa and Asia, while there has been more relatively emphasis on financing in LAC (Figure 2).

FIGURE 1. TYPES, NUMBERS, AND SPENDING OF GEF BIODIVERSITY MAINSTREAMING PROJECTS FROM GEF 3 TO 5.

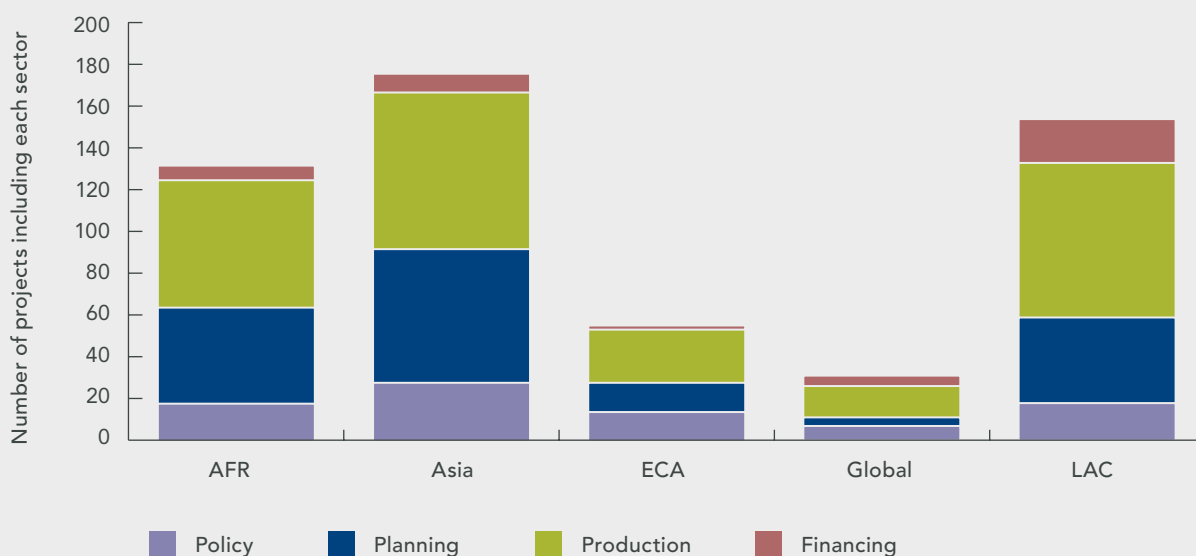


<sup>6</sup> A project could, and often did, use multiple types of interventions and work with multiple sectors. Classification was based on the mainstreaming component(s) of the project rather than the project as a whole. There had to be a substantial commitment to activities before a mainstreaming classification was made. Because projects often worked on two or more sectors and two or more types, data analysis becomes more complicated. As a result, analyses of the number of projects that work on sectors or types likely include double counting; therefore, discussion should focus on the patterns rather than the absolute numbers.

**TABLE 3. NUMBER OF PROJECTS USING DIFFERENT COMBINATIONS OF INTERVENTION TYPES BY GEF PHASE**

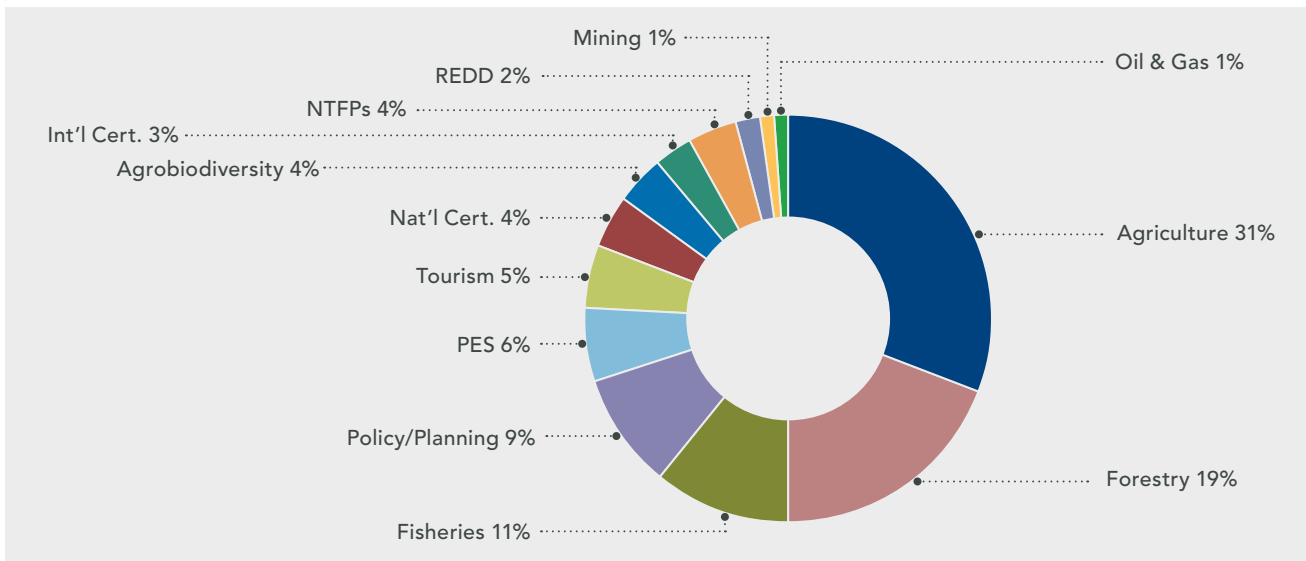
Project type	GEF-3	GEF-4	GEF-5	Total
Planning, production	32	25	33	90
Production	44	32	9	85
Planning	11	9	17	37
Policy, production	11	14	9	34
Policy, planning, production	4	11	5	20
Financing	3	9	2	14
Production, financing	1	7	2	10
Policy, planning	5	2	3	10
Planning, production, financing		4	4	8
Policy		6	1	7
Policy, production, financing		2	2	4
Policy, financing		2	1	3
Planning, financing			2	2
Policy, planning, financing		1	1	2
Knowledge management		1		1

**FIGURE 2. TYPE AND GEOGRAPHIC REGION OF GEF BIODIVERSITY MAINSTREAMING PROJECTS FROM GEF-3 TO 5.**



**Note:** These figures should be used for relative comparison of the mix of project types because projects can be more than one type.

**FIGURE 3. PERCENTAGE OF GEF BIODIVERSITY MAINSTREAMING PROJECTS BY SECTOR FROM GEF-3 TO 5.**



Analyzing the portfolio by sector shows that agriculture was the sector with the greatest number of projects, followed closely by forestry with fisheries in third place. The other eight categories made up only about a third of the total number of projects (Figure 3).

## 1.6. What has been learned in practicing mainstreaming?

A great deal more has been written about how and why mainstreaming should be done than about what has been learned from mainstreaming practice (e.g. Kok *et al.*, 2010). A 2004 summary based on a workshop on mainstreaming hosted by STAP and published by the GEF in 2005 is valuable input (Petersen and Huntley, 2005). This workshop was built upon, and expanded by, the 2013 workshop (see the following **Section 2 and Appendices**). Using material from experience in South Africa (Pierce *et al.*, 2002), a 2004 review of the GEF Biodiversity Program (Dublin and Volonte, 2004 in Petersen and Huntley, 2005), and the results of the 2005 workshop, the authors stated that successful mainstreaming projects occurred in situations characterized by:

- incorporation of biodiversity considerations into policies governing sectoral activities;
- simultaneous achievement of gains in biodiversity and gains in an economic sector (a “win-win” scenario);

- sectoral activity being recognized as based on, or dependent on, the sustainable use of biodiversity;
- situations where sectoral activities result in overall gains for biodiversity exceeding biodiversity loss.

They concluded that work on mainstreaming in single sectors needs to be complemented by mainstreaming work in cross-sectoral dimensions such as finance and health. Many mainstreaming projects have been directed at the local level (e.g. CBD, 2008), yet local decisions are conditioned by national and international policies including development assistance, trade, climate and policies of international financial institutions (Kok *et al.*, 2010).

Looking across a set of mainstreaming projects (Cowling *et al.*, 2008; Aongola *et al.*, 2009; Dalal-Clayton and Bass, 2009; Cadman *et al.*, 2010; Bass *et al.*, 2010a; Bass *et al.*, 2010b; Kosmus *et al.*, 2012; Maun Workshop in Roe and Mapendembe, 2013) that report recommends a list of facets of successful projects emerges that includes:

- presence of enabling conditions/prerequisites: democratic and accountable governance, awareness and knowledge, organizational and institutional capacity, scientific knowledge (especially, rich global information systems, or GIS), political will, enabling policy framework;
- identification and involvement of all stakeholders in an iterative, inclusive fashion;

- identification and engagement of leaders or champions for biodiversity, development, finance and civil society;
- identification of the problem or development issue – focusing on perceived problems and felt needs: exactly what needs to be mainstreamed and into what?
- identification of the element of biodiversity that is critical to the development issue (e.g., species, ecosystem service);
- collection of information to make the “business case” for mainstreaming in a clear and transparent fashion;
- identifying what risks and opportunities the biodiversity element poses to the development need;
- identifying the key policy measures and institutions that are essential for regulating the identified problem;
- looking for windows of opportunity: elements external and internal to the sector that catalyze awareness of the need for mainstreaming and present an opportunity to act;
- identification and implementation of a variety of approaches and mechanisms to achieve the mainstreamed biodiversity/development outcomes;
- using existing implementation frameworks when possible;
- striving for “pull” rather than “push” approaches;
- creating a learning and listening process and develop regular means of communication and consultation;
- allocating time, as mainstreaming is a long-term process that must proceed on many tracks;
- developing and implementing monitoring and evaluation methods that allow learning and modification of actions as the process proceeds;
- expecting failures which should be treated as opportunities to learn and improve.

In a review of mainstreaming in South Africa, Pierce *et al.* (2002) point out that mainstreaming may arise either gradually or suddenly in response to rapidly emerging enabling conditions. Exemplifying the latter, Sandwith (in Marris, 2007) observed that “mainstreaming works well in a revolutionary policy environment, such as South Africa.”

South Africa has been a rich testing ground for the implementation of biodiversity mainstreaming work. It has engaged in this work in the mining sector, the grasslands and Fynbos Biomes, and water management, and has recognized the importance of biodiversity in the country’s National Development Plan (Republic of South Africa, 2014 SANBI, n.d.; SANDBI, 2012; SANBI, 2013).

Experience with PES, in particular, is much like that with mainstreaming: much has been written, many projects have been started, but there is very limited information available on what works and what does not (GEF, 2010). GEF (2010) reviewed 42 GEF projects with PES either as the major objective or containing a PES component. Projects were focused in a number of different ways, including global level, national level, public-private schemes, and stand-alone agreements between buyers and sellers. The authors concluded that GEF PES projects have been used as revenue mechanisms to support biodiversity conservation in protected areas and to compensate resource managers for off-site ecological benefits associated with biodiversity conservation compatible land-use practices. An additional review commissioned by STAP concluded that the empirical evidence from the portfolio of GEF PES projects was too weak for the efficacy of this “new paradigm of ‘conditional conservation’” to be assessed (Wunder *et al.*, 2010).

A review of 36 PES projects (Kissinger *et al.*, 2013) found that market mechanisms were an imperfect way of pricing the value of ecosystem services, particularly in the absence of enabling policies. It also found that national-level programs such as REDD+ and project-level programs differed in their ability to deploy a full range of incentives, policies and regulatory interventions. Most REDD+ projects are in their early stages, and therefore not many lessons appear to be available.

A WWF analysis of progress toward the European Union’s biodiversity mainstreaming target (WWF, 2008) found five key constraints to success:

- limited streamlining of environment into EU external policies;
- a limited share of environmental activities in overall development cooperation;
- insufficient harmonization among bilateral donors and multilateral actors;

- inconsistent use of available instruments to assess the environmental impact of different activities;
- lack of country ownership: environmental stakeholders are often not represented at the negotiating tables where Poverty Reduction Strategy Papers (PRSPs), Country Strategy Papers (CSPs) or bilateral aid programs are being discussed.

The Convention on Biological Diversity has developed a series of “best practices” guides for mainstreaming that provide further advice (CBD, 2014d). In 2009 CBD sought advice from development agencies on biodiversity mainstreaming (CBD, 2009). It enumerated a set of challenges that face mainstreaming work (drawn from Roe and Mapendembe, 2013):

- insufficient evidence (case studies and success stories) on the advantages of mainstreaming biodiversity to reach development goals;
- difficulties in the formulation of development outcomes incorporating biodiversity in programs;
- the complexity of results-based management since biodiversity benefits are dispersed in space and time, while development projects are often funded for a short period and decisions at the national level are often based on short-term returns;
- difficulties in raising awareness and in ensuring engagement by the private sector;
- lack of effective measurement of financial flows for biodiversity;
- lack of systematic utilisation of economic valuation tools – both at the national and the donor agencies levels;
- finding biodiversity champions within ministries associated with development sectors or in Ministries of Finance and Planning to make the case for biodiversity’s critical input into their sectors (Ashwell *et al.*, 2006);
- current trends in funding moving away from conservation – making mainstreaming activities more difficult to support.

All these experiences are derived from the informal conservation and development literature. Unfortunately, this is the only source of information available, as there is a very limited peer-reviewed literature on experience from implementing mainstreaming activities. The exception is a small but growing

literature on the efficacy of certification programs (Hughell and Butterfield, 2008; Steering Committee on the State-of-Knowledge Assessment of Standards and Certification, 2012; Hughell, 2013; Rueda and Lambin, 2013). There is little evidence that the mainstreaming projects funded through GEF have produced peer-reviewed articles written by the project implementers or others. However, there is no clear way to determine that such articles, or even articles in the gray literature, have been produced. There is an obvious and important need for the practitioners of mainstreaming to publish in the peer-reviewed literature.

## 1.7. Further lessons: trade-offs, the question of proof, and new areas

The conviction that win-win solutions exist in a world of complex biodiversity and social problems is shared by many conservation initiatives, such as integrated conservation and development projects and community-based wildlife management. In a thorough review McShane *et al.* (2011) conclude that in practice most apparently win-win programs involve trade-offs between desired conservation outcomes and desired social outcomes. Because these trade-offs are not expected and therefore not negotiated, the results can often be disappointment and anger. The authors advocate discussion and negotiation in advance, to address the full range of values and dynamics that shape project outcomes and provide a framework for such engagement.

Most mainstreaming activities are predicated on a belief that they are win-win – that is, a win for development and a win for conservation. This belief is based on the assumption that markets, if properly informed and incentivized, will protect biodiversity. Market-based instruments are seen as having great potential by some (Kinzig *et al.*, 2011)- but raise serious concerns for others (Lockie, 2013). Market-based initiatives (MBIs) such as pollution taxes, cap-and-trade schemes, eco-certification and payment for ecosystem services are promoted as economically efficient, targeted solutions to difficult, coupled environmental and social problems (Lockie, 2013). Pirard (2012) provides a useful taxonomy of these MBIs, categorizing them into regulatory price signals, reverse auctions, tradable permits, direct markets, and voluntary price



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signals. Their use is based on the assumption that, though markets arguably created many of the problems, it is markets that can provide the solutions.

In the case of mainstreaming, it is unclear if the use of MBIs will result in support only for those components and attributes of biodiversity that are of direct interest to humans. If so, mainstreaming will not have succeeded as a biodiversity conservation strategy. This significant concern suggests that mainstreaming is a strategy best addressed by pairing mainstreaming approaches with direct support for protected areas, as is done by GEF.

It is also unclear whether, in the implementation of mainstreaming projects, difficulties similar to those with other MBIs have been faced. However, there is already discussion that PES programs may be headed in that direction. PES programs have increased dramatically in recent years, perhaps because they are the only specific MBI to be mentioned in the report of the 10th Conference of Parties (COP) to the Convention on Biological Diversity in October in Nagoya, Japan in 2010 (Lapeyre *et al.*, 2012). The concept of PES has become the focus of international conferences, new journals, and new governmental and non-governmental funding streams. But their implementation has also raised concerns centering around the dangers of reducing the complex and multi-faceted benefits humans derive from ecosystems to a single exchange-value measure (Muradian *et al.*, 2013).

It is hard to determine what has been learned from PES programs, as they have not been carefully evaluated (Muradian *et al.*, 2013; and see discussion above).

In fact, the conclusion reached by those interested in assessing the efficacy of PES is that unfortunately, due to a heterogeneity of methods and lack of clear experimental design and data collection, very little can be concluded about their effectiveness (Miteva *et al.*, 2012; Lapeyre *et al.*, 2012).

This concern about PES applies to the collective family of MBIs. A review of the field of MBIs led Pirard (2012) to conclude that, due to their diversity, as a whole they are not either “cost-efficient, risky, inequitable, or capable of revealing information to reach a social optimum and better environmental management.” Furthermore, they are based on a set of unacknowledged “assumptions about the distribution of benefits arising from ecosystem service provision, the rights and duties associated with resource access, and the fitness for purpose of various policy instruments” (Lockie, 2013). We simply do not know to what extent these conclusions apply to biodiversity mainstreaming.

A final trade-off to consider is that between biodiversity and ecosystem services. The relationship between these two concepts is not at all straightforward (Ingram *et al.*, 2012), despite the common assumption that ecosystem services programs must also conserve biodiversity. Biodiversity has key roles to play in underpinning all levels of ecosystem services and can itself be an ecosystem service (Mace *et al.*, 2012). Greater clarity is needed in regard to determining the effects of mainstreaming activities on biodiversity and ecosystem services and possible trade-offs between the two.



It is clear that greater care needs to be brought to the design, implementation and assessment of mainstreaming projects, as well as to the use of this learning to inform policy-making (Lapeyre *et al.*, 2012). Ferraro (2012) argues that:

“*As one of the largest multilateral donors for environmental programs, the GEF should be a leader in the production of evidence. With multi-nation investments in common environmental policies and programs, the GEF is uniquely placed to generate credible evidence about improving the performance of environmental programs. Such evidence would not only increase the return to GEF investments, but it can also catalyze broader investments and actions by making the connection between environmental investments and the effects of investments clear to general audiences.*”

To advance this agenda, Ferraro has proposed a set of experimental project designs that would help enhance assessment and learning of – and by – GEF projects.

Ferraro’s (2012) call is echoed by Miteva and colleagues (2012), who call for a program of research that “seeks to measure how programme impacts vary by socio-political and bio-physical context, to track economic and environmental impacts jointly, to identify spatial spillover effects to untargeted areas, and to use theories of change to characterize causal mechanisms that can guide the collection of data and the interpretation of results.” Billions of dollars have been spent on biodiversity outcomes, but there is very little robust, credible evidence on the efficacy of these actions (Miteva *et al.*, 2012).

However, mainstreaming is not a controlled experiment, but rather a social experiment in changing the value structures of institutions and individuals – with vital consequences for the natural world and the humans who rely on it. Therefore, it may not prove amenable to rigorous, experimental testing, but it is certainly a field deserving of more systematic inquiry.

Finally, several approaches to mainstreaming biodiversity are not currently included in the mainstream of mainstreaming but show great potential. The first is human behavioral change. Mainstreaming in all its forms and settings will only work if people change their behaviors (Schultz, 2011). Yet recent work shows

conclusively that increasing knowledge by itself does not lead to a change in behavior (McKenzie-Mohr *et al.*, 2012). Effective work could be done to assess the most effective ways to promote behavioral change toward biodiversity using methods such as social marketing and community empowerment (Wilhelm-Rechmann and Cowling, 2011, Bolderdijk *et al.*, 2013, Clayton *et al.*, 2013, Wilhelm-Rechmann *et al.*, 2013).

The second approach is ecological restoration. At the 2012 United Nations Conference on Sustainable Development (Rio+20) a target was set to restore 150 million ha of disturbed and degraded land globally by 2020 (Menz *et al.*, 2013). Several countries, including Brazil, India, the Republic of Korea and South Africa, have started major national restoration programs (Aronson *et al.*, 2011, Aronson and Alexander, 2013). Beynas *et al.*, (2009) have shown that ecological restoration can increase flows of biodiversity and ecosystem services, though not to the levels of intact sites. Very large-scale projects are taking place, such as China’s (and Africa’s) Great Green Wall initiative and Grain for Green programs to restore and maintain ecosystem services (Ratliff, 2003; Kolinjivadi and Sunderland, 2012). With the rapid changes facing the world due to climate change and other factors, there are ample mainstreaming opportunities with the potential to conserve biodiversity and promote human well-being (Hobbs *et al.*, 2011).

Increasingly, public health and development professionals are appreciating the strong links between human health and biodiversity (Campbell *et al.*, 2012, Myers *et al.*, 2013). In 2012 both the CBD (Bridgewater *et al.*, 2012) and the World Bank (World Bank, 2012) called for more work in this area. More than 60% of human infectious diseases are caused by pathogens shared with wild or domestic animals, and emerging zoonoses are a growing threat to global health (Karesh *et al.*, 2012). The pattern of emergence is related to a combination of globalized trade and human travel, expansion of road networks, conversion of natural ecosystems, and intensification of wildlife trade (Karesh *et al.*, 2012) – all of which are the object of mainstreaming activities. Mainstreaming biodiversity into human health and then into development using a layered approach would make mainstreaming of greater importance to achieving the Millennium Development Goals – and in particular the post-2015 Sustainable Development Goals.



## 1.8. Mainstreaming in a changing world

Mainstreaming is an approach that is difficult to bound. The general concept of working to inculcate conservation values into development, and thereby modify development policy, has been pursued for many years under many names. It has clearly not had the sort of success needed, as witnessed by the fact that threats to biodiversity are increasing and interventions are not keeping pace (Butchart *et al.*, 2010).

Conditions when many approaches were developed are now, or soon will be, very different. Climate change is a particularly urgent type of global change that conservation and development planners are addressing (e.g. Groves *et al.*, 2012). Much of their work will have to be done outside protected area boundaries. However, many new scientific developments are anticipated in the next decades, whose impacts cannot yet be known. They include synthetic biology (Redford *et al.*, 2013), carbon farming (Lin *et al.*, 2013), and evolving markets and business models (Laird and Wynberg, 2012).

Political and social change also needs to be taken into account. Huntley (2012) describes a process of “strategic opportunism” that matches unpredictable funding sources and unexpected opportunities to unplanned but fortuitous events. This approach is exemplified by the Working for Water project (van Wilgen *et al.*, 2012), which took advantage of rapid socio-political change to mobilize a massive mainstreaming program using a tool kit of legal, social and political interventions implemented by a mix of “mainstreaming champions”.

Mainstreaming should not be considered a panacea. Everything that humans wish for and need cannot be provided through biodiversity conservation. There have been programs built on assumptions about the extent to which biodiversity conservation and/or other nature conservation activities can help alleviate poverty, affect the future of people living in cities (CBD, 2013), or even help people to obtain basic needs such as access to food (de Schutter, 2014). Satisfying some human wants and needs is beyond the scope of international efforts to avoid biodiversity loss, and other conservation efforts, and therefore that of biodiversity mainstreaming. Care should be

taken to promote mainstreaming in appropriate ways in order to help provide realistic solutions to pressing global problems.

National governments have committed to continue their work related to biodiversity mainstreaming. The CBD’s Strategic Plan for Biodiversity 2011-2020 (CBD, 2014e) includes a Strategic Goal to “address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society”. Moreover, parties to the CBD are in the process of revising their National Biodiversity Strategies and Actions Plans (NBSAPs) – a potentially valuable window of opportunity to promote mainstreaming and emphasize the opportunities that biodiversity can provide for development (Roe and Mapendembe, 2013).

A recent TEEB study (2013) estimates that major business sectors have unpriced natural capital costs totaling US\$ 7.3 trillion, equating to 13% of global economic output. The majority of these unpriced natural capital costs originate from greenhouse gas emissions, water use and land use. Biodiversity mainstreaming has potential to help bring about full accounting and modify the human behaviors that result from centuries of institutions and markets remaining blind to their reliance on nature.

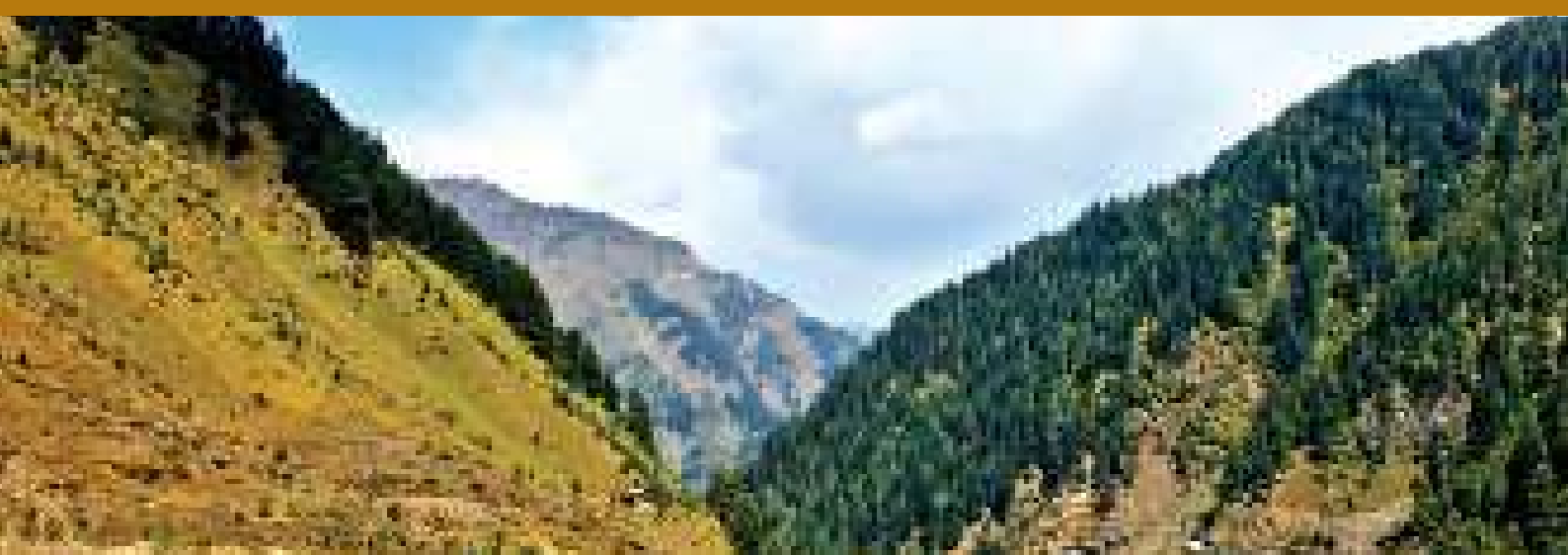




Photo: ebarrera

## 2. DETERMINANTS OF EFFECTIVE BIODIVERSITY MAINSTREAMING

Brian J. Huntley

### Report of the Scientific and Technical Advisory Panel (STAP) Workshop

Cape Town, South Africa, October 2013

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### 2.1. Introduction

#### 2.1.1. Background to the 2013 Workshop

In September 2004, the Scientific and Technical Advisory Panel (STAP) of the Global Environment Facility (GEF) convened a workshop in Cape Town, South Africa, to review the newly emerging concept of biodiversity mainstreaming, and to develop principles and guidelines for its effective application. The workshop also identified areas for GEF interventions to promote the mainstreaming of biodiversity in production landscapes and seascapes and proposed indicators to assess the effectiveness of such interventions.

The 2004 workshop identified ten principles for mainstreaming. It also outlined three main intervention types (Table 4):

- strengthening capacity at systemic levels;
- establishing markets for environmental goods and services;
- improving production practice.

Finally, it described 57 indicators grouped under seven thematic areas to assess the effectiveness of mainstreaming.

In October 2013, STAP convened a follow-up meeting, also in Cape Town, which brought together 35 senior project implementers and researchers with field experience in over 80 countries and all inhabited continents. The objectives of this workshop were to assess lessons learned following the US\$ 1.6 billion investment made by the GEF since 2003 in 327 mainstreaming projects in 135 countries. The 2013 workshop upheld the principles and guidelines recommended by the 2004 meeting. However, based on the rich experience of both successful and less successful projects over the previous decade, the need to consider changes in emphasis of both principles and guidelines was noted.

Key findings arising from the workshop discussions have been extracted in this section.

Abstracts of the papers presented at the workshop will be found in Appendix 1.

The workshop participants are listed in Appendix 2.

### 2.1.2. What is biodiversity mainstreaming and what are global environmental benefits?

To avoid a lengthy discourse on definitions of the objectives of biodiversity mainstreaming, the definitions agreed at the 2004 and 2013 workshops follow, the latter consistent with and building on the former:

“ [The purpose of] Biodiversity mainstreaming is to internalize the goals of biodiversity conservation and the sustainable use of biological resources into economic sectors and development models, policies and programs, and therefore into all human behavior. (2004)

*Biodiversity mainstreaming is the process of embedding biodiversity considerations into policies, strategies and practices of key public and private actors that impact or rely on biodiversity, so that it is conserved and sustainably used both locally and globally. (2013)*

Terms in the continuum from genes, species, biodiversity, ecosystem services, environmental services and ecological infrastructure are not well understood by the sectors with which the mainstreaming process must engage. The inter-relationships between biodiversity and ecosystem services are complex. The common assumption that the maintenance of ecosystem services will conserve biodiversity – and that conserving biodiversity will secure ecosystem services – is oversimplified (e.g., a plantation of invasive alien trees might provide the ecosystem service of carbon sequestration – but might significantly reduce or eliminate indigenous species). The conflation of these terms can lead to unrealistic expectations of project interventions, which are often specific to species or ecosystem function.

Furthermore, biodiversity mainstreaming is not only about wild species but also about genetic resources, agricultural biodiversity and crop relatives. As it is an evolving science and practice, new terms and concepts of biodiversity mainstreaming are constantly emerging. Precision in their use will improve the effectiveness of communicating the mainstreaming message. The workshop treated biodiversity and ecosystem services as distinct but tightly interdependent concepts.

Clarifying key terms relative to the conservation objectives of GEF mainstreaming projects is also important. *Global environmental benefits* (GEBs) are project outcomes that protect, restore or reduce the rate of loss of genes, species and ecosystems (and their emergent properties) of benefit to all humanity (i.e. of global importance and not solely local importance). Mainstreaming projects deliver benefits by increasing the rate of protection or restoration – or reducing rates of loss – relative to a baseline or likely alternative scenario. In some cases, a stable or even negative trend line in specific GEBs may indicate success if it represents effective threat mitigation and a significant reduction in the rate of biodiversity loss.

### 2.1.3. Why is mainstreaming so important? What has been the GEF response?

Great success has been achieved in the long tradition of establishing protected areas (PAs), with 12.7% of the world's terrestrial, 10% of its coastal and 4% of its marine area having been included in formally designated protected areas by 2010. Protected areas remain the conservation community's most successful management response to the global decline of biodiversity assets.

Impressive as this might appear, over 85% of terrestrial and 95% of marine systems are without any rigorous protection. Further, effective management systems are in place in less than 40% of the global network of PAs. In terms of the protection afforded sites of highest biodiversity richness and importance, the situation remains challenging. Of 588 sites listed by the Alliance for Zero Extinction, only 22% fall within existing PAs. Of 10 – 993 sites listed as Important Bird Areas, only 28% fall within PAs. Finally, over 100 countries have downgraded or de-gazetted PAs since 1990.

Human needs for and impacts on land, water, food and fuel already exceed known planetary boundaries for several key resources. Dramatically but presciently described as the Great Acceleration into the Anthropocene, the 1950s marked the beginning of a massive surge in human activity and large-scale changes in the Earth system. The rapid expansion in production of, in particular, cattle, palm oil, fish and rice, are the key drivers of habitat loss, exacerbated by growth in human numbers to beyond 7 billion in 2012, and in the understandably escalating material demands of the new middle class of emergent economies.

Globalization has resulted in as few as 500 companies controlling 70% of global trade. The impacts of such international trade have been causally linked to 30% of the vertebrate species listed by the IUCN as threatened. Models of trade and threat trends demonstrate that developed nations drive biodiversity threats in developing nations.

The planetary scale of the increasing challenges to biodiversity demand new approaches. They also open new opportunities. Mainstreaming is one of these. Simply put, biodiversity conservation considerations

must be embedded in the investment decisions of public and private sectors, and into resource use policies, planning and production practices.

Recognizing the urgency of addressing biodiversity conservation needs “beyond park boundaries”, the International Union for Conservation of Nature (IUCN) and many other organizations have, since the 1980s, advocated the concept of mobilizing biodiversity conservation across landscapes and seascapes – a process that has more recently become termed “biodiversity mainstreaming”. Mainstreaming has received considerable traction as a mechanism to achieve multiple environmental and development goals, with support from the highest levels of international institutions such as the CBD, GEF, UNDP, UNEP, IUCN, and most recently the G20 – all of whom have embedded the mainstreaming of environmental sustainability into their key policy statements. Through novel transformational practices at landscape and seascape scale, mainstreaming links protected areas to the more than 85% of global landscapes and seascapes that fall outside the world's protected area system.

The GEF has had considerable success in supporting the effective management of existing, and the development of new protected areas around the world. It has also taken a leadership role in advancing the concept, design and implementation of mainstreaming initiatives. Mainstreaming has rapidly increased in importance in the GEF's biodiversity focal area strategy. From the mid-1990s to 2013, the GEF invested over US\$ 1.6 billion (with US\$ 5.3 billion in co-financing) in 327 projects operating in 135 recipient countries. Most projects have had a five-year duration, but layering of successive projects has helped to extend successful initiatives over more realistic timeframes. Experience from GEF mainstreaming projects underpinned much of the workshop discussion.

Biodiversity mainstreaming thus represents a major and significant intervention in the global conservation and sustainable development agenda.

This section seeks to offer guidance for increased investment by the GEF and partners in mainstreaming initiatives during GEF-6.

## 2.2. Key determinants of effective biodiversity mainstreaming

### 2.2.1. Summary

A summary of the proposals from the 2004 and 2013 workshops illustrates the continued commonalities and changing emphases developed through “learning by doing” over the past decade (Table 4).

### 2.2.2. Project design and implementation

#### *Determinant 1. Project design and operational strategy embedded within a theory (or theories) of change for biodiversity mainstreaming*

A general framework for the mainstreaming process was described at the 2004 workshop and has proven of great heuristic value. It was based on early experience in mainstreaming projects and has an inductive and empirical rather than a theoretical foundation. Its key components are:

**TABLE 4 SUMMARY OF PROPOSALS FROM THE 2004 AND 2013 MAINSTREAMING BIODIVERSITY WORKSHOPS**

2004 Principles and conditions for effective mainstreaming	2013 Key determinants of mainstreaming success
<ul style="list-style-type: none"> <li>• Awareness and political will from the highest levels, providing support for implementation</li> <li>• Strong leadership, dialogue, and cooperation at all levels</li> <li>• Mutual supportiveness and respect between biodiversity and development</li> <li>• A strong focus on economic sectors, supported by cross-sectoral approaches, securing sector-based biodiversity conservation</li> <li>• Analysis and understanding of the changing motivations and opportunities of each sector, including the effects of globalization</li> <li>• Identification and prioritization of entry points and the development of sector-specific tools and interventions (such as international codes of conduct or standards)</li> <li>• Awareness within sectors of the relevance of biodiversity conservation and the capacity needed for implementation</li> <li>• A coherent set of economic and regulatory tools and incentives that promote and reward integration and added value, while discouraging inappropriate behaviors</li> <li>• Sustained behavioral change within individuals, institutions, and society, and in both public and private domains</li> <li>• Measurable behavioral outcomes and biodiversity gains.</li> </ul>	<p><b>Project design and implementation</b></p> <ol style="list-style-type: none"> <li>1. Project design and operational strategy embedded in a theory (or theories) of change for biodiversity mainstreaming</li> <li>2. Availability and use of science-based biophysical and socio-economic spatial information systems and assessments at relevant scale</li> <li>3. Flexible project duration, financial sustainability and adaptive management approaches</li> <li>4. Effective project monitoring and evaluation systems implemented</li> </ol> <p><b>Project strategic alignment</b></p> <ol style="list-style-type: none"> <li>5. Alignment of mainstreaming initiatives with the CBD and other intergovernmental processes</li> <li>6. Alignment of mainstreaming projects with government priorities, working across multiple sectors</li> </ol> <p><b>Social context and leadership</b></p> <ol style="list-style-type: none"> <li>7. Democratic, transparent and stable governance systems</li> <li>8. Strong capacity at individual and institutional levels</li> <li>9. Strong and responsive teams led by champions</li> <li>10. Effective communication with stakeholders to make the case for biodiversity</li> <li>11. Positive, incremental and continuous behavioral change</li> </ol>



- *prerequisites* (elements without which mainstreaming cannot happen, e.g. good governance, spatial biophysical and socio-economic knowledge, strong institutions);
- *stimuli* (elements internal and external to the sector that catalyze awareness of the need for mainstreaming or offer unexpected opportunities, e.g. change in governments, natural disasters);
- *mechanisms* (the actual activities that seek to affect mainstreaming, e.g. enabling legislation, strengthened institutions, tax incentives, product certification);
- *outcomes* (the measurable indicators of mainstreaming effectiveness, e.g. area of land that is under improved management systems, habitats that are sustainably managed for threatened species, effective incentives through certification resulting in biodiversity gains).

This general approach was reflected in many of the projects reported on at the 2013 workshop. In several cases (in Latin America, West Africa, Southern Africa and South East Asia) elaboration of the approach into design and implementation models has taken place. Building on experience in conservation planning, an operational model from South Africa described three phases – assessment, planning and management – across spatial and temporal scales and differing levels of stakeholder engagement. Projects of the Rainforest Alliance for the certification of coffee, cocoa and palm oil production systems in West Africa, Latin America and South East Asia drew on a model developed within the context of a theory of change in agriculture. The Water Fund paradigm developed by The Nature Conservancy and partners in South and Central America has provided an environmental services model focusing on the dynamics of users and providers of water.

The workshop did not explore the development of a general theory of change that would explain how mainstreaming will happen over spatial and temporal landscapes. However, it recognized that mainstreaming is, in fact, an umbrella term for a suite of different models of transformation. The need to develop working hypotheses during project design to ensure effective linkages between project interventions and the desired global environmental benefit outcomes might lead to several theories of change, for each of the major approaches/tools used in mainstreaming

project (see next paragraph). Similarly, the workshop recognized the critical importance of matching mainstreaming intervention entry points with opportunities for different global benefits and sectors, as identified by key stakeholders participating in the planning and implementation processes of project development.

The various typologies categorizing the tools/approaches followed in the GEF portfolio of mainstreaming projects over the past decade retain their utility:

- policy and legislative frameworks;
- planning tools and regulations;
- production practices in agriculture, forestry, fisheries, and extractive industries;
- financial mechanisms, including payments for environmental services, and natural capital valuation.

While project design may identify a range of opportunities to address underlying causes of threats to biodiversity, it may be feasible to address only a couple of these during project implementation. Recognizing the complexities, unpredictable nature and uncertain time frames of addressing underlying causes, the workshop recommended that projects be designed to allow a deeper focus on fewer interventions over longer time frames. Hypotheses developed within a theory of change should be re-evaluated at project midterm to see if they are holding up and, if necessary, adjusted. A further suggestion was to link the upstream consequences (both intended and unintended) articulated in the theory of change to the project's logical framework.

At project implementation, systemic interventions (e.g. policy, planning, enforcement, institutional strengthening) should be blended with on-the-ground activities that generate concrete global environmental benefits and promote sustainability. Projects should not undertake on-the-ground mainstreaming without linking these to an integrated systemic outcome that can be replicated at scale.

Social assessments and governance assessments are two areas that are still poorly developed in current GEF projects. Another area that needs more engagement is the health sector. Wildfires associated with the drainage of peatlands in Eastern Europe and extensive deforestation for biofuels in South East Asia have resulted in severe impacts with respect to respiratory

disease and increased morbidity. Healthy habitats are needed not only for biodiversity but equally for human wellbeing. There are numerous fundamental connections between human health and nature's health, which the biodiversity community has barely started to flesh out. Mainstreaming projects will need to explore such opportunities through active engagement with relevant social and health scientists.

***Determinant 2. Availability and use of science-based biophysical and socio-economic spatial information systems and assessments at relevant scale***

Progress in systematic conservation planning and other spatial tools for identifying priorities for natural resource management have become standard practice in the countries where mainstreaming has become a key component in biodiversity conservation programs. Increasingly, these information systems have been integrated into global and regional open-access resources. But for many countries the scale and quality of such spatial information is still weak.

Where GEF and similar donor support has been available to create and strengthen such information systems, progress has been most rapid. A strong positive relationship exists between information and data richness (and the policy and outcomes relevance of such information for decision support) and mainstreaming success. In many situations, mainstreaming can proceed without fine-scale spatial information, but as resources and options narrow, higher quality data will be needed to defend conservation arguments.

Users of such information including institutions beyond the immediate biodiversity community, and major development banks and aid agencies, and increasingly the private sector, are using such systems in implementing risk assessment and safeguard policies. Investment in strong, fit-for-purpose information systems at an early stage of project development is fundamental to project success.

The availability of a strong science base to such information systems is essential, and this needs continued support through enabling research to systematically identify spatially strategic areas and monitor resource trends and responses to interventions.

While progress in biophysical information systems has been impressive, the level of spatial data on social and economic variables important to biodiversity

mainstreaming is less robust and is often inadequate to inform management policies, priorities and actions on the ground. Such information is particularly important in making judgment calls about which biodiversity assets might be subject to trade-offs. We need to be much clearer about what we want to protect and what economic activities we might need to forego.

Mapping existing and potential land uses and exploring compatibility with conservation initiatives provides a firm basis on which to assess trade-offs. Here an objective should be to shift the land use trajectory towards compatibility with biodiversity goals. The economic return of different land uses and the point at which the rate of return on a biodiversity-friendly option exceeds the non biodiversity-friendly option needs to be established in trade-off assessments.

The process is not simple, and it is often difficult for mainstreaming projects to negotiate with economic sectors without a clear understanding of the business models, economics and risks of the sectors whose land use practices mainstreaming projects seek to influence. These projects require production sector economic analyses to focus on changing business models of those sectors for biodiversity gains. Thus mainstreaming must be based on far more than the traditional biophysical data sets with which conservation professionals are most familiar.

Economic valuation studies have become more common in mainstreaming projects. However, these are not always useful, especially when they generate hypothetical information about the value of a particular ecosystem service that is not actually captured in a market. In some cases, particularly where economic activities are heavily dependent on biodiversity, e.g. tourism, using valuation to generate headline numbers can be a powerful tool to make the case for public and private sector investment. Data from valuation studies should be used with clear understanding of their limits and underlying assumptions.

***Determinant 3. Flexible project duration, financial sustainability, and adaptive management approaches***

A key lesson coming from a decade of mainstreaming practice is that dynamic strategies with good timing, flexible, adaptive and opportunistic implementation approaches are essential. Opportunities often arise through changes far removed from the



project area. “Hot moments for biodiversity conservation” occur through unexpected political change, law and institutional reforms, new technologies or macro-economic dynamics that offer special opportunities for inserting mainstreaming processes into national level development agendas, as illustrated in changes in the Commonwealth of Independent States, Eastern Europe, and southern African countries such as Mozambique, Namibia and South Africa.

Projects need to be designed, planned and implemented with future sustainability in mind. While “stretch objectives” are attractive and might provide an incentive to meet ambitious challenges, goals and outcome expectations should be realistic and adaptable. Mainstreaming projects should thus have modest site level targets the influences on which can be measured within project timeframes. Projects should identify, in the working hypothesis or theory of change, the linkages between site level actions and systemic change and the potential of replication over wider temporal and spatial scales.

A sustainability plan must be part of any exit strategy in projects initiated with donor funding and that are ultimately dependent on national resources. A sustained funding mechanism is needed with a flexible governance structure to allow for adaptive management of risks and opportunities.

Mainstreaming is an iterative process and requires adaptive skills to progress through policy transition processes that cannot be tightly managed or accelerated. In working with both governments and the private sector, the process of developing mutual trust, communicating convincing arguments for change, and having such new ideas embedded in policy and action cannot be rushed.

Entry points and “low hanging fruit” must be identified opportunistically and should lead to quick-win situations that can build confidence among stakeholders. In certain circumstances, political moments such as changes in government, law reform, or the arrival of a political leader who champions a project, or even natural disasters that trigger public responses, offer special opportunities that require skilled and persuasive negotiators to exploit for advancing the mainstreaming agenda.

Two general approaches to selecting entry points for mainstreaming interventions have succeeded. A

“short hook” approach works at local, farm-based and landscape level to maximize biodiversity compatibility, while a “long hook” approach tackles policies, product supply chains, and markets via a range of focus areas from individual consumers and retailers, to the development of national platforms in commodity sectors. The choice of which of these approaches to use must be part of both the longer-term project strategy but also respond to unexpected opportunities within an adaptive management approach.

While most donor funding is based on short-term, typically five-year investments, mainstreaming takes much longer timeframes. Experience in some GEF projects suggests that the same budget, but spread over twice the time, might lead to better results. Initial funding of a 5-year GEF project might only meet the needs of a stimulus to institutions, stakeholders and the development of the fundamental information framework for complex mainstreaming interventions. Mainstreaming often requires institutional changes that may take a decade or more, i.e. beyond the lifetime of typical projects. Therefore, different project planning models are needed.

There is often tension between project targets that require site level interventions and the systemic change required in mainstreaming. A focus on ambitious site level targets can lead projects away from the deeper institutional mainstreaming outcomes. Projects should identify the linkages between site level action and systemic change, recognizing that systemic change leading to global environmental benefits is often sequential and sometimes occurs beyond project timeframes. Similarly, projects focused on systemic change may only result in gains on the ground after the project closes.

In countries receiving multiple GEF investments in the biodiversity focal area, blending or layering of project activities can create synergies with great advantage. Networking between project implementers from different agencies and institutions is critically important, but often neglected.

Mainstreaming is a process of “learning by doing”. Once a successful pathway has been mapped out and agreed, a progression toward more intelligent and responsive design detail can be achieved. Modest starts and broad-based sharing of experience helps build confidence in a network of partners from many sectors.

#### **Determinant 4. Effective project monitoring and evaluation systems implemented**

Most GEF mainstreaming projects require significant budgets (a median of US\$ 5.3 million from GEF plus US\$ 17.3 million in co-financing during GEF-5). Elaborate reporting systems are therefore in place to monitor the performance of these donor-funded projects. Reporting focuses on project activities, administrative compliance, and financial records, rather than measures of quantified biodiversity indicators and impact on these. While the many in-house publications of the GEF and implementing agencies are excellent products in terms of presenting examples of successful projects, few report on less successful projects. Further, results from individual projects are difficult to aggregate into region-wide or global metrics of biodiversity return on investment. The need for suitable indicators of project impacts was recognized by the 2004 workshop, which listed seven indicator groups for project impact:

- spatial indicators for the increase in the percentage of a key biodiversity area under biodiversity-compatible management;
- government indicators on, for example, biodiversity legislation, planning, staffing, removal of perverse incentives, and funding;
- private sector indicators on, for example, numbers of sectoral key players championing biodiversity inclusion in planning, budgets, internalization of costing, and incentives to producers for better production practices;
- individual-based indicators – for example, consumer awareness and behavior, volunteerism, and membership of “green” organizations;
- multilateral donor organizations – for example, funding levels, training programs, biodiversity safeguards, and in-house best practices.
- poverty alleviation indicators linking biodiversity sustainability to poverty eradication;
- markets-for-ecosystem services indicators including, for example, biodiversity considerations in commodities, supply chains and certification.

It is self-evident that few of these indicators are easy to measure at scale. A working group of the 2013 workshop addressed the problem of appropriate indicators and monitoring approaches, focusing on three tasks. First, to identify indicators and

measurement tools by which the GEF can assess global environmental benefits of mainstreaming projects; second, to explore how monitoring could be systematized to test hypotheses about mainstreaming; and third, to suggest ways in which the GEF could function more effectively as a “learning organization” based in part on knowledge gained through measurement efforts.

#### **What should be measured?**

The working group began by clarifying the conservation objectives of mainstreaming projects. Specifically, *global environmental benefits* (GEBs) were recognized to be the project outcomes that *protect, restore, or reduce the rate of loss* of genes, species and ecosystems (assets) of value to all humanity, i.e. of global importance and not solely local importance. This framing clarifies that the state of such assets (e.g. their presence, quantity, or quality) at any given point in time is not necessarily an adequate indicator of project impact. Rather, mainstreaming projects deliver benefits by increasing the rate of protection or restoration of these assets – or reducing rates of loss – relative to a baseline or likely alternative scenario. In some cases, a stable or even negative trend line in specific biodiversity assets may indicate success if this trend is significantly more favorable than an alternative scenario in the absence of the project. In this case, the project would have delivered effective threat mitigation to reduce the rate of biodiversity loss.

During the 2013 workshop, several presenters noted that mainstreaming efforts might take decades to come fully to fruition. Thus, initial investment through a GEF project roughly five to seven years in duration may establish critical foundations and achieve early successes, but not realize the full desired mainstreaming agenda in any given context. With this reality in mind, the workshop clarified that a mainstreaming evaluation framework should include measures of both *means* and *ends*. These may be considered, alternatively, as *fast* vs. *slow* measures, or as *soft* vs. *hard* outcomes. As implied by some of the workshop presenters, the means (e.g., strengthening of local institutions, capacity building, supply chain engagement, and other “soft” interventions) can sometimes be at least as indicative of long-term conservation success as initial on-the-ground results. Therefore, ends and means are both important to monitor.



Monitoring of land use and land cover change was recognized as a nearly universally appropriate “ends” measure of project results, and was deemed widely feasible by virtue of recent advancements in remote sensing technologies. Credible counterfactual scenarios should be developed to improve the interpretability of land change data as a measure of project impact. Changes in species and population status may be appropriate measures for some projects, but the group recognized several challenges in collecting and interpreting such data. Specific indicators for “soft” outcomes related to policies, institutions, markets, human capacities, and the like were not proposed. Generally, it will be more difficult to standardize and roll-up such measures.

***How can be monitoring be systematized to test key hypotheses about mainstreaming effectiveness?***

To help address the knowledge gap on the effectiveness of mainstreaming approaches (highlighted in the workshop background discussion document), the workshop recommended increased investment and focus on evaluating mainstreaming interventions not only at the project level, but also at the level of project portfolios and mainstreaming strategies. Doing so will require designing project-level monitoring and evaluation (M&E) to align with a “superstructure” of hypotheses and theories-of-change about various mainstreaming models or strategies.

The workshop recognized “mainstreaming” as being essentially an umbrella concept to refer to a cluster of different programmatic strategies (e.g. policy mainstreaming, supply chain mainstreaming, and integrated landscape approaches to conservation and development). As a first step, these individual

mainstreaming strategies should be identified and, for each, a theory-of-change and set of “meta-hypotheses” should be elaborated. A circumscribed set of standard indicators, comprising measures of means as well as ends, can then be developed for each set of hypotheses. Individual mainstreaming projects, in most cases, should associate themselves with one or more of the pre-identified mainstreaming strategies, and develop a project-level M&E system that incorporates standard indicators related to these strategies. In this way, projects will generate data on standard indicators that may be more effectively rolled-up to provide evidence on the effectiveness of different mainstreaming strategies across a range of contexts. It was recognized that this proposed structure is not unlike that of the current GEF Tracking Tool, and suggested that the Tracking Tool could be refined to deliver consistent data that helps the GEF evaluate the key meta-hypotheses related to each mainstreaming approach.

***How can monitoring and measurement better support learning and innovation?***

As expressed in the workshop background report and by several speakers, there is certainly room for improvement in how the conservation community generates and shares knowledge in the service of evidence-based approaches to conservation. The group believed that the GEF could contribute positively in this regard by generating robust learning for the broader conservation community of practice (defined as the GEF, its affiliate organizations, and the wider set of conservation actors in government, civil society, and academia). In the mainstreaming context, the group recognized the need for knowledge generation (e.g. through systematic evaluation approaches,

as proposed above), knowledge sharing (e.g. through increased investment in synthesis and publication), and learning (e.g. through existing or new learning networks and active communities of practice) at three levels:

- At the *project level* there should be tighter feedback loops between monitoring and action, including through mechanisms to engage project stakeholders in information sharing, learning, and adaptive management.
- At the *level of specific* mainstreaming strategies, there are opportunities to share information and experience around best practices to inform future activities.
- At the *level of geographic regions*, industry sectors (e.g. the cattle sector), or sets of mainstreaming actors (e.g. development policy experts) there are opportunities to synthesize mainstreaming experiences to share and improve interventions.

The workshop discussed a missing link with experiential learning within the GEF portfolio. Projects provide a huge opportunity that is currently not being optimized for building on the body of knowledge of mainstreaming, but also to share learning amongst themselves to enable more effective implementation.

It was generally agreed that knowledge sharing and innovation at the level of mainstreaming overall would generally be too broad, whereas a more distributed topical approach (as suggested above) could engage key actors in the ways most relevant to them.

Perhaps the most direct way in which the GEF can facilitate learning and knowledge sharing is to invest specifically in evaluation, synthesis, and written publications. It is suggested this could occur at the project level (i.e., identifying a subset of GEF mainstreaming projects for which rich documentation of project experiences and outcomes is warranted) and at the portfolio or strategy level (i.e., investing in synthesis across a set of thematically linked projects, ideally under a robust structured methodological framework). In some cases such investment could partially substitute, or provide modest additional resources to complement, existing M&E approaches that tend to focus more on project management and workflow compliance than on critical reflection and learning. In other cases, particularly for portfolio- or strategy-wide synthesis, dedicated resources and engagement of outside researchers is recommended. At both the project/landscape level and the portfolio level, collaboration with dedicated university researchers could bring a welcome measure of objectivity, methodological rigor, and commitment to written documentation, including in peer-reviewed journals.



### 2.2.3. Project strategic alignment

#### ***Determinant 5. Alignment of mainstreaming projects with the Convention on Biological Diversity and other intergovernmental institutions and processes***

The objectives of biodiversity mainstreaming are fully embedded in the Strategic Plan of the CBD and its 2020 Aichi Targets, most particularly the four targets of Strategic Goal 1: Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society. Indeed, the GEF notion of mainstreaming is itself 'mainstreamed' across the CBD Strategic Plan – specifically in Goal A Target 2, but also parts of Goal B Targets 6 and 7, and Goal D Target 14 and part of Target 15.

Mainstreaming biodiversity is also embraced in the visions and/or strategies of many intergovernmental and non-governmental institutions such as the FAO, IUCN, UNDP, UNEP, World Bank and WWF. It is specifically embedded in the GEF Biodiversity Focal Area Strategy. There are thus numerous entry points for linking national or local initiatives with the global agenda. However, points of entry into key institutions that have wide impact on biodiversity such as the World Trade Organization (WTO) are less obvious and need to be addressed.

At national level, although the revision of National Biodiversity Strategies and Action Plans (NBSAPs) is a direct opportunity to mainstream biodiversity into national policy, the key participants in NBSAPs processes are mostly drawn from the biodiversity sector, with little involvement from the production sectors and the ministries of finance and planning that are most critically important to achieving mainstreaming objectives. NBSAPs can serve as a key mainstreaming tool and this has been supported as an explicit objective in the GEF-5 biodiversity strategy.

A further emerging opportunity for testing the mainstreaming model is that of the International Platform for Biodiversity and Ecosystem Services (IPBES). As has been recognized by the workshop, the evidence base for mainstreaming is rather thin in terms of publications in peer-reviewed journals – an incentive to existing projects to commit to publication of their results, as a way of enabling broader reflection on the very large GEF investment in mainstreaming.

As mainstreaming develops its own “community of practice”, project designers and implementers should ensure close liaison and collaboration with the existing body of experience and the commitment of governments to international initiatives such as the CBD and IPBES. The depth of field experience held by project implementers makes them well positioned to explore improvements to mainstreaming theory and practice with colleagues from academic institutions participating in the IPBES platform and its assessments.

#### ***Determinant 6. Alignment of mainstreaming initiatives with government priorities***

Political support and buy-in is essential for the success of mainstreaming projects, which by definition seek to embed biodiversity conservation concerns into the policies and practices of multiple sectors, and in particular, national development objectives. This might require working across ministries that do not normally deal with biodiversity matters or even work with one another.

Interventions should be informed by an intimate understanding of the policy environment, the political economy and dynamics of power and of influence. Ideally, interventions should seek to respond to demand, rather than positioning on the supply side of national strategies – seeking a “pull” rather than a “push” relationship with partners. For many ministries, evidence of the benefits of biodiversity toward meeting development goals might be unknown, unconvincing or competing for limited resources with other priorities of government. Such perceptions are difficult to change, requiring convincing messages and business cases that make sense to national development objectives.

Understanding the national development landscape thus ensures that interventions build on existing planning processes and budgeting cycles rather than creating additional burdens on institutions, donors and the national treasury.

Mainstreaming approaches should respond to specific country and regional contexts toward achieving clearly defined benefits and outcomes. These objectives and outcomes must sit within a more broadly framed theory of change targeting global environmental benefits, while directly serving the national needs of the countries in which they operate.



## 2.2.4. Social context and leadership

### **Determinant 7. Democratic, transparent and stable governance systems**

The importance of having democratic, transparent, stable and accountable governance systems at national to local levels has been reflected in the success of many projects and the difficulties in others. Governance systems that manifest the rule of law, impartial courts, respect for private property, a free press and effective education, health and other social services provide the enabling conditions for strong supportive policies and regulatory frameworks.

Strong political will, with effective enforcement of legislation and regulations, the removal of perverse incentives, and the institutional capacities to discharge statutory responsibilities concerning land use planning legislation enforcement and good practice have characterized successful projects. In many countries the ease (or difficulty) of doing business, and access to credit for small entrepreneurs and farmers, are key factors in project success.

In contrast to protected area programs, which are site-specific and are dependent on a relatively limited number of institutions and sectors for their success, the breadth and complexity of landscape and seascape level mainstreaming interventions make them far more vulnerable to governance issues. As such, a governance due-diligence assessment might be appropriate before mainstreaming projects are initiated. This does not, however, assume that countries with high governance rankings are inherently more likely to succeed. There are countries with high governance ratings that have failed to implement mainstreaming projects.

Mainstreaming is not going to work everywhere, so we should target places of high or vulnerable ecosystem services and biodiversity values and where mainstreaming investments have a good chance of success. It is notable that 48% of current GEF investments in mainstreaming projects go to just ten countries (Argentina, Brazil, China, Colombia, India, Indonesia, Mexico, the Russian Federation, South Africa and Viet Nam), all noted for their uniquely rich biodiversity assets and relatively strong governance capacity. However, many CBD-led and GEF-financed enabling investments, such as the NBSAPs, prepare the ground through stimulating the review

of legislation, developing information systems and strengthening institutional and individual capacities and creating communities of learning and professional networks. These create the conditions necessary for mainstreaming interventions.

### **Determinant 8. Strong capacity at individual and institutional levels**

Like good governance, strong institutional and individual capacity is a sine qua non for effective mainstreaming. Capacity strengthening is a cross-cutting issue in all conservation programs, with specific needs for mainstreaming in several areas:

- In the public sector, improved capacity for the implementation of policies and regulations to manage and regulate the use of biodiversity in the production landscape is needed in most countries. Experience indicates that for the majority of countries there appears to be limited capacity to move from policies and plans to implementation.
- In the private sector, capacity needs include strengthened ability to identify, adopt, monitor and report to stakeholders on institutional performance on standards that relate to biodiversity responsibilities, safeguards and certification systems.
- In research institutions, improved information and data gathering, spatial planning, GIS development and application are needed. The inclusion of socio-economic information, in addition to more accessible biophysical data, needs attention in surveys and assessments.
- In the banking sector an understanding of the role and importance of biodiversity in relation to business risk management and the implications for lending and investment portfolios is essential but not readily available.
- In the GEF Secretariat and implementing agencies and among project managers, an understanding of the complexity and specificity required for effective management vis a vis technical assistance and monitoring capacity is inadequately appreciated.
- Finally, in both public and private sectors, effective national delivery systems for extension services to farmers and local communities is a key determinant of effective responses to mainstreaming processes.



**Determinant 9. Strong and responsive teams led by champions**

Given the trans-disciplinary and multi-institutional nature of mainstreaming projects, leadership of such “managed” or “leveraged” partnerships and collaborative networks requires extraordinary skills. Strong but sensitive leaders are thus essential to drive and sustain mainstreaming projects. Such persons need to have both the self-confidence and emotional intelligence required to facilitate cooperation and commitment from a wide diversity of stakeholders. Simultaneously, they must create an environment where enablers, managers and innovators feel comfortable, where politicians can leverage support, and where the passions of diverse participants can play out. Continuity of leadership and awareness of the institutional history of complex mainstreaming projects is an advantage. Some implementing agencies reported that projects that were designed and implemented by the same persons worked best.

Institutional leadership is also critical to ensuring the continued investments needed beyond the initial planning and launch phase of a project – which often depletes early enthusiasm and funding resources. Mainstreaming “champions” at both individual and institutional levels are needed to push the process, and to keep momentum going. Such partnership mechanisms must build “thick networks of trust”

– which can develop, even over decades – into long-lived communities of practice.

Multi-stakeholder platforms are an effective mechanism to develop a shared vision as well as buy-in to the mainstreaming tools required to achieve that vision. Inclusive, socially sensitive, iterative and participatory approaches to the development of mainstreaming projects, and joint management versus command-and-control approaches to implementation, are essential. Project leaders need to convene regular project planning meetings with project teams and mainstreaming partners throughout the project implementation process. Risk needs to be managed through adaptive leadership, flexibility and innovation.

While the private sector has become increasingly active in many mainstreaming projects, a larger role for and a wider range of private sector partners, with more effective engagement including seeking private sector champions of biodiversity, is desired.

**Determinant 10. Effective communication with stakeholders to make the case for biodiversity**

Awareness and advocacy was included in the list of priority interventions recommended to the GEF by the 2004 meeting, and was included in one of its proposed principles:





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- Awareness within sectors of the relevance of biodiversity conservation and the capacity needed for implementation

Awareness raising has been supported within GEF biodiversity projects when relevant to achieving high-level project objectives but not as an end in itself. The 2013 workshop placed renewed emphasis on improved awareness raising and effective communication processes, identifying it as a weakness in current projects. An ability to sell the mainstreaming business case, which is key to attracting more demand-led mainstreaming interventions, is critical to expanding resources, especially from government ministries. A focus on key policy priorities of government leads the biodiversity sector into a demand-led space where awareness of biodiversity's benefits to human wellbeing can be communicated.

Suggested specific guidance includes the need to understand why "the people we want to influence" do not understand what "we" understand. Arguments must be tailored to the audience – economists like numbers, but caution must be exercised to avoid biodiversity valuation studies that include many assumptions that are easily challenged. In regard to valuation studies, compelling metrics can be found that do not need direct valuation. In South Africa, progress has been made in the use of ecological infrastructure (defined as naturally functioning ecosystems that deliver valuable services to people) as a surrogate to valuation metrics, focusing on "value" rather than "valuation".

Biodiversity messaging must first answer a rational need, and then satisfy an emotional need. It is important to demonstrate practical applications that warrant

the use of scarce government resources, with explicit measures and indicators of trade-offs between desired social development and the biodiversity assets that contribute to such development. Many GEF projects have successfully used a global information system (GIS) and other visual evidence such as maps or photographs as powerful tools to support logical and common sense arguments, especially if used to place emphasis on what society has to gain from improved environmental management and resilient ecological infrastructure, rather than focusing on what it is losing.

***Determinant 11. Positive, incremental and continuous behavioral change as a driver of mainstreaming***

Behavioral change is central to achieving the transformational leap that society must make to live within our planetary resource boundaries. The 2004 meeting identified behavior in three principles:

- a coherent set of economic and regulatory tools and incentives that promote and reward integration and added value, while discouraging inappropriate behaviors;
- sustained behavioral change within individuals, institutions, and society, and in both public and private domains;
- measurable behavioral outcomes and biodiversity gains.

Behavioral change can be difficult to measure and might be slow, incremental and subtle. This component of project effectiveness assessment needs improvement in mainstreaming projects. But the success of interventions across all sectors has been accompanied by changes in attitudes, positioning and responses of key role players, as illustrated in mainstreaming projects in PES in Latin America, certification in Latin America, West Africa, South East Asia, and in community conservancies and private ownership stewardship projects in southern Africa.

As underscored in the CBD Strategic Plan, achieving behavioral change is fundamental and should be considered in the development of any theory of change for mainstreaming.

## 2.3. Conclusions and key messages: What have we learned since 2004?

Mainstreaming biodiversity in production landscapes and seascapes has progressed significantly since the 2004 workshop. The massive investments by the GEF and partners in 327 projects in 135 countries reported on at the 2013 workshop demonstrated a robust body of experience through “learning by doing”.

The 11 “key determinants” described in this report indicate the depth and breadth of this learning. Like many new approaches, such as integrated rural development of the 1960/70s, and community-based natural resource management of the 1980/90s, mainstreaming will need several decades to mature and prove its merit and fitness for purpose. As the GEF and other institutions continue the global program of mainstreaming, it is hoped that these general guiding perspectives will improve the success rate of such investments.

While the first generation of mainstreaming projects did not provide the level of evidence and learning that might have been desired, there is an opportunity now to design the next generation of investments in a way that yields credible, systematic data that can be interpreted, rolled-up, and published to provide robust evidence and learning over time. Key steps in this direction are to begin with a set of overarching hypotheses linked to mainstreaming theories of change; develop common indicators and measurement approaches that will furnish data to test these hypotheses; design project M&E systems to align with the overall mainstreaming logical framework and standard indicators; and invest adequately in evaluation, synthesis, and publication to ensure that data are translated effectively and promptly into insight, learning, and progressive improvement.

Mainstreaming remains a “work in progress”. Therefore, the actual process of mainstreaming should be researched. Questions of importance include: How do networks develop? What social learning is taking place? What leadership traits work? Where and how best to implement flexible, innovative and opportunistic approaches? For pointers, we need to look at organizational science as articulated by the business community. In particular, the GEF needs to

respond more energetically to the opportunity to use its multiple projects and partnerships to build a robust learning community of practice, both regionally and globally.

In synopsis, **seven headline observations or messages to policy makers, practitioners and project initiators** can be mentioned:

**Message 1.** A maturing body of experience in biodiversity mainstreaming has provided significant results and established a robust global community of practice, building on and expanding the principles and guidelines identified at the STAP workshop of 2004. This community of practice has not been integrated into any formalized structure. Opportunities exist for the GEF to lead the accelerated development of learning communities and innovation processes that effective mainstreaming processes demand.

**Message 2.** An adequate collective knowledge base is now available on which to develop theories of change for biodiversity mainstreaming, effectively linking interventions to desired outcomes within overarching hypotheses, and to develop common indicators and measurement approaches to provide evidence to test these hypotheses.

**Message 3.** Mainstreaming is a complex, costly process that takes a long time – decades or even a generation – to achieve impact at scale and across sectors. Transaction costs can be high, and in some cases, greater investment in design, monitoring, evaluation and publication of results will be needed.

**Message 4.** Strong and detailed science-based biophysical and socio-economic data and knowledge at appropriate spatial scales have underpinned successful mainstreaming interventions. Data and knowledge collection should be policy relevant to achieve cost-effective impact.

**Message 5.** Few project results have been published in peer-reviewed journals, but an intuitive sense suggests that significant progress has been made in developing the evidence base on successful interventions. Mainstreaming projects do not lend themselves to replicable experimental design, but further investment in developing a stronger evidence base on project outcomes was recommended.

**Message 6.** Communicating the right message to the right audience at the right time has proven paramount. Making a business case for biodiversity requires skills that lie outside the expertise of most mainstreaming implementers and indicates the need for closer partnership with the private sector and in particular, use of successful business models for marketing.

**Message 7.** Good governance and strong institutions are recognized as perhaps the key determinants of project success or failure. A balance needs to be struck between working in countries and sectors where there is sufficiently strong governance capacity for mainstreaming outcomes to have a good chance of success, and tackling the most pressing mainstreaming challenges in situations where globally valuable biodiversity is threatened but capacity is often lacking.

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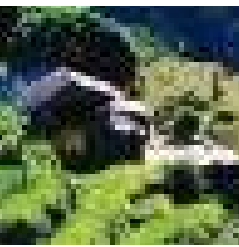
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## APPENDIX 1. Abstracts of the Workshop Presentations

### Session 1 – Scene-setting Keynotes

#### Reflections on Biodiversity Mainstreaming Principles of the GEF

Mark Zimsky, GEF

Protected areas (PAs) are the conservation community's most successful management response to conserve and sustainably use biodiversity thus far. However, protected areas do not exist as isolated islands of tranquility where evolutionary processes continue uninterrupted by humans. Rather, protected areas are often located in mixed-use landscapes and seascapes where natural resources are managed or exploited – at times unsustainably – to satisfy human needs for food, water, wood, energy, and minerals. These resource uses often unintentionally degrade biodiversity within and outside protected areas. In addition, productive landscapes and seascapes also provide habitat to globally significant biodiversity. Therefore, the persistence of biodiversity, including threatened species that are not solely dependent on site-based action, requires the sustainable management of landscape and seascape mosaics that include protected areas and a variety of other land and resource uses outside of PAs.

Thus, in order to complement its investments to strengthen the sustainability of protected area systems, GEF has promoted measures to help reduce the negative impacts that productive sectors exert on biodiversity – particularly outside of protected areas and those affecting landscape species – and that highlight the contribution of all components of biodiversity to ecosystem functioning, economic development and human wellbeing; a set of actions often referred to as “biodiversity mainstreaming”.

To date, GEF support to biodiversity mainstreaming has focused on the following suite of activities:

i) developing policy and regulatory frameworks that remove perverse subsidies and provide incentives for biodiversity-friendly land and resource use that remains productive but that does not destroy biodiversity; ii) spatial and land-use planning to ensure that land and resource use is appropriately situated within the landscape and seascape to maximize production without undermining or degrading biodiversity; iii) improving and changing production practices to be more biodiversity-friendly with a focus on sectors that have significant biodiversity impacts (agriculture, forestry, fisheries, tourism, extractives); and iv) piloting an array of financial mechanisms (certification, payment for environmental services, access and benefit sharing agreements, etc.) to help incentivize actors to change current practices that may be destroying biodiversity.

Based on a review of GEF's experience over the last decade, and in order to realize more sustained impact, the next generation of GEF biodiversity mainstreaming projects must:

- ensure that GEF investments are spatially targeted and thematically relevant to conserving or sustainably using globally significant biodiversity consistent with the GEF mandate;
- produce outcomes and impacts on biodiversity status at broader landscape/seascape scales;
- develop a more explicit theory of change for biodiversity mainstreaming that is underpinned by evidence;
- formulate monitoring frameworks for measuring mainstreaming success with more precise benchmarks of success that include critical processes as well as biodiversity status indicators;
- be placed within realistic time frames, as the successful biodiversity mainstreaming interventions in the GEF portfolio have been long-term processes, often requiring multiple and complementary projects that span numerous GEF phases.

### **Further reading**

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## **Principles and realities for effective mainstreaming – lessons learned from field implementation**

**Nik Sekhran, United Nations Development Programme (UNDP)**

UNDP currently supports a large portfolio of mainstreaming projects funded by the GEF (worth US\$ 523 million), aligned with the UNDP Signature Programme on *Integrating biodiversity and ecosystem management into development planning and production sector activities to safeguard biodiversity and maintain ecosystem services that sustain human wellbeing*. Having contributed to the growth of this area of work supported by the GEF since its inclusion in the 3<sup>rd</sup> replenishment, UNDP has developed a body of work and knowledge on biodiversity mainstreaming, successes and challenges, and lessons learned.

UNDP's approach to biodiversity mainstreaming involves the removal of barriers to effective integration of biodiversity and ecosystem management into development planning and production sector activities. These barriers operate at the systemic, institutional and individual levels, and include market barriers. Designing mainstreaming interventions involves selecting the best entry point in terms of these levels and may involve either a "short hook" approach – working at landscape level to maximize biodiversity compatibility – or a "long hook" approach, tackling product supply chains. An analysis of mainstreaming projects in our portfolio shows that both approaches have been effective under particular circumstances.

Sharp conceptual thinking is required for determining the optimal entry point; this includes designing interventions at national scale that have a realistic chance of success, given the policy and institutional environment, and the governance framework in place. Here there are interesting lessons to be learnt around the kinds of landscape-scale interventions and policy/regulatory changes that have been possible in upper middle income countries (such as Botswana, Bulgaria, Cuba, Lebanon, Maldives, South Africa), where a short hook approach has been used.

Even in Least Developed Countries, interesting opportunities are presenting themselves to mainstream biodiversity considerations into public sector policy and expenditure, for example, through the public policy debate in Ethiopia on foreign buy-up of land. The enormous challenge here and elsewhere may be to turn potential tipping points for wide scale and irreversible conversion of natural capital into "hot moments" for mainstreaming. The entry point for this work again depends on the governance framework in place, and may involve support for building particular pillars of society – such as the legislature, judiciary, civil society or media – in order to help bring about a shift in the national development trajectory.

The entry point is also critical in the long hook approach, varying from the level of individual consumers and retailers, to the development of national platforms in commodity sectors whose expansion is causing rapid biodiversity loss without accompanying long-term societal benefits, for example through the Indonesian Sustainable Palm Oil Initiative. In this kind of mainstreaming work, the choice of entry point needs to be based on a clear analysis of the market and supply chain in question, the way businesses calculate and manage risk, and the trigger conditions that enable more biodiversity-compatible investment decisions.

Finally, there is potential for applying the mitigation hierarchy as a framework for the choices and trade-offs involved in our biodiversity mainstreaming work: balancing competing societal priorities in the face of rapid change and pressing sustainable development challenges.

### **Further reading**

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## Session 2 – Policy and Planning

### Lessons learnt from policy and planning mainstreaming approaches implemented since 2004 in South Africa

Kristal Maze, South African National Biodiversity Institute (SANBI)

South Africa's first National Biodiversity Strategy and Action Plan (NBSAP), published in 2005, set ambitious objectives for mainstreaming biodiversity in a range of national policy and planning instruments and in production sectors. Through several government and GEF investments, significant progress has been made, especially in the domain of spatial biodiversity planning and integration of biodiversity priorities into land-use planning and environmental authorization processes (mostly aimed at avoiding biodiversity loss).

However, until recently we have had relatively little success in mainstreaming biodiversity in the heart of South Africa's economic policy and national planning, where biodiversity is still seen at best as peripheral or a nice-to-have, and at worst as a break on development. Mining, manufacturing and infrastructure development remain the dominant focus of industrial policy, and even the emerging *Green Economy* discourse is focused largely on energy efficiency and technological solutions.

This lack of success in penetrating the core of government's thinking prompted us in 2010 to undertake a concerted exploration of why or how we are failing in communicating our message, through a project referred to as "Making the Case". With the help of marketing experts, we developed a suite of eight "value propositions" for biodiversity, which were tested systematically with key audiences. Two clear lessons emerged: first, the strongest value proposition for decision-makers in government is that biodiversity is a national asset (i.e. *biodiversity is natural capital with immense economic significance for South Africa*) that can contribute to the development priorities of the country; and second, the "doom and gloom" message of impending extinctions and imminent collapse, which the biodiversity sector has tended to use for decades, not only has no traction but in fact elicits apathy.

We need to show how biodiversity is relevant to government's priority issues of the day – for South Africa these are job creation, poverty alleviation and rural development. The value proposition that SANBI has spearheaded since 2011 is that of ecological infrastructure as a national asset that is under-invested in and under-realized. Ecological infrastructure refers to naturally functioning ecosystems that deliver valuable services to people, such as fresh water, climate regulation, soil formation and disaster risk reduction. It is the nature-based equivalent of built infrastructure, and is just as important for providing services and underpinning socio-economic development.

This message has resonated strongly with key mainstreaming targets. It has required common sense arguments and some compelling visual images, combined with an assurance of a good science foundation. It has also required an understanding of mainstreaming as heavily context-dependent and always based on relationships built over time; and skillful practice of the art of being in the right place at the right time with a contribution that meets the immediate need of a high-level official or politician.

South Africa's mainstreaming journey demonstrates some of the less tangible aspects of mainstreaming success from a practitioner's point of view – aspects that we believe are often missed in the formal literature and in attempts to codify a recipe for mainstreaming interventions. Some of the lessons learned include: policy transition processes cannot be tightly managed; effective mainstreaming interventions occurred in instances where there was a thorough understanding of the policy environment and where there was a demand from the target audience; and, mainstreaming requires institutional changes, which can take seven to ten years, well beyond the lifetime of typical projects.

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### **Strengthening policy and regulatory frameworks at national and sub-national levels; advancing biodiversity-friendly policies and legislation and their implementation, supported by biodiversity-sensitive spatial planning and capacity building**

**Carlos Manuel Rodriguez, Conservation International**

Ecosystems are deteriorating worldwide, and with them, the capacity to support human wellbeing: a problem that is exacerbated by climate change. Part of the solution to this problem lies in policy-making and institutional development that takes into account the full value of ecosystem services, the benefits from ecosystems to individuals, communities and the economy; what is commonly known as mainstreaming biodiversity.

Considerable progress in the measurement and valuation of ecosystem services has been made, and a large number of case studies and demonstration projects have been carried out. Valuation has been widely accepted in the environment community as a way to upscale mainstreaming efforts, but

challenging issues still remain: engaging Ministries of Finance and economic planning agencies in a pragmatic dialogue about growth and ecosystem services; and restructuring public institutional frameworks to avoid sectorial decision making and build a more integrated cross-sectorial approach, based on the premise that we cannot leap forward with the same institutional framework that generated the current unsustainable model.

Equally important is the major challenge that parties to the CBD face after the 2010 agreement on the Strategic Plan and Aichi Targets to implement those historic decisions and translate them into real national-level results in policy and institutional development. The Aichi Targets provide a roadmap for achieving most of the Rio+20 goals on the ground; therefore, ensuring that national level targets and strategies are technically sound and that governments are committed to implementing them is of our highest interest. Aichi Targets implementation will trigger, without any doubt, national initiatives to mainstream biodiversity.

Costa Rica, a long-standing nation in natural capital conservation and mainstreaming biodiversity in development policies, is in a unique position to generate political consensus to advance the structural reforms needed to drive the implementation of the Aichi Targets. This Central American nation – globally known for its rich biodiversity and efforts to protect it – has in the last 25 years stopped deforestation, doubled its forest cover and tripled its GDP per capita, proving that protecting nature is not a barrier to economic growth. The political and institutional lessons coming from Costa Rica are important for nations considering options and scenarios for innovative policy development in the context of the Aichi Targets and mainstreaming biodiversity.

Ultimately, policy tools and institutional transformation have given Costa Rica success in its biodiversity mainstreaming efforts. The Costa Rican case presents a wealth of policy lessons on how the country has been innovative in institutional development, good environmental governance, and financial tools for conservation. Biodiversity conservation and its economic benefits have brought about the political wisdom needed to ban oil, gas and gold exploitation; decision-makers understand that the extractive activities are not the future base for Costa Rican economic growth.

Addressing institutional and market failures has proven to be a straightforward approach to Costa Rica. The payment for environmental services programme –with more than 8,000 beneficiaries being paid for carbon, water and biodiversity services, phasing out perverse subsidies (from agriculture, agrarian reforms, public credit, land tenure) and developing a cross-sectoral institutional approach for landscape management – has been the cornerstone of political efforts around maintaining the rich, valuable natural capital for human wellbeing.

## **Mainstreaming biodiversity on the Seychelles – a Small Island Developing State**

**Didier Dogley, Seychelles Ministry of Environment**

A current UNDP supported, GEF funded project in Seychelles focuses on two sectors – artisanal fisheries and tourism – both of which are socio-economically important for the country and have a significant impact on Seychelles' biodiversity. The project aims to integrate biodiversity conservation into the day-to-day productive practices of these sectors by removing barriers to a more sustainable set of practices; this implies demonstrating how change can be concretely promoted, establishing new standards for biodiversity management across the land and sea-scape, and equally creating the enabling conditions for change. Through its ongoing implementation, the project has learned a number of important lessons that can be applied to mainstreaming interventions elsewhere in the world, particularly in other Small Island Developing States (SIDS).

The project found that data on key biodiversity areas are necessary for better land use planning, and to assist decision-makers in conserving the biodiversity of SIDS. During assessments of areas of high biodiversity, consultants were able to identify important tools that should be made available for land-use planning. From this work, the project produced detailed species distribution maps for species-centered conservation actions, and established a multipurpose and flexible database integrating species and ecosystems levels. This database is a powerful tool for the development of national specimen collections, and should greatly improve data collection as well as land-use planning. In fact, the Government recognized the necessity to have district-level Land Use Plans and has developed a National Land Use Plan. The area covered by the 25 district Land Use Plans is 20,438 ha, which is the total

land area of the three main Inner Islands; this will have a major impact on the whole trajectory of development in the country and is an unprecedented level of biodiversity mainstreaming in national development.

In terms of co-management, the project has also found that, in spite of the uncertainty, decision-making must be done by both of the partners involved in co-management for the system to function. For example, in Seychelles fishers' knowledge and involvement in decision-making is extremely important though a lot of effort is required – and the process must be well supported – to secure their buy-in. The stakeholders have learned that when determining the fishing regulations, the impacts on major fish species and the different groups of fishers should be assessed and factored in to the regulations.

In terms of partnerships, the project team has learned that a broad-based stakeholder consultative process – involving all sectors, including public, private and not-for-profit sectors – is the best way to manage a project. The project has successfully engaged non-governmental organizations (NGOs) and civil society organizations (CSOs) in the project activities, which has enabled broad-based stakeholder knowledge and experience for decision-making and a stakeholder-based participatory approach to decision-making. The project team involves communities as key stakeholders in decision-making for all aspects of the project and offers consultancy opportunities for local individuals and companies to work with other stakeholder groups. Members of the public are always consulted for their opinion about the land use plans while they are being drafted and are also invited to stakeholder meetings. The local communities have volunteered to participate in the first Seychelles Sustainable Tourism Label in order to improve the sustainability of their business operations.

## **Mainstreaming of biodiversity into economic sectors and land-use, under GEF-funded UNDP-implemented projects, in Europe and Commonwealth of Independent States**

**Maxim Vergeichik, United Nations Development Programme (UNDP)**

In Europe and the Commonwealth of Independent States (ECIS), UNDP and GEF supported over 60 ecosystem and biodiversity projects between 1992 and 2012. As of early 2012, projects for mainstreaming

biodiversity conservation had directly benefited over 55 million ha of land and seascapes and indirectly benefited a further 49 million ha. Two case studies follow that illustrate the mainstreaming work of UNDP-GEF in Bulgaria and Belarus.

As a result of long-term co-existence with farmers, semi-natural grasslands of Bulgaria are rich in species. A recently closed project was designed to establish local and national capacities to develop and manage agro-environmental measures for these valuable grasslands. The project set up a system of financial incentives paid to farmers for maintaining habitat in a certain condition. Each farmer was monitored to comply with obligations set in the payment contract. Upon completion of the project, the payment scheme was incorporated in the National Subsidy scheme, financed further by the European Union and the Government of Bulgaria.

Key to project success was the role of the Bulgarian Society for Protection of Birds, which ran three mobile teams, advising farmers on the complexities of the agro-environmental measures, stimulating their interest, helping farmers correctly complete applications for the scheme, and providing support and advocacy. These experts were instrumental in developing both government ordinances and the content of grassland measures included within the national agro-environmental scheme.

In Belarus, globally significant deciduous forests, wet meadows, fen mires, bogs, lakes and riverine ecosystems are threatened by changes in local land use, new patterns of agriculture, forestry, fisheries, and hunting. A current project is working to help remove systemic, regulatory and capacity barriers to mainstreaming biodiversity conservation priorities into the territorial planning policies and practices of Belarus.

The project has supported a new analysis and classification of biotopes of national and international significance. Recommendations have been prepared on minimum standards to be observed by different economic activities to maintain the integrity of key biotopes and habitats; it is intended that these standards will be legally adopted, helping to harmonize national nature protection legislation with international norms. All protection guarantees issued by the project have been based on consultations with land users and land owners before their official adoption by Local Councils.

Based on the experience of UNDP-GEF in ECIS, mainstreaming can deliver biodiversity results if the mechanism is clearly defined. If the project development confirms the specifics of the mechanism, and proves it is country-tailored and low-risk, then mainstreaming results will likely be achieved.

In this portfolio, the most successful projects were developed and implemented by the same people; the least successful had different project implementation and development teams. The experience in ECIS shows that there are no trade-offs between the desired conservation and social outcomes. Ultimately, the biodiversity solutions have benefitted communities at no regret.

To ensure success in a mainstreaming project, it is critical to: permit adequate project duration; set realistic deadlines; extend projects where reasonable; and allow innovation, even if it presents risk. Neither Bulgarian nor Belarusian mainstreaming mechanisms had been explicitly stated in the GEF-4 program on mainstreaming. Nonetheless, the innovation that came with them paid back with biodiversity results and valuable experience for the wider GEF portfolio.

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## **Lessons Learned on Mainstreaming Biodiversity in Development**

Dilys Roe, International Institute for Environment and Development (IIED)

The “first generation” of National Biodiversity Strategies and Action Plans (NBSAPs) has tended to be weak on poverty and national development objectives and, as a result, have not been seen to be relevant to a broader development agenda; biodiversity has thus remains undervalued and over-exploited. CBD Decision X/2, taken at COP 10 in 2010, urges Parties to revise and update their NBSAPs in line with the new Strategic Plan for Biodiversity and to use them “...as effective instruments for the integration

of biodiversity targets into national development and poverty reduction policies and strategies...”

The NBSAPs 2.0 Project – funded by the UK Darwin Initiative and UK Aid, and implemented by the IIED (International Institute for Environment and Development) and UNEP-WCMC (World Conservation Monitoring Centre) – is supporting African countries to develop improved NBSAPs that engage the development sector and mainstream biodiversity.

The four countries working on the NBSAPs 2.0 project – Botswana, Namibia, Seychelles and Uganda – have emerging experiences to share from their efforts to “build a business case for biodiversity” within their revised NBSAPs. At a recent project workshop in Uganda, feedback from a panel of sectoral, finance and planning ministries in the Ugandan Government highlighted a number of issues that would better convince them of the relevance of biodiversity to development:

- hard evidence and empirical data (e.g. numbers of jobs, returns on investment, values);
- clear and measurable indicators of what success in biodiversity mainstreaming would look like;
- acknowledgement of trade-offs;
- clear links to sector investment plans;
- scenarios for different options with and without biodiversity;
- clarity on how different development sectors affect and are affected by biodiversity.

There is a certain amount of concern within the biodiversity sector about the current emphasis on valuation studies and the “commoditization” of nature, but valuation does not have to be all about economics, but rather the myriad of other values that biodiversity provides for socio-economic development, including:

- *service delivery* – delivering key ecosystem services through green, cheaper and low-energy infrastructure (e.g. pollination, water provisioning);
- *risk reduction* – including disaster and climate risk reduction in key sectors (e.g. providing a diverse resource that offers alternatives);
- *national economic diversification* – habitat, species and genetic diversity that presents options;

- *intrinsic and cultural values of biodiversity* – to do with identity, tradition, social cohesion, recreation and spirituality.

A number of tactics for mainstreaming biodiversity emerge. Most important is to understand the political economy in the country or region where mainstreaming is happening. For example, how different ministries address environmentally sustainable natural resource use, power relations between ministries, and key development decision-making people and processes. It is also critical to understand why “the people we want to influence” do not understand what “we” understand. We need to be clear what kinds of evidence influence different stakeholders. For example, with the private sector we should talk about shareholder value, market access and risk mitigation; with the Ministry of Finance we should talk about jobs, returns on investments, and cost benefits; with agriculture, contributions to food security will capture their attention.

The African ministries involved in the NBSAPs 2.0 project have developed a set of principles for mainstreaming biodiversity that are captured in the Entebbe Statement on Biodiversity in Development Planning, which concludes that “biodiversity mainstreaming should be informed as much by development needs, potentials and conditions as by those of biodiversity, and should actively seek to achieve joint biodiversity and development outcomes”.

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## **Session 3 – Production Practice**

### **The Market Transformation Initiative**

Jason Clay, WWF

By 2050 per capita income is expected to nearly triple and consumption double. We will need to produce as much food in the next 40 years as in the last 8000. And



the production of food and fiber currently has more impacts on the planet than any other human activity.

One hundred companies touch 25% of the 15 globally traded commodities with the biggest environmental impact. These companies can send clear signals through their supply chains that they care about long-term, more sustainable supplies of raw materials. They also want to avoid reputational risks; choosing certified products and collaborating with other companies are ways they can reduce risk. However, companies are not working with governments to reduce impacts along the entire performance curve.

The Market Transformation Initiative was formed in light of the above. It has produced a number of results. Standards now exist for the commodities with the largest environmental impacts; trends suggest that by 2020, 25% of 15-20 commodities with the largest recent impacts will be certified. Four different ground-breaking commitments have been made:

- Corporate platform: the Consumer Goods Forum (CGF) committed to zero net deforestation, starting with beef, palm oil, soy, pulp and paper produced in Brazil and Indonesia – which represent 50% of global deforestation.
- Individual company: Unilever committed that 100% of its >3,000 bio-based raw materials will be certified sustainable by 2020.
- Individual sector: the Global Salmon Initiative (GSI) – representing 15 companies and 70% of global production – committed to be 100% certified by the Aquaculture Stewardship Council by 2020.
- Individual country: Ireland and its private sector food producers committed that 100% of food exports would be third-party certified as sustainable by 2016.

Through this work, lessons have been learned.

Metrics are key, but they must be meaningful, e.g. reduce key impacts. Both short-term directional indicators and long-term indicators of results on the ground are needed. As we shift from “doing” to “influencing”, measuring the impacts of a single intervention is not a useful metric.

Certification and standards are key tools for market transformation. Credible standards must

be multi-stakeholder and science based; they involve consensus about a few key impacts and measuring results.

Sustainability is a precompetitive issue, not a way to differentiate products. Companies buy products from the same producers and share reputational risks from how the raw materials are produced. As a result they are beginning to share information about how to reduce impacts more quickly.

Capacity needs are shifting. Different capacity is needed as we shift our focus from conservation measurements to threat reduction. For example, foresters won't stop deforestation from agriculture or ranching.

Markets should be used to change markets. Companies do not need to value nature the same way conservationists do to have positive impacts; they think globally about raw materials and have the ability to make all the products on their shelf sustainable.

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### **Leveraging the commercial banking sector to mainstream biodiversity conservation in production landscapes**

**Courtney Lowrance, Citibank**

Commercial financial institutions adopt policies that require obligors to meet certain environmental and social standards – including biodiversity and ecosystem services considerations – to qualify for financing. The most common mainstreaming instrument is the *Equator Principles*, a voluntary framework adopted by 78 banks globally to apply the International Finance Corporation (IFC) Performance Standards, including PS 6 on Biodiversity Conservation and Sustainable Management of Living Natural Resources, to all project financings over US\$ 10 million.

From a commercial bank perspective, the primary goal of mainstreaming biodiversity into bank processes is to manage environmental and social risks associated with financings and investments. Some of the drivers for banks are:

- enhanced brand reputation;
- getting ahead of regulatory requirements;
- reducing operational risks associated with the client's "social license to operate";
- avoiding project delays or business disruptions.

Less recognized – although likely to become more important to financial institutions in the future – are the external costs associated with impacts to ecosystem services that business depends on (e.g. wetlands for flood protection, water for operations). Mainstreaming activities, such as the Natural Capital Declaration led by the UNEP Finance Initiative, are in the process of addressing financial risks associated with impacts to ecosystem services.

Mainstreaming initiatives in the financial sector, particularly with the Equator Principles and Green Credit Protocols, require banks to invest in the development of an environmental management system, including internal resources to implement the system. Capacity building within individual banks, and more importantly across entire markets, is essential for successful outcomes of the mainstreaming objectives.

The success of the Equator Principles in 2003 was contingent on capturing the majority of the project finance market globally. With the adoption of the framework by ten banks in 2003, an estimated 70% of global project finance was subject to the IFC standards through application of the Equator Principles process. Over the past ten years, a number of lessons have been learned:

- *Level playing field within a market or sector:* Because of the competitive nature and interdependence of the financial sector (i.e. multiple banks often service the same client), it is imperative that banks operate on a level playing field with regard to the integration of biodiversity and ecosystem services in their lending and investment decisions. For example, national banks in a particular market typically adopt the Equator Principles at the same

time (e.g. Brazil, Mexico, Nigeria, South Africa). They are unwilling to adopt voluntary standards without ensuring their competitors also adopt the same standards.

- *Harmonization and common understanding of the standards:* Broad uptake and adoption of a standard is only as good as its implementation. This underscores the importance of capacity building, particularly on complex issues like biodiversity and ecosystem services.
- *Capacity among all of the actors/implementing partners:* Mainstreaming of biodiversity into financial processes provides leverage to push companies to better manage risks and impacts on-the-ground, but this also requires greater technical capacity within the companies that are financed and within the consulting firms relied on. To this end, the Equator Principles Association has partnered with the International Petroleum Industry Environmental Conservation Association (IPIECA) and the International Council on Mining and Metals (ICMM) – the oil and gas and mining associations – in a knowledge sharing initiative called the Cross Sector Biodiversity Initiative.
- *Limits to what can be achieved without government partnership:* As the private sector gains experience in implementing IFC Performance Standard 6, the importance of engaging with governments to achieve its objectives becomes apparent. Efficiencies are gained through landscape level planning, and government involvement is almost always needed when biodiversity offsets are contemplated.

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## Scaling up sustainable commodity production

Andrew Bovarnick, United Nations Development Programme (UNDP)

Unsustainable practices persist because they are symptoms of inherent structural problems prevalent in the developing economies where many commodities are produced and sourced. These underlying structural causes of issues, or "root causes", go beyond what any one company or farm can solve. Root causes can include: insecure and complicated land tenure, weak land use planning, policies and fiscal incentives promoting negative impacts, and lack of production standards.

Addressing root causes can support development of effective long-term solutions to sustainability problems; contribute significantly to accelerating the scale up of certification in a given country; and overcome business risks and bring major benefits to supply chains. Companies should now recognize the business case for addressing these root causes and support initiatives to tackle them.

National governments should have the lead role in addressing many root causes, including: setting and enforcing baseline farming standards; providing agricultural extension services; implementing effective land use planning; and reforming land tenure and rights. As governments deliver on these responsibilities, companies will have more confidence that

acceptable economic, environmental and social practices are possible.

As companies select which root causes to tackle, they should focus on change and traceable improvement and work with the appropriate stakeholders, including government, to affect change. It can take many years to address root causes whereas business requires quick wins. However, in many cases companies will be purchasing commodities from the same countries in ten years so results – even if long-term – will still be relevant.

Four prerequisites for effectively tackling root causes have been identified:

- increase government sense of ownership and ability to make improvements;
- national level coordination and collaboration of stakeholders and projects;
- capacity strengthening of government agencies to deliver services;
- engagement by the private sector to provide market signals, demand-side incentives and technical expertise.

New forms of public-private partnerships (PPPs) allow companies to become engaged beyond their purchasing power for product, and to move from site-based to collective action. An example of a successful PPP has been in Ghana where the Cocoa Board, COCOBOD, was given the responsibility to provide extension to cocoa farmers but had no extension officers. The Kraft Cocoa Project funded 17 extension officers to kick-start COCOBOD's extension service; COCOBOD then invested government funds and secured additional donor funds, which now cover the costs of 120 extension officers.

Building on certification tools is key to identifying new solutions to business and reputational risks linked to agricultural commodities. Companies should consider how their supply and sustainability are affected by root causes. An essential precursor to any corporate sustainability program is an initial analysis of what the root causes are within a given country, which can build on value chain analysis and ecological footprint mapping tools. Without a rigorous root cause analysis, businesses and development partners may design costly programs of assistance to tackle symptoms of (or assumed) root causes.

Where the analysis identifies that risk to business of disregarding root causes – or the benefit for certification programs of resolving root causes – is substantial, companies should consider how they can best get involved to manage the root causes. However, to start managing root causes a company may need to develop a different framework for addressing sustainability that takes a long-term programmatic approach that would include managing root causes.

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## **Shaping land-use practices and supply chains through commodity certification: the experience of Rainforest Alliance**

**Jeff Milder, The Rainforest Alliance**

Sustainability certification systems include three core components: i) *sustainability standards* that define sets of social and environmental practices or outcomes for specific industries, crops, or products; ii) *compliance verification systems*, including certification audits and traceability; and iii) *eco-labeling* to differentiate certified products in the marketplace. In addition, the effectiveness of certification as a mainstreaming strategy depends on engaging the value chain on both the demand side (company and trader partnerships) and supply side (technical assistance for producers and producer groups).

In the agriculture sector, the exponential growth of certification over the past five to seven years for key tropical commodities (up to 20% for some crops) suggests its strong potential to deliver large-scale

benefits. Until recently, there was little robust evidence on how certification systems affected social and environmental outcomes. Within the past few years, however, numerous studies have documented benefits including improved crop productivity, farmer income, and the adoption of more sustainable practices, some of which are credible proxies for biodiversity benefits. But more research is needed, particularly to evaluate conservation impacts over larger spatial and temporal scales.

The Rainforest Alliance uses certification as part of a comprehensive strategy to transform value chains toward sustainable outcomes. The organization has executed or contributed to three GEF-supported mainstreaming projects. The *Biodiversity Conservation in Coffee* project (UNDP-GEF) worked in six Latin American countries to align biodiversity and productivity goals in coffee-producing landscapes through market and consumer engagement, producer training and evaluation research. The *Greening the Cocoa Industry* project (UNEP-GEF) invests in similar activities to reduce biodiversity threats associated with cocoa production in ten leading cocoa-producing countries. Finally, the *Biodiversity and Agricultural Commodities Program* (World Bank-GEF, with IFC as the implementing agency) is supporting work in Indonesia to demonstrate a biodiversity-friendly cocoa intensification approach.

Experience in these projects yields insights that can inform future mainstreaming efforts. One major success has been “market transformation” through rapid acceptance of certification by farmers, companies and consumers. However, as companies make major commitments to sustainable sourcing and certification, scaling-up must be paired with efforts to improve the quality of certification systems and resist pressures to dilute standards. Not all certification delivers equal biodiversity benefits; in this context, the Rainforest Alliance and the Sustainable Agriculture Network (which maintains the associated sustainability standard) are working to set a high bar for conservation performance, demonstrate the feasibility of attaining such performance, and thereby shape the sustainable sourcing trend to deliver real benefits.

A second success has been the demonstration – through controlled field research – of benefits for biodiversity, water quality, crop productivity and farmer income. To address the evidence gap noted above,

rigorous place-based research of this type should be incorporated into mainstreaming projects whenever possible; this focused research must be complemented by broader monitoring programs that track productivity, biodiversity and socio-economic outcomes across a representative range of places. This will require greater alignment among standards bodies and new collaborations between certifiers, researchers, civil society, and companies.

Finally, experience suggests that certification can deliver greater biodiversity benefits when paired with complementary conservation strategies as part of a landscape approach. For instance, in Ghana the Rainforest Alliance uses certification to reduce pressures in a buffer zone, which can complement management efforts in adjacent protected areas.

Experience with certification during the first generation of mainstreaming has been positive and promising. It points the way to a second generation of investments that can leverage sustainable sourcing trends to amplify both the scale and effectiveness of certification to deliver biodiversity benefits.

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## **Mainstreaming biodiversity within agriculture, forestry and mining sectors in South African grasslands**

**Anthea Stephens, South African National Biodiversity Institute (SANBI)**

South Africa's grasslands are critically threatened and many biodiversity priority areas lie in production landscapes. This challenge is best addressed by an approach aimed at strengthening the enabling environment, and innovating, piloting and mainstreaming new models for biodiversity management into production sectors. The Grasslands Programme – a 20-year partnership between government, conservation agencies, non-governmental organisations and private sector – has implemented this approach to sustain and secure grassland biodiversity and ecosystem services for the benefit of current and future

generations. Funded by the GEF, supported by the United Nations Development Programme (UNDP) and hosted by the South African National Biodiversity Institute (SANBI), the Grasslands Programme relies on partnerships to mainstream biodiversity objectives into the major production sectors that operate in the grasslands biome, including agriculture, forestry, coal mining and urban development.

Biodiversity mainstreaming in South Africa is underpinned by a strong foundation in systematic biodiversity planning. This approach enables the identification of biodiversity priority areas and informs management actions as well as policy priorities. Systematic biodiversity planning helps to prioritize the investment of limited conservation resources, and – by focusing these resources on the priority areas for biodiversity across the landscape – also enables to identify upfront where trade-offs are possible and where they are not. Understanding that some areas are more important than others for biodiversity management facilitates a landscape approach to balancing conservation and development imperatives in production landscapes.

In five years of implementation, notable achievements of the Grasslands Programme have been in shaping policies and regulations, improving existing institutional capacity, and implementing pilot projects demonstrating biodiversity gains across sectors. Particularly significant is experience from the mining and plantation forestry sectors. In these sectors, deeper engagement is enabling the development of integrated tools and products that help to ensure that: biodiversity issues are consistently incorporated into decision-making processes for new mining and forestry projects; high priority areas for biodiversity or ecosystem services are avoided; in the case of mining, residual impacts are offset; and proactive stewardship secures landscapes of high importance for biodiversity, food and water provisioning. The sector demand for these tools and the leveraged finance raised from industry bodies is evidence of achievements earned in the face of lessons learned as regards policy engagement, market-based incentives, and communicating the value offering of biodiversity using sector-appropriate language.

A set of six key ingredients – or practitioners' principles – have become evident where mainstreaming has been successful:



- technically proficient, cross-disciplinary teams able to provide leadership and expertise on biodiversity mainstreaming into a particular production sector;
- the development of integrated, accessible decision-support tools and guidelines in partnership with sector stakeholders;
- being able to articulate a 'case' for biodiversity that resonates with the objectives of mainstreaming partners;
- strengthening capacity for mainstreaming and ensuring decision-support tools are institutionalized within sector partners;
- convening focused discussion platforms that provide a neutral space to enable the identification of mutual needs and a collective vision;
- the ability to provide science-based policy advice to influence production sector practices at a systemic level for sustained impact.

The consistent application of these principles has been critical to the gains made in this multi-million dollar mainstreaming programme.

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## International Trade Drives Biodiversity Threats in Developing Nations

Arne Geschke, University of Sydney, Australia

Earth's current sixth major extinction event is being caused by human activities, with an accelerating decline of the world's stocks of biodiversity at rates 100 to 1000 times pre-human levels. Historically, humans' demand for materials (food, fuel) and space resulted in localized and minimal impact on species and their habitat. In the modern and increasingly globalized economy, however, international trade chains accelerate habitat degradation far removed from the site of consumption. Although adverse effects of economic prosperity and economic inequality have been confirmed, the importance of international trade as a driver of threats to species is poorly understood.

Research has shown that 30% of global species threats – excluding invasive species – are due to international trade; this study mapped the world economy to trace the global trade of goods such as coffee, cocoa and lumber that are implicated in biodiversity loss.

Over 5 billion supply chains connecting consumers to over 15,000 commodity types produced in 187 countries were evaluated in this study; these supply chains were cross-referenced with a global register of 25,000 endangered and vulnerable species to explore the relationship between consumption and the status of species.

Among exporting countries, where the species losses actually occur, on average 35% of recorded threats can be linked to export-led production. In Honduras, Madagascar, Papua New Guinea and Sri Lanka this figure is 50-60%. Papua New Guinea, for example, has 171 listed species threatened by industries – including mining, timber, coffee, and cocoa – that export to a few large trading partners, including Australia.

Agricultural exports from Indonesia, another Australian trading partner, affect 294 threatened species, including tigers. Australia's trove of unique

species means that despite its high consumption, it is a net exporter of implicated goods, including mining and agricultural products whose production often drives habitat loss and pollution that threaten particular species.

These findings can be used to better protect biodiversity. On the consumer side, the study supports the argument for sustainability labels, which – based on the findings – should become the norm, not the exception. The information produced and made publicly available by this research can help facilitate the development and use of such labels.

On the production side, the study implies that companies should be required to make foreign suppliers accountable to the same production standards they hold at home, as Apple does with its Asian manufacturers. However, countries should harmonize environmental laws so producers don't simply relocate to the country with the least protections.

This study emphasizes the importance of examining biodiversity loss as a global and systemic phenomenon, rather than focusing on isolated sources of degradation and pollution. It further uncovers the complex and often counter-intuitive international supply chains that ultimately remove the cause of species threats from the region or country in which they occur. Existing legislative frameworks for the protection of endangered species, such as the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), should be extended to commodities that represent the main drivers of species loss; this will improve consumers' awareness of global biodiversity threats imposed through the consumption of particular goods. It will further distribute the responsibility for biodiversity loss between consumers and producers of goods, contrary to the current practise of focusing on the producers' role in this process only.

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## Mainstreaming of Agrobiodiversity Conservation and Use – UNEP/GEF experience

Marieta Sakalian, United Nations Environment Programme (UNEP)

Agricultural biodiversity can make a great contribution to meeting Millennium Development Goals (MDGs); however, current agricultural practices are regarded as one of the most significant drivers of biodiversity loss. At the same time, the goal of global food security remains a long way off. The world desperately needs an agricultural production system that is both sustainable and contributes to achieving food security.

Recognizing agricultural biodiversity's potential to contribute to overall biodiversity maintenance and ecosystem function – as well as to better nutrition, increased food security and improved wellbeing in rural communities – UNEP over the last ten years, with financial support from the GEF, has been assisting 47 countries in Africa, Asia and Latin America in mainstreaming agricultural biodiversity conservation and sustainable use in the agriculture production sector. The total budget invested in partner countries through these projects is US\$ 159.4 million.

The projects are implemented in centers of diversity with globally significant agricultural ecosystems and agrobiodiversity that is central to the livelihood strategies of small-scale farmers, rural communities and indigenous peoples.

The barriers targeted by these projects include:

- lack of or weak existing policy guidelines and incentives to support conservation of agricultural biodiversity *in situ* on farm;
- lack of coordination and collaboration between different agencies implementing various programmes on conservation and use of agricultural biodiversity and access and benefit sharing (ABS);
- traditionally weak links between sectors (environment, agriculture, finance, etc.);
- lack of farmers' awareness of the issues and possibilities regarding ABS.

An analysis of the portfolio shows that significant

progress has been made in overcoming these barriers. Projects have demonstrated sustainable agricultural management practices that strengthen on-farm conservation and use of agricultural biodiversity across 311,000 ha, and have directly contributed to the conservation and sustainable use of agricultural biodiversity on 1,254,564 ha. In addition, as result of the UNEP/GEF supported mainstreaming interventions, the governments of partner countries developed strategies and supportive policies and regulatory frameworks that address the mainstreaming of agricultural biodiversity in different ways.

Specific examples from several projects – In Situ/ On-Farm Conservation and Use of Agricultural Biodiversity in Central Asia, in Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan; In-situ Conservation of Crop Wild Relatives Through Enhanced Information Management and Field Application, in Armenia, Bolivia, Madagascar, Sri Lanka and Uzbekistan; and Conservation and Sustainable Use of Cultivated and Wild Tropical Fruit Diversity: Promoting Sustainable Livelihoods, Food Security and Ecosystem Services in India, Indonesia, Malaysia and Thailand – highlight the achievements, challenges and some of the most important lessons that have been learned across the portfolio.

These key lessons include:

- Mainstreaming requires institutional changes and building of institutional capacities, which take more than five years and are therefore beyond the lifetime of standard GEF projects;
- Success of mainstreaming projects depends on effective policy and regulatory frameworks;
- Strong and sustainable partnerships at all levels are one of the main factors for sustainable mainstreaming. The success of the projects depended on establishment of a platform for collaborative partnerships that brings together a wide range of institutions, civil society organizations, rural community groups and farmers;
- Mainstreaming approaches should respond to the context of the specific country and/or region.

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## Session 4 – Financing Mechanisms

### Mobilizing financing and conservation investments through PES mechanisms: the experience of Mexico

Jose Carlos Fernandez, National Forestry Commission of Mexico (CONAFOR)

From a policy perspective, addressing the drivers of biodiversity and forest loss requires influencing land use and management decisions across multiple economic sectors and multiple scales. Effective mainstreaming of biodiversity into the decision-making process would generate conservation objectives in balance with development objectives. For Mexico, a first bold step in this process was to “set a value” to conservation efforts through its program of Payments for Environmental Services (PES). For over a decade, this PES program has recognized the contribution of ecosystems to the economy, providing direct cash incentives for forest owners to conserve them. The program has expanded at an impressive pace, making it one of the world’s largest PES schemes.

The program initially focused on values associated with hydrological services, “virtually” drawing funds from the general collection on water charges, but soon it was expanded to include biodiversity and carbon sequestration. The experience accumulated over the years in all three modalities has provided important lessons for recent modalities being implemented for the future expansion of the program. Importantly, the implementation of the program has demonstrated that enforceable contracts can be made with local communities – who own most of Mexico’s forests – to establish conditions for their conservation. The national program effectively created a platform for such payments that can be used by others and serve as inspiration for new PES schemes.

In 2008, seeking to secure a more diversified financial source and to advance the mainstreaming of forest conservation into the decisions of other actors, the program established a scheme to encourage local PES programs by providing co-funding. This scheme has been very successful, securing alternative funding

sources and blending PES as part of broader integrated landscape management approach at the local level across the country. This expansion of the program into local schemes is deepening the mainstreaming impact of PES since it has attracted a very diverse set of actors that are willing to internalize the cost of conservation in their financial, policy and business decisions. To date, participants include public and private entities across the country at various scales.

With 4.04 million ha under PES across the country – including 80 agreements for local PES schemes covering almost 300,000 ha, and less than 3% non-compliance – the Mexican PES program is a significant example of successful policy innovation, adoption and program evaluation. The program can be linked to a series of policy innovations over the last two decades – some of which were funded by the GEF – that were taken to the national scale. In its most recent policy cycle, PES formed part of the policy toolkit that will be used for a more targeted intervention to conserve coastal watersheds, also as part of a GEF funded effort; this will trigger new efforts to promote PES in specific areas, and to blend it with other cross-sectoral programs in more ambitious ways.

### **Integrated financing of biodiversity conservation and poverty reduction at national scale**

**Ahmed Khan, Department of Environmental Affairs, South Africa**

Since its inception in 1995, the Working for Water Programme of South Africa – which provides jobs and training on the removal of invasive alien plants to people in the most marginalized sectors of society – has grown into arguably the largest public funded conservation initiative anywhere, with a budget of around US\$ 130 million in 2013/14. Some of the factors that have contributed to its growth and success have been documented, but the biodiversity benefits resulting from the Programme have remained difficult to quantify; a number of broad assessments and case studies have been conducted to assess its impacts, but the Programme's effectiveness at a national level is still primarily judged from an employment creation perspective.

A key component of the growth behind the Programme was the political support given at inception, primarily through the then Minister of Water Affairs, Dr. Kader Asmal, to whom the environmental and job creation synergies made sense. In fact, the Programme's early success –

in placing around 6000 unemployed people in the field and working at removing invasive alien plants within six months – set the tone for ever-increasing political and financial support, which has not abated. This support remained primarily focused on meaningful employment and skills development aimed at poor communities, with little focus on the environmental impacts.

The political imperative to launch the Programme – with a focus on the Programme's socio-economic benefits – also meant that little effort was put into strategically selecting the locations of the interventions for optimal environmental impact; only some of the initial locations were selected based on expert knowledge. A recent survey refreshed the understanding of the status of plant invasions across South Africa. The survey provided some interesting insights into the extent of the problem and has allowed the Programme to look at developing a prioritization approach to determine where the maximum potential impact will be realized at a quaternary catchment scale, looking at primarily water and biodiversity criteria.

Invasive plant clearing is now part of a stable of natural resource management interventions aimed at supporting ecosystems services in South Africa, but has only been partially documented in terms of objectives and targets that enable judging efficacy of these interventions; this gap has added a further level of complexity to this national prioritization approach. There are a number of examples where quaternary catchment scale impacts through invasive plant clearing have been realized – such as the Molenaars and Rondegat Rivers in the Western Cape – though little effort has been put into documenting the long-term impacts in a more coordinated fashion nationally, which is further compounded by ongoing human resource constraints and highlighted as a key priority going forward. Furthermore, significant additional efforts are required to assist project managers with effective planning and monitoring tools at the site level.

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## The Latin America Water Funds Partnership

### Fernando Veiga, The Nature Conservancy

Natural ecosystems provide benefits to human societies, which are known as ecosystem services. In the case of water, the most valuable services are water quality control, flow regulation and sediment retention. However, knowing that ecosystem services are valuable is of little use if that knowledge does not lead to tangible investments in conserving the natural systems (i.e. the green infrastructure) that provide the services. For hydrological services, investments are especially needed for conserving and/or restoring the upstream watersheds that provide water to downstream users, including water utilities, hydropower companies, irrigation districts and other main users.

Over the last decade, The Nature Conservancy (TNC) and its partners have been working to implement and refine the innovative "water fund" concept to secure freshwater for people living downstream in urban centers by compensating those living upstream for conserving or restoring watershed headwaters. Investors – the large water users – pay into an endowment fund

(the water fund) whose earnings leverage public and private funds and benefit local communities through a self-sustaining funding mechanism that supports efforts such as watershed conservation and habitat restoration and enables sustainable small businesses. There are also some cases in which, instead of endowment funds, a flow of constant revenue has been created based on water users' contributions. Because of their intrinsic flexibility, water funds are well suited to global replication, which sets the stage for their application in a range of geographies and political realities.

Since 2011, with the formal creation of the Latin America Water Funds Partnership among TNC, FEMSA Foundation, the Inter-American Development Bank and the Global Environment Facility (GEF), all these initiatives were placed under this single partnership, which aims to establish 32 water funds across the region by 2016. At the end of 2013, 14 water funds were already operating, with an additional 13 water funds under negotiation and in design.

These initiatives have been promoting an intense process of cooperation and exchange of lessons learned among their implementers, as well as generating powerful examples of the business case for water-related ecosystem services. The water funds, as governance and financial mechanisms, have played an important role as the implementation channel for watershed conservation activities. The regional approach behind the water funds has also been key to promoting the reduction of transaction costs for private and public regional players that want to participate in watershed conservation on a broader scale.

The water funds in operation in Latin America have been showing the concrete benefits that can be expected from this payment for ecosystem services (PES) scheme. To date, the funds have generated positive biodiversity impacts on 216,833 ha by supporting activities on the ground; these areas are part of larger watersheds that cover almost 1.5 million ha and supply water for over 33.7 million people living in some of the biggest Latin America cities, including Bogotá, Quito, Lima, São Paulo and Rio de Janeiro. Through this work, the water funds have also been generating positive economic incentives through watershed conservation activities that involve 4218 families living in the upper parts of these watersheds.

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## Mobilizing finance for managing biodiversity assets and ecological infrastructure in South Africa

Mandy Driver, South African National Biodiversity Institute (SANBI)

Initial engagement by the biodiversity sector with South Africa's National Treasury in the mid-2000s focused on the development of fiscal incentives for private landowners who voluntarily put land forward for declaration as protected areas. Central to the case made to Treasury was the assurance that fiscal incentives would be applied only to land of high biodiversity value that was identified using the best available science, along with the assurance of clear contracts with landowners and regular auditing. These contract protected areas, owned and managed by private landowners in production landscapes, now make large contributions to meeting national protected area expansion targets at a tiny fraction of the cost of land acquisition to the state.

Alongside this development, the latter part of the 2000s saw several attempts in South Africa to pilot market-based PES schemes – as opposed to government-funded PES-like programmes such as Working for Water. In spite of considerable enthusiasm within

the biodiversity sector for this approach, it met with little success, leading to a shift in thinking from “payments for ecosystem services” to “investments in ecological infrastructure”, which is defined as naturally functioning ecosystems that deliver valuable services to people.

Since 2012, the biodiversity sector has successfully used the concept of investing in ecological infrastructure to frame its engagements with a range of other sectors, including National Treasury, the Development Bank of Southern Africa, the Department of Water Affairs, the National Disaster Management Centre, the Presidency, and municipalities. This approach has opened doors that were previously closed, most recently resulting in a major project on Ecological Infrastructure for Water Security as part of the National Infrastructure Plan, thereby accessing some of the R850 billion (approximately US\$ 85 billion) earmarked for infrastructure investment in South Africa over the period 2012-2015.

Key factors behind the success of this work have included:

- good maps of biodiversity and ecological infrastructure priorities based on best available science; these have been an essential starting point;
- building a narrative around “ecological infrastructure” rather than “ecosystem services”. In our experience, the term “ecosystem services” is not easily understood by target audiences, and has become so broadly defined that it can be difficult to work with, in practice, from a policy and implementation point of view. The concept of “ecological infrastructure” puts the focus on the long-term condition and integrity of the underlying asset, rather than on maximizing the flow of services, which can be detrimental to biodiversity and ecosystems;
- a logical argument using the language of development, with clear links to national development priorities. Valuation of biodiversity or ecosystem services in monetary terms has not played a central role in building this argument; rather, common sense explanations of why ecological infrastructure is important, supported by photographs and non-monetary metrics (such as avoided sedimentation or increased base-flows) have proved effective;



- emphasis on the public-good characteristics of ecological infrastructure, and the fact that it is appropriate for the public sector to lead investment and to regulate;
- estimates of the costs and resources required for various interventions to maintain and restore ecological infrastructure (such as clearing water-thirsty invasive plants, rehabilitating wetlands or riparian zones), to demonstrate feasibility and affordability.

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## The Wealth Accounting and Valuation of Ecosystem Services (WAVES) initiative

Caroline Petersen, United Nations Development Programme (UNDP) (presented on behalf of Valerie Hickey, World Bank)

Gross domestic product (GDP) is the recognized measure of growth, but as it measures only gross output it tells us nothing about income for the long term. GDP looks at only one part of economic performance – output – but says nothing about wealth and assets that underlie this output and the generation of income. The other major limitation of GDP is the poor representation of natural capital; important contributions to the economy of forests, wetlands, and agricultural land are not fully captured in national accounts, or may be hidden.

It is thus in the interest of all countries to move beyond traditional GDP and start incorporating their natural capital into their national accounts to make better economic decisions. Natural capital includes the resources that are easily recognized and measured – such as minerals, energy, and timber – and the services that are often “invisible”, such as air and water filtration, flood protection, and carbon storage. Natural capital is a critical asset, especially for low-income countries where it makes up a significant share (36%) of total wealth. For these countries, livelihoods of many subsistence communities depend directly on healthy ecosystems. Incorporating natural capital into national accounts can support better decisions for inclusive development.

The concept of natural capital accounting has been around for more than 30 years, and is about measurement and information—for example, how much water is being used by which sector. The objective is better government decision making, better planning using this information. Ecosystem accounting can help countries design a management strategy that balances trade-offs among ecotourism, agriculture, subsistence livelihoods, and ecosystem services; it not only provides a tool to maximize economic growth, but is also a means to measure who benefits and bears the cost of ecosystem changes, helping governments gauge whether their growth is inclusive.

However, progress in moving toward implementation of natural capital (or ecosystem) accounting has been slow. A major step towards achieving this vision came recently with the adoption by the UN Statistical Commission of the System for Environmental-Economic Accounts (SEEA), which provides an internationally agreed method to account for material natural resources. The challenge now is to build capacity in countries to implement the SEEA and to demonstrate its benefits to policy makers.

The Wealth Accounting and Valuation of Ecosystem Services (WAVES) is a global partnership –which the World Bank announced during the tenth CBD COP in 2010 – that supports a number of countries as they prepare to implement natural capital accounting based on the System for Environmental-Economic Accounts (UN ). The WAVES partnership includes UNEP, UNDP, the UN Statistical Commission, and Botswana, Colombia, Costa Rica, Madagascar and



the Philippines, which are implementing programs. Financial or other support is provided by Australia, Canada, France, Japan, Norway, the United Kingdom and several NGOs.

The partners want to take natural capital accounting beyond the SEEA-approved material resources to include ecosystem services and natural resources that are not traded or marketed and are therefore harder to measure. A Policy and Technical Experts Committee, working closely with the processes set up by the UN Statistical Commission, has been established to take this forward.

The five countries in the WAVES Partnership are already making major progress into developing natural capital accounts, and have embarked on work plans that were endorsed at the highest level of their governments.

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## **Session 5 – Future Opportunities: Mainstreaming in a Changing World**

### **Surviving the Anthropocene: Beyond Mainstreaming to Global System Transformations**

Deon Nel, WWF South Africa

The functioning of the earth's biophysical systems is now so dominated by human activities that it has been suggested that the earth has moved into a new epoch, the so-called "Anthropocene" (Steffen et al. 2007, Steffen et al. 2011). Humanity's habitation of our planet in this new epoch is precariously balanced. WWF's *Living Planet Report* (2012) warns that humanity's footprint currently exceeds the earth's biocapacity by more than 50%.

Despite greater environmental awareness and conservation efforts than ever before, trends in environmental degradation continue on their negative trajectory (WWF 2012). It is becoming increasingly

clear that if these trends are to be shifted towards a more sustainable trajectory, a far more fundamental transition will be required.

Human society has already undergone at least two major global transitions in recent history (Meadows et al. 2004). The first transition – driven by local wildlife scarcity some 10,000 years ago – was from nomadic hunter-gatherers to a more static agricultural civilization. The second transition occurred in about 1800 AD when vanishing trees were replaced by abundant coal; this led to the industrial civilization, which had a significant impact on our social systems and resulted in population rocketing from 750 million to 7 billion in 200 years. This expansion has created its own constraints, resulting in the need for a further transition (Meadows 2004, Randers 2012).

Large-scale societal transitions are typically non-linear and typically take more than one generation (Kemp and Rotmans 2005). Whilst such large scale social transitions cannot be engineered, they can be influenced and managed. Transition management is based on a two-pronged strategy that requires incremental system improvement—under the existing equilibrium or "rules of the game" – and more fundamental system transformation, towards the new equilibrium and new "rules of the game" (Kemp and Rotmans 2005).

The WWF *Living Planet Report* (2012) defines five systemic interventions for creating a sustainable planet: i) Preserving natural capital, ii) Redirecting finances, iii) Better production, iv) Wise consumption, and v) Equitable governance mechanisms. This model can be aligned to the two-pronged strategy recommended by Kemp and Rotmans (2005). The preservation of natural capital can be considered an incremental system improvement strategy that needs to happen under the existing "rules of the game", while the other four components will require a far more fundamental system innovation and renewal strategy to fundamentally transform the "rules of the game".

Fundamental transformation of these large global systems will require a careful understanding of their structure. The overwhelming trend for all these systems seems to be one of increasing connectivity and concentration of flows of resources, power and decision-making. For instance, in the global food production systems there are probably more than 1.5 billion

producers and 7 billion consumers, but between 300 and 500 companies control about 70% of consumption choices (WWF 2012). However, while these 'pinch points' in the system may appear to be strategic leverage points, Frank and Geels (2007) warn that these points in the system may well be extremely "locked-in" by vested interests and may not malleable for real transformational change; they instead advocate for a multi-level perspective to transforming these "locked-in" regimes.

In conclusion, there is a need to move beyond mainstreaming, towards more fundamental system transformation.

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## **Why mainstreaming biodiversity is like swimming upstream, and what can be done about it**

**Richard Cowling, Nelson Mandela Metropolitan University, Port Elizabeth, South Africa**

Most people who actually do mainstreaming find it exhausting – like swimming upstream endlessly, no respite in sight. It begs the questions of why mainstreaming biodiversity is so difficult and how can the barriers to effective mainstreaming be overcome.

Modern humans – who communicate via language, have sophisticated technologies, store and share foodstuffs, and use symbols in many contexts – emerged about 160,000 years ago. For our first

150,000 years, we were hunter-gatherers dependent on daily foraging bouts for survival. Although we lived close to nature, we did not understand its resilience to our depredations: archaeological evidence indicates repeated bouts of technological collapse owing to impacts of resource depletion and rapid climate change on prey biodiversity. We were vulnerable then as we are now.

Our evolution selected for brains that are wired to massively discount the future in favor of the present; deal with discrete information instead of poorly defined, continuous processes; comprehend frequencies rather than probabilities; and respond positively to stories and negatively to making decisions in the absence of experience. This is why we have developed economic systems that emphasize short-term profits over long-term persistence, and why we find it so hard to do the necessary: redistribute wealth to non-kin, control population growth and consume less.

Thus mainstreaming biodiversity is hard work because our nature is against it, largely as a consequence of brains hard-wired to discount the future; consequently, most of our institutions are designed to maximize immediate material gains. At times, it seems hopeless – this endeavor to swim against the stream of human cognition – but we must, and there are ways to improve our chances.

Conservation success at the (mainstreaming) project scale requires two things: a passionate champion and a dynamic strategy. In the conservation context, effective champions have both high emotional intelligence and high self-confidence. They are able to lead in a way that stakeholders find empathetic and reassuring. They acknowledge complexity, rely on a network of loyal stakeholders for information, and are willing to learn from mistakes.

The other component of conservation success – the strategy – is the dynamic heart of a mainstreaming process. It is informed by research on the socio-political, biophysical and economic realms, and from feedback from a rigorous assessment of implementation. A key institution for implementing a strategy is a project learning organization, comprising researchers, officials and civil society. The learning organization fosters both social learning, and formal research.

The scope and importance of research in the mainstreaming process should not be ignored. Researchers

are enablers, providing peer-reviewed evidence on the opportunities and constraints for mainstreaming, as well as responding to research issues arising from strategy development and implementation. In reality, few mainstreaming projects support a research component, and most of it is formative research on the biophysical and economic realms; the actual process is seldom, if ever, the focus of research.

The absence of engaged research is highly problematic. Having invested billions of dollars in mainstreaming projects over the past ten years, the GEF has scant evidence that is rigorous and credible. One of the major reasons for this is that there has been virtually no investment in research on mainstreaming as a social process.

Many refer to mainstreaming as an art. However, if this label implies that mainstreaming is not amenable to rigorous scientific research, then it is completely incorrect.

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## **Protected areas inspiring solutions for development outcomes: trends and future directions**

**Trevor Sandwith, International Union for Conservation of Nature (IUCN)**

A persistent perception – that protected areas (PAs) are an exclusive and recent institution of management – equates all protected areas with strictly protected national parks, such as those in developed countries. However, nature conservation is concerned not only

with specific sites designated by governments, but also with the remaining 80% of areas under a variety of management regimes in production landscapes.

IUCN broadly defines “protected areas” to include a full range of objectives for governance and management regimes that conserve biodiversity and ecosystem functions and services, and that are manifested in a diversity of forms, both spatial and institutional (Dudley et al. 2008). Global statistics on PAs indicate an increasing trend towards the recognition of all governance types—including those governed by governments, indigenous peoples and local communities, the private sector and in various forms of shared governance (Bertzky et al. 2012). The assessment and evaluation of governance type and quality further reveals that institutions of PAs are an extremely old and persistent form of natural resource governance, inspired by community perceptions of their purpose, value and significance, both socially and economically (Borrini-Feyerabend et al. 2013, Kothari et al. 2012).

This perspective clearly shows that PA systems individually and collectively are embedded in the production landscape and seascape, contribute towards the persistence of biodiversity and associated ecosystem functions at the landscape scale, and are an essential component of any effort to mainstream biodiversity into production economies. They therefore represent an almost “hidden”, unconscious form of mainstreaming. In contrast with other efforts to “engineer” mainstreaming of biodiversity into production sectors, there is an opportunity to recognize that biodiversity in PAs is an integral and valuable component of mainstream production economies, and to understand why and how this has come about and how these forms of governance and management can be maintained and inform strategies for mainstreaming in the future.

Examples of mainstreaming fortuitously dependent on PA systems include the mosaic of PA governance types that collectively make up the Amazon Basin, where forest destruction and degradation would be far worse without the governance and management arrangements beyond government designated PAs. At a global level, more than 15% of extant forests are protected in only 12.6% of land, with marked positive contribution to avoided deforestation (Campbell, et al. 2008). There are also many examples of water funds that ensure the persistence of quality water supplies to major metropolitan areas, which are based in the watershed values of even single PAs.

While research on the relationship between the quality of PA governance and outcomes for conservation is still ongoing, Leverington et al. (2008, 2011) established in a global study of management effectiveness that among the best predictors of effective management is essentially governance, and communication. It is implicit in the establishment of PAs that they will have a value for society, but their role in institutional mainstreaming of biodiversity in production economies and sectors is less well established. In addition to their physical role in ensuring the persistence of biodiversity pattern and processes at the landscape scale, the underlying governance and institutional management arrangements that ensure their functions and values are maintained over time are complex and worthy of investigation as one of the essential contributory mechanisms for successful mainstreaming. Indeed, an examination of governance diversity and quality in engineered mainstreaming would also be worthy of consideration.

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## APPENDIX 2. List of Workshop Participants

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