

Experiences with mainstreaming biodiversity and the role of markets

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ABSTRACT: With the continuous decline in global biodiversity, mainstreaming biodiversity has become an essential tool to reverse this trend. This paper will discuss the main elements that need to be in place for a successful implementation biodiversity mainstreaming initiatives. On the basis of lessons drawn from the implementation of a sample of mainstreaming projects in Latin America, we will discuss the conditions that should be in place for a successful implementation of mainstreaming biodiversity, with special reference to the incentives for farmers to integrate biodiversity conservation principles into their production decision-making process. The paper will further elicit the areas that need additional research to provide a clearer response to some of the issues that are still jeopardizing the implementation of biodiversity conservation activities. Finally, the paper will discuss some basic rules that should be applied for mainstreaming biodiversity in the rural landscape.

KEY WORDS: Conservation, sustainable development, economy, rural landscape.

RESUMEN: Con el continuo deterioro de la biodiversidad global, la integración de la biodiversidad ha llegado a ser una herramienta esencial para revertir esta tendencia. Este documento discutirá los principales elementos que se requieren para una ejecución exitosa de iniciativas de integración de la biodiversidad. Sobre la base de las lecciones aprendidas durante la ejecución de una muestra de proyectos en América Latina, que incluyeron la integración de la biodiversidad como uno de sus objetivos, discutiremos las condiciones que se tienen que dar para una ejecución exitosa de la integración de la biodiversidad, haciendo referencia especial a los incentivos que deben recibir los agricultores para que integren los principios de la conservación de la biodiversidad en el marco de sus decisiones de producción. El documento pondrá en relieve las áreas en las cuales se requiere investigación adicional para entregar respuestas más claras a los problemas que todavía amenazan la ejecución de actividades de conservación de la biodiversidad. Finalmente, el documento discutirá algunas reglas básicas que deberían ser aplicadas para integrar la biodiversidad en el paisaje rural.

PALABRAS CLAVE: Conservación, desarrollo sustentable, economía, paisaje rural.

INTRODUCTION

During the past four decades there has been an increase in awareness of the wide range of critical life-support functions and services to society that are provided by biodiversity - understood as the variety of life at multiple scales of organization (genes, species, habitats and ecosystems) and their interrelations. This increasing awareness has resulted in a growing concern for implications of the ever-quickening pace of species extinction and ecosystem conversion (Boisvert and Vivien 2012).

Services provided by biodiversity include food, shelter, clean water, genetic resources, flood protection, nutrient cycling and climate regulation. However, despite the significant economic, social and cultural benefits provided by biodiversity and ecosystem services, there has been a steady increase in the rate of loss in global biodiversity. By the end of the last decade, species in all groups with known trends were, on average, being driven closer to extinction, with amphibians facing the greatest risk and warm water reef-building corals showing the most rapid deterioration in status. Among selected vertebrate, invertebrate and plant groups, between 12% and 55% of species were globally threatened with extinction. Species of birds and mammals used for food and medicine were on average facing a greater extinction risk than those not used for such purposes. Preliminary assessments suggest that 23% of plant species were threatened (CBD 2010). Moreover, without change in our policies and action plans, a further 10% loss of global biodiversity is expected between 2020 and 2050 (OECD, 2012, as quoted in OECD, 2013).

Early attempts to preserve biological resources focused primarily on forest conservation and the establishment of protected areas, and were characterized by top-down, centralized protectionist approaches, which attempted to separate conservation from development issues¹. However, already by the late 1980s it was becoming clear that a much broader and more ambitious set of policies and programs needed to be implemented across

all sectors of the economy if global biodiversity losses were to be effectively tackled. While the protected areas system continues to play a central role within such an approach, the burden of conserving the world's biodiversity falls on sectors outside of protected areas. Moreover, given demographic growth and pressures for competing land uses, the survival of the planet will depend on the promotion of ecological processes that maintain the quality of soil, water and climate in the 87% of the land area located outside the protected areas system. To that end, and in order to secure national and global benefits, there is a pressing need to integrate biodiversity conservation into agriculture, forestry, fishery, and tourism production systems: the so-called "mainstreaming" of biodiversity.

There does not appear to be an agreed definition of "mainstreaming biodiversity". However, following Petersen and Huntley (2005a), it can be taken to refer to the process of internalizing the goals of biodiversity conservation and sustainable use of biological resources into the economic sector and development models, policies, and programs, and therefore into all spheres of human behavior. In the early 1990s, the Convention on Biological Diversity embraced the concept of mainstreaming biodiversity in production landscapes and sectors by calling on the contracting parties 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 and to integrate consideration of the conservation and sustainable use of biological resources into national decision-making (CBD 2005).

Twenty years later, available evidence would suggest that despite the consensus reached at the CBD, mainstreaming biodiversity is far from being the preferred tool in use by member countries to prevent the extinction of species and to reduce the rate of conversion of ecosystems. The purpose of this paper is to explore the reasons behind this rather poor uptake of what should be and have been a key element in the fight for biodiversity preservation. On the basis of the lessons learned from a sample of World Bank-financed biodiversity conservation projects, we discuss the conditions that should be in place for a successful implementation of mainstreaming biodiversity, with special reference to the incentive framework that farmers should be presented with in order to be persuaded to integrate biodiversity conservation principles into their production decision-making process. The paper also identified the areas that need additional research to provide a clearer response to some of the issues that continue to jeopardize the implementation of biodiversity conservation activities.

1 By the end of 2005, the World Data Base on Protected Areas (WDPA) had recorded over 114 000 sites. These protected areas covered more than 19 million km², or 12.9 per cent of the Earth's land surface (Chape et al. 2008, p.11). Integration was also the theme of the Biodiversity Planning Support Programme (BPSP) of UNEP/UNDP/GEF, which was given the mandate to provide assistance to national biodiversity conservation planners.

MAINSTREAMING BIODIVERSITY INTO AGRICULTURE

In its broadest sense, mainstreaming biodiversity into agriculture involves the integration of the principles of biodiversity conservation and its sustainable use into those policies, plans, programs, and production systems where the primary focus has traditionally been on production and development, rather than on biodiversity conservation losses or gains. Moreover, it is widely accepted that successfully mainstreaming biodiversity into all aspects and levels of society and governance will be the surest way to sustain conservation gains in the long term (Dublin *et al.* 2004).

Mainstreaming interventions can be implemented at a wide range of levels varying from international or national policies and economic activities to ground or local level production systems. Similarly, a wide range of actors will participate in mainstreaming initiatives and, consequently, share the relevant costs and benefits. These actors are located at the local level, such as farmers with a clear insight of the particular biodiversity conservation issues, or at the government level where concerns center on the way in which policies, legislation and institutional arrangements could promote or facilitate mainstreaming activities. Some would even argue that for mainstreaming “to achieve lasting impact, it must occur at a very local level, and become part of ordinary people’s lives” (Sandwith 2002).

The importance of local-level mainstreaming activities notwithstanding, mainstreaming initiatives at the macro-level might be essential to create an enabling environment in which local activities or projects aimed at the protection and rational use of biodiversity could flourish and succeed. Moreover, while the outcome of mainstreaming activities is perhaps more likely to be successful if the protection and sustainable use of biodiversity become part of ordinary people’s lives, mainstreaming interventions at other levels can also have lasting impact depending on the specific policy and institutional context in which they are being implemented as well as the type of biodiversity issues that they are addressing (Petersen and Huntley 2005b).

From the experience and the lessons drawn from the implementation of World Bank-financed biodiversity conservation projects² it becomes clear that mainstreaming can be implemented more successfully in some situations than in others. But what are the key elements that need to be in place to increase the chances of success of mainstreaming activities? For the purposes of our discussion we focus the analysis on the agricultural sector. In other words, we analyze the process of mainstreaming biodiversity within economic sectors directly related to natural resource use and management, such as agriculture, forestry, fisheries, wildlife utilization, and tourism. This choice of focus is not only purely practical, as our sample of projects are located in the agricultural sector, but also conceptual as we strongly believe that there is a need to address the issue of biodiversity conservation and management within the areas using existing agricultural production systems, which constitute one of biodiversity’s most serious threats, and represent roughly 90 per cent of land not under formal protection.

2 See, *inter alia*, World Bank (2002a), World Bank (2005) and World Bank (2006)

The focus on agriculture does not imply in any way a disregard for the important role that mainstreaming efforts in other sectors of the economy can play in the conservation and sustainable use of biodiversity. On the contrary, we believe that specific opportunities for mainstreaming biodiversity exist in every sector of the economy. The potential “targets” of mainstreaming are rarely limited to one sector, but cut across two or more sectors. Targets can include spatial targets (entire bioregions, landscapes, individual properties, and specific sites), and they can include all levels of governance (international bodies, national governments, and lower tiers of government), as well as international donor agencies and banks. Many of the barriers to effective mainstreaming are also common across sectors, relating both to the enabling environment (improving policy and institutional capacity) and to the need to create markets for biodiversity goods and services (Petersen and Huntley 2005a). Finally, we hope that conclusions drawn on the basis of the experience in the agricultural sector will also be relevant to mainstreaming activities across all sector of the economy.

BASIC FOUNDATIONS

Successful mainstreaming initiatives can be defined as those that have managed to change “the behavior of individuals and organizations through the creation of institutions (including incentives) that bind actors to supporting norms, values, and practices that promote biodiversity persistence” (Cowling 2005). There appear to be certain basic elements that need to be in place in order for any mainstreaming initiative to succeed. The list of elements that constitute the foundations of biodiversity mainstreaming could be endless and vary from location to location and from sector to sector, but we have selected the ones that, in our view are the most relevant³. These are discussed in the sections below.

(i) Sound scientific knowledge and its adequate dissemination.

Sound scientific knowledge combined with an effective program for ensuring that this knowledge reaches the main stakeholders underpins all successful mainstreaming initiatives. Unless there is a clear understanding of the causes of biodiversity degradation and the possible measures that can be adopted to reverse that degradation it is impossible to design mainstreaming initiatives that aim at improving biodiversity conservation.

Research that cuts across different disciplines and knowledge areas is particularly important for supporting decisions regarding the trade-offs between biodiversity conservation and conventional forms of economic production, both in short and a long-term perspectives. This is a responsibility of governments, universities and independent research institutions for which it is essential to identify adequate sources of finance. A better appreciation of the importance of biodiversity in general, but especially of the importance that the local environment (or project area) could have for global or regional biodiversity conservation,

3 In the case Cowling *et al.* (2002), for example, they identified 8 prerequisites, as they define them, based on their analysis of 11 case studies representing different initiatives to promote biodiversity conservation in the context of sustainable development in South Africa. Some of these prerequisites overlap with the basic foundations discussed in this paper.

is another important component of the scientific knowledge base that is required for the successful implementation of mainstreaming initiatives (World Bank 2009).

Once the scientific knowledge has been acquired, its adequate dissemination is essential to gain the effective commitment of stakeholders to mainstreaming initiatives. Scientific knowledge and technical answers that remain within the four walls of research institutions will have no impact on stakeholders’ attitude towards the importance of biodiversity conservation and, therefore, on their willingness to adopt biodiversity mainstreaming initiatives. Without stakeholders’ commitment, no mainstreaming activity will succeed, regardless of the soundness of its scientific underpinning. Moreover, the dissemination of scientific knowledge and information about the importance of biodiversity in general, will help to create an enabling environment for the implementation of biodiversity conservation initiatives. For example, stronger support from the general public for biodiversity conservation would make the allocation of national financial resources to further scientific biodiversity knowledge potentially less controversial.

(ii) Accountable governance and enabling environment.

The mainstreaming process often requires the formation of alliances between different sectors of the biodiversity community as well as the strengthening of existing institutions or the creation of new ones to bind actors to supporting norms, values and policies that promote biodiversity conservation. Moreover, governments need to promote behavioral changes among the general public via legislation, policies and other institutional arrangements. Consequently, there a permanent interaction is required between government and the biodiversity conservation community.

An effective integration between different organizational levels and between stakeholders and local and national government institutions requires democratic and accountable governance. Democratic and accountable institutions are essential to promote an enabling environment in which the policy and legal framework are conducive to mainstreaming biodiversity into the various economic sectors. Without the checks and balances provided by democratic government, stakeholders are not able to demand the incorporation of biodiversity consideration into policy governing sectoral activities and, therefore, to develop a more biodiversity friendly environment in which mainstreaming initiatives in production sectors and landscapes can flourish.

Furthermore, governments are not always supportive of biodiversity conservation initiatives and, in some cases, promote the implementation of projects and programs that run contrary to the local biodiversity community mainstreaming efforts. It is only through the channels offered by an effective democratic system that conditions will be established to encourage the full participation of civil society in the discussions and implementation of legislation, policies and programs that are biodiversity friendly. In particular, there is a need to engage national governments that have made commitments on paper to agreements promoting biodiversity conservation, but are simultaneously forging ahead with new developments that run contrary to those agreements, or that maintain perverse incentives that drive economic sectors to destroy biodiversity rather than conserve it. Thus, democratic and accountable

governance is essential for a process as complex as mainstreaming (Stephens *et al.* 2002).

Finally, the development plans and policies of national governments are a crucial aspect of the enabling environment for mainstreaming work in production sectors and landscapes. National processes for developing National Sustainable Development Strategies and National Biodiversity Strategy and Action Plans (NBSAPs) have the potential to make a large contribution to mainstreaming biodiversity into government departments and sectors of the economy. However, NBSAPs may be of limited use if they are not able to exercise any significant influence on the planning process in different economic sectors, do not pay sufficient attention to linkages with economic policies and plans, or suffer from a lack of integration with other national institutions and planning mechanisms (Swiderska 2002).

(iii) Adequate institutional capacity

The mainstreaming of biodiversity will not happen without an adequate level of institutional capacity, both human and financial. This implies that all institutions, including government institutions (national, regional or local), responsible for the design, implementation, and monitoring of development policies and programs, as well as conservation agencies, academic institutions, non-governmental organizations (NGOs), and stakeholders organizations (e.g. farmer organizations, cooperatives, forestry conservation groups, et.) should have the ability to implement and manage mainstreaming projects and programs.

Increasingly, mainstreaming initiatives originate within economic sectors, and typically involve a broad range of actors, with partnerships between NGOs, government, industry, small, medium, and micro enterprises, and communities (Peterson and Huntley 2005b). In the case of stakeholders' organizations, appropriate experience and managerial capabilities can often be provided by academia and, particularly, by NGOs linked to biodiversity conservation activities. In those cases where *win-win* situations can be identified in which significant and equal gains can be made in both biodiversity conservation and an economic activity, private sector investors can also provide this managerial capacity in association with, for example, farmers' organizations. But, more often than not, it will be NGO involvement that will constitute a precondition for the design and implementation of biodiversity initiatives in the agricultural sector.

In those countries where there is a particularly active NGO sector, which potentially can provide technical assistance, institutional strengthening support, seed funding, and essential research and scientific knowledge, NGOs will become an essential ingredient for successful biodiversity mainstreaming initiatives. For example, the role played by Guyra Paraguay in the implementation of a wide range of biodiversity conservation initiatives in the San Rafael Conservation Area in Paraguay, is a case in point (Cartes and Yanosky 2006).

Consequently, creating the right institutional framework is another key component of successful mainstreaming biodiversity initiatives. Stakeholders and organizations with appropriate institutional capacity and technical knowledge need

to be identified during the early stages of the design and implementation of any mainstreaming initiative. The existence of an operational institutional environment for the implementation of biodiversity mainstreaming initiatives is critical for ensuring sustained biodiversity benefits. Unless the institutional structures of a country are strengthened, mainstreaming biodiversity projects will remain vulnerable to alternative development options or may become islands in a sea of biodiversity degrading activities, and whatever progress these isolated projects could achieve in biodiversity conservation or sustainable use will be eroded over time (GEF 2002).

These three basic pillars will consequently form the foundations on which any proposed mainstreaming initiative will have to be built. But having the foundations is only the first step towards building the edifice that will contain the mainstreaming initiatives. Once the right scientific knowledge, democratic governance and the appropriate institutions are available, the incentives that will move stakeholders into action have to be identified.

INCENTIVES

If every mainstreaming initiative were to yield simultaneous gains in biodiversity conservation and gains in economic returns to investment (the "win-win" scenario), we would be facing an ideal world in which there would be no biodiversity degradation nor would need for special incentives to farmers to encourage them to adopt biodiversity friendly production systems. However, there is an on-going debate on the extent to which these so-called "win-win solutions" are attainable.

In reality, it is not uncommon to find that there are powerful vested interests involved in the destruction of biodiversity, with no little or no real incentive for cooperation in a conservation agenda. Farmers are often asked to stop using their existing production system because of the negative impact on biodiversity but without a clear indication of the potential benefits available to them. The move towards more biodiversity friendly technologies can often involve a loss of income for farmers, as the markets are not prepared to compensate for the additional long-term costs of biodiversity conservation. Under those circumstances, the adoption of biodiversity friendly production technologies would be impossible in the absence of an adequate incentive system.

Successful outcomes will take many forms and will always necessitate compromises and trade-offs (Peterson and Huntley 2005b). But, it is clear that, for any mainstreaming initiative to succeed there will have to be a linkage between biodiversity conservation measures and economic gains. In other words, mainstreaming biodiversity initiatives can be undertaken only if farmers are both convinced of the advantages of biodiversity conservation and can operate within an appropriate incentive framework. In the next sections, we will explore some of the mechanisms that can be used to increase awareness of the need for mainstreaming and provide a stimulus to the implementation of biodiversity mainstreaming initiatives in the agricultural sector.

MARKET BASED INCENTIVES

The success of any biodiversity conservation and management initiatives will depend on the active participation of the agricultural sector's main stakeholders. The need to provide adequate incentives to ensure farmers' participation while simultaneously improving the cost effectiveness of biodiversity conservation initiatives, has led to an increasing interest in the use of market-based mechanisms to promote conservation and sustainable management of the world's biological resources. In the next sections two main market-based mechanisms used to promote biodiversity conservation will be discussed: the so-called payments for ecosystem services (PES)⁴ and markets for green products.

(i) Payments for ecosystem services (PES)

There is a consensus that society obtains valuable services from biodiversity and ecosystems, which include food, fuel, clean water, genetic resources, recreational services, flood protection, nutrient cycling and climate regulation. From the farmers' viewpoint, biodiversity conservation is an externality and, consequently, is not taken into account when they make decisions either about land use or the production system to be adopted. As a result, they are unlikely to adopt biodiversity friendly decisions if they imply higher cost. As biodiversity and ecosystem services are normally not incorporated into the benefit and cost structures of the farming system, market prices will not reflect the optimal allocation of resources. Payments for ecosystem services programs aim at addressing this market failure by introducing a mechanism whereby farmers are paid for the ecosystem services that they generate, thus aligning farmers' incentives with those of the society as a whole. These programs refer to voluntary agreements whereby the user or beneficiary of an ecosystem service pays an individual or a community whose land use or other resource use management decisions influence the provision of that particular service, for the additional costs of providing this ecosystem service (OECD 2010).

Such payments are needed to address the externalities associated with biodiversity and ecosystem services, and can include, for example, payments by downstream users of hydrological services to up-stream land managers in a given watershed, as in the case of the Costa Rica Payment for Environmental Services Program⁵, or payment for the protection and management of high value forest on private land, including actions to reduce fire risk, as is the case of Tasmanian Forest Conservation Fund in Australia⁶. Thus, payment for ecosystem services is a program where the user pays for the ecosystem services that he/she would like to benefit from. This is in contrast to systems whereby the polluter is required to pay for the external environmental costs of their actions. The two approaches are complementary. Instruments based on the "polluter pays" principle penalize environmental performance that is below the socially agreed norm (accepted level of environmental damage), while the instruments based on a "beneficiary pays"

⁴ Some authors prefer to use the term payment for environmental services. See, for example, Pagiola *et al.* (2005) and Pattanayak *et al.* (2012)

⁵ See Pagiola (2002) and Pagiola (2008)

⁶ See OECD (2013)

principle reward environmental performance that is superior to this norm (OECD 2013)

Key challenges to ensure the effectiveness and feasibility of PES are the definition of an appropriate regulatory baseline and the ability to enforce it. In other words, a successful PES will be the one that has the mechanisms to both distinguish between what resource owners/managers can reasonably be expected to do at their own cost and what more they might agree to undertake on the basis of PES, and enforce this rule (TEEB 2011).

Most existing PES programs are linked to water services, reflecting not only the urgency of addressing water issues in many developing countries but also the relative ease with which the beneficiaries of water services can be identified (Pagiola *et al.* 2004). However, in a few cases, this type of program has been used for biodiversity benefits, mostly with GEF support⁷. The main limitation for an expanded role of PES is the gap that exists in the knowledge of how different ecosystems interact in the delivery of services. Ecosystems are rarely homogeneous; they often include rivers, lakes and wetlands as well as patches of land that may be farmed or managed as open habitat for wildlife. Therefore, it is essential to have a clear understanding of how the various combinations of ecosystems operate together to generate services, which may be enhanced or impeded by interactions (TEEB 2011). For a full discussion on the development and operation of the system of payments for ecosystem services see, *inter alia*, Cornell 2011, Norgaard 2010, OECD 2010, OECD 2013, Pagiola 2002, Pagiola *et al.* 2005, and Pattanayak *et al.* 2012.

(ii) Markets for green products

In the last decade, there has been an expansion of markets for biodiversity-friendly products and services, especially in forestry, fisheries, agriculture and tourism. The increasing interest in the so-called “green products” is an apparent response to “supply push” initiatives by producers combined with “demand pull” changes triggered by emerging consumer preferences for environmentally responsible products, which are being expressed through their purchasing decisions.

This trend reflects the increasing awareness of many consumers and producers that conventional production and consumption practices are not only contributing to a continuous deterioration of the world’s biodiversity but also threatening the long-term viability of its ecosystems. There seem to be certain groups of consumers, particularly in developed countries, who are prepared to pay a price differential or premium for produce that has been produced with production technologies and processes that protect the environment and biodiversity. This is a positive development, as higher prices for green products is one of the key incentives that can induce farmers to abandon their traditional production system and adopt sustainable biodiversity production technologies instead, which can involve higher production costs or lower yields than traditional production systems.

Market niches are available for products and services that can reliably distinguish themselves

⁷ See, for example the Costa Rica World Bank/GEF-financed Ecomarkets Project (World Bank 2000)

from their competitors by demonstrating their conservation credentials. To be able to access these new markets, farmers in many countries are already introducing changes in their production practices to distinguish themselves from those using conventional methods.

Green products include those produced through methods that have a reduced impact on biodiversity due to adoption of more efficient or low-impact production and processing methods as is the case, for example, of reduced impact forestry or fisheries. They also include goods and services that are based on sustainable use of biodiversity and ecosystems, such as eco-tourism and bio-trade, as well as goods whose consumption results in less pollution, such as biodegradable detergents (TEEB 2011)⁸.

The development of markets for green products requires an efficient and reliable labeling system that can certify the compliance by farmers (or companies) with local environmental or biodiversity conservation standards, in order to provide the necessary assurances to consumers that they are actually buying what the labels say. The design and implementation of a reliable international eco-labeling system is an essential element in the future development of green product markets. Eco-labeling schemes have been established already by governments (see, for example, the EU Ecolabel), and by private organizations (e.g. UTZ Certified; GLOBALGAP, Sustainable Forest Initiative –SFI) and civil society (e.g. Fairtrade, International Federation of Organic Agriculture Movements (IFOAM), Rainforest Alliance).

Existing certification systems are, however, not without their shortcomings. In general, certification systems assume that the adoption of certain specified production and processing practices will have positive biodiversity and ecosystem benefits, regardless of the producer’s location in the landscape/watershed. Unfortunately, many certification systems do not make their relationship to biodiversity explicit. Organic farming, for example, which is by far the largest type of certified agriculture, is reported to be generally beneficial (according to its labels) but the certification does not set out to ensure biodiversity and, depending on local circumstances, could actually reduce species richness⁹. To further confuse matters, there are substantial differences between standards in terms of how they treat biodiversity.

Biodiversity-relevant eco-labeling schemes need to explicitly address biodiversity, with rules related to genetic and species diversity of the production areas, prescriptions for habitat set-asides and rules against conversion of high conservation value land, which are not always easy to define and even more difficult to enforce (OECD 2013). As eco-labels proliferate at the national, region-

⁸ While outside the agriculture, forestry and fisheries sector most product markets still do not treat biodiversity as a key concern, there is growing evidence from across the world that an environmentally-friendly label or conservation approach to business can enhance the competitive position of a private investor’s company. Moreover it can open new market opportunities and offer enhanced product differentiation in increasingly competitive global markets.

⁹ Bengtsson *et al.* 2005, as quoted in TEEB (2011), Ch. 5, p. 52

al and global level, it is imperative to streamline standards and help consumers differentiate between the different labels (OECD 2013). Consequently, if there is going to be any significant future for green product markets, governments and international organizations will have to play a central role in the development of a reliable and enforceable international eco-labeling system that provides the necessary assurances of transparency and effective enforcement to both consumers and producers. There is not only the problem of defining internationally agreed standards, which farmers have to comply with to qualify as green producers, but also the need to develop a system of verification that can certify that green production processes actually meet the agreed standards. In other words, there is need for a system capable of tracing green products along the whole supply chain so that consumers can accurately distinguish between green products and less sustainable ones.

Even with reasonable guarantees of transparency and enforcement, the expansion of eco-labeling schemes and, therefore, of green markets will face growth limits. The expansion of certified biodiversity-friendly products and services is hampered by the cost and complexity of implementation, reflected in relatively low levels of certified production in developing countries. The direct costs of certification may be insignificant for large operators but can be a challenge for many small-scale producers and community enterprises. The proliferation of green products will necessarily lead to an increase in the operational costs of these markets in terms of the cost of eco-labeling and its certification. However, not all producers will have the means or the capability to become certified farmers, which will tend to leave markets of green products beyond the reach of most small farmers, unless governments devise special programs to overcome this constraint.

There are some additional elements, particularly on the demand side of the equation that would also indicate that the expansion of green markets has a growth limit. While recent experiences have shown that there is an increasing global awareness of the importance of the environment and biodiversity, and that consumers are increasingly demanding higher environmental standards from the products they consume, they are not always willing to pay a price premium (Kraxner *et al.* 2011; OECD 2013). Moreover, premiums paid by consumers vary considerably, but in general they tend to be relatively small¹⁰.

In the more advanced economies, where consumer commitment with the environment and biodiversity is much larger than in other countries, sustainable products tend to become the norm and, therefore, there is no premium price available¹¹. Consequently, although price premi-

¹⁰ Forest Stewardship Council (FSC) certified wood, for example, reported premiums ranging from 4% to 20% for USA and Western European production, compared to Programme for the Endorsement of Forest Certification (PEFC), which reported premiums of 0% to 1% (OECD 2013, p. 94). In the case of coffee, most premiums fell within the range of US\$ 0.05 to US\$ 0.10 per pound in 2009 (Potts *et al.* 2010, p. vii).

¹¹ This is the case, for example with the supply of PEFC or FSC labeled softwood and composite panels in the United Kingdom, the Netherlands and Belgium (OECD 2013)

ums will provide an incentive to companies and producers to participate in green markets, they are not necessarily an essential component for the operation of green markets. The progression of green products to “norm” or “standard” products would certainly represent a triumph for the cause of environmentally sustainable development, but would undermine the basis for a successful eco-labeling system.

From an eco-labeling system viewpoint, the optimal result would be to develop a niche market for a product and remain in it for as long as premium prices are obtainable. As soon as green products become the standard traded in the market, premium price will disappear and the cost of eco-labeling will be difficult to finance. But from the point of view of the environment and biodiversity, the sooner green products become the norm the greater the benefits and the greater the chances of consolidating a sustainable development pattern. So, in a way, the success of green products also contains the seeds of destruction of the eco-labeling system.

Although markets for green products have witnessed a sustained growth over the past decade, the market share of most green products is not very significant and it is likely to remain low given that, by definition, niche markets represent usually less than 30% of the total. Bananas are perhaps the most important green product in terms of market share. In 2007, exports of “green” bananas represented 20% of global exports. Exports of sustainable coffee and tea represented only around 8% of global exports of these products in 2009 and 2008 respectively (Potts *et al.*, 2010). Exports of sustainable coffee are expected to continue growing in the near future largely in response to various commitments from important buyers such as Kraft, Nestle and Sara Lee. In the case of sustainable tea, exports are also expected to increase as Tetley, Unilever, and Twinings either have sourced, or have committed to sourcing, from sustainable supplies in the coming years (Potts *et al.* 2010).

There is no denying that despite the limitations, markets for green products can represent an important incentive for farmers interested in adopting biodiversity favorable production practices. Price premiums for green products can be an important incentive to encourage farmers of all scales to adopt biodiversity friendly production systems. For small farmers the road towards green markets might be more difficult than for larger producers, but not impossible provided a few simple measures are adopted, in the following areas:

- i. Identification of potential niche markets,** which would require a complete market study to assess the real potential of the proposed green productions (see Annex II of this paper).
- ii. Identify the relevant eco-labeling system.** Once the results of the market study become available, farmers should approach one of the existing eco-labeling schemes in order to be included in their certification program.
- iii. Technical assistance.** Farmers, and particularly small-scale farmers, will require specialized technical assistance not only for the adoption of the sustainable bio-

diversity production systems but also for the marketing of their produce in the respective niche markets.

- iv. Market information systems.** Given the fluctuations in world markets, it is essential that farmers are permanently linked to reliable information systems that can provide basic data on market development and produce prices to facilitate the farmers’ production decision making process.

Given the wide range of issues that small-scale farmers have to address if they are interested in changing adopting “green” production practices, it is very unlikely that they will succeed in their undertaking without specialized assistance. As the assistance required has to cover a wide variety of knowledge areas, ranging from marketing to production technologies, the institutions best equipped to deal with this type of technical assistance will be either specialized government institutions, such as Extension Services or Government Research Institutes, or specialized NGOs, with experience in the production and marketing of biodiversity friendly green products.

GOVERNMENT-FINANCED INCENTIVES

Market-based mechanisms should not be the sole instruments to promote the sustainable use of biodiversity in agriculture and, when markets fail, governments should provide the necessary incentives to farmers to encourage the adoption of biodiversity friendly production systems.

One of the aims of public policies should be to make markets work better by integrating whenever possible biodiversity and ecosystem services values into price signals. If market failures are allowed to persist, the price signals that farmers will receive will have an implicit bias against ecosystems and biodiversity conservation benefits, and farmers will not receive the right type of price incentives to adopt biodiversity friendly production systems. But, as discussed in the previous sections, despite government efforts, available market-based incentive mechanisms face some limitations and might not always work, leading to undesired results, particularly for small farmers. Under this framework, direct government support to biodiversity friendly production systems should be seen as an adequate complement to market-based incentives.

For biodiversity mainstreaming in agriculture to succeed it is essential that farmers face the right type of incentives. Farmers will normally decide which production systems to adopt on the basis of profitability rather than on the impact that the selected system could have on biodiversity. When the most profitable production system happens to also be biodiversity friendly, there will be a lucky concurrence between private and social benefits¹². But, normally, biodiversity friendly production systems are not the most profitable from the farmers’ viewpoint. Consequently, if farmers are to be encouraged to adopt biodiversity friendly production systems, markets have to boost their profitability either by paying premium prices, as in the case of green products, or

¹² As is the case, for example, of the jungle rubber production in Indonesia (Pagiola *et al.* 2004, p. 1)

by paying for the ecosystem services delivered by the farmers. However, as discussed in the previous sections these market-based mechanisms do not always work.

Due to their inherent nature, markets will aim at the short term maximization of profits, whereas the evolution of ecosystems and biodiversity operate within a long-term time horizon. So, it is not surprising that the goals of economic growth (whether at the country or small enterprise level) will frequently clash with the objectives of biodiversity conservation and sustainable use. There will be many instances, where the sustainable use of biodiversity will be in line with the directions shown by market forces. But, when this is not the case, in our view, governments interested in promoting the implementation of agricultural production systems based on the sustainable use of biodiversity will have to step-in and compensate farmers for benefits that markets are unable to detect, which is not uncommon in the case of biodiversity or ecosystem services¹³.

For many, subsidies will be synonymous of wasteful allocation of resources to support activities that would otherwise not be able to compete in the world market. Unfortunately, examples of wasteful allocation of scarce budgetary resources through ill-defined subsidy programs can be found in abundance, particularly among programs which encourage the expansion of intensive agriculture using environmentally harmful production methods. But subsidies do not have to be wasted resources that will only have negative effects on ecosystems and biodiversity. “Financial transfers that are well targeted at environmental objectives and cost-effective can play an important role in improving incentives for conservation of ecosystems and biodiversity” (TEEB 2011).

The first step in the design and implementation of a financial transfer scheme to support biodiversity conservation proposals should be the removal of environmentally harmful subsidies, such as production-inducing agricultural subsidies that have negative impacts on biodiversity. This, in itself, will not constitute an incentive for the conservation of biodiversity, but it will enhance the cost-effectiveness of the biodiversity incentive schemes that are going to be implemented. In addition, the elimination of harmful subsidies will potentially free scarce budgetary resource than can be put to better use in the biodiversity programs.

Once the “harmful subsidies” have been removed, efforts should be directed towards the design and implementation of effective “green subsidies”¹⁴. There are a few simple rules that

¹³ Some would argue that the discussion about government subsidies should be held within the context of broader environmental fiscal reform, which would include a range of taxation and pricing measures that could raise fiscal revenues while furthering environmental and biodiversity conservation goals (OECD 2013)

¹⁴ In our discussion, subsidies are understood to be direct transfers of funds to farmers. But subsidies come in many shapes and forms. They may consist of income or price support (e.g. for agricultural goods and water), tax credits, exemptions and rebates (e.g. for fuel), low-interest loans and guarantees, preferential treatment and use of regulatory support mechanisms (e.g. demand quotas). They can take the form of implicit

should be followed in order not to fall in the design trap of past subsidy schemes. Green subsidies should¹⁵:

- i. Be based on clear, targeted and measurable objectives and associated indicators;
- ii. Ensure cost-effectiveness and be justified by a thorough analysis of costs and benefits;
- iii. Be feasible to administer in a low cost way;
- iv. Be transparent so that everybody knows how much it costs and who is benefiting;
- v. Include monitoring, reporting and evaluation provisions; and,
- vi. Include sunset and review clauses to help avoid their continuation beyond their useful life.

Direct government financial support to farmers can play a pivotal role when farmers are trying to change their existing production systems in favor of production techniques that are more biodiversity friendly, as otherwise the upfront investments may be prohibitively high. Moreover, there is likely to be a time-lag between the actual investments in new production systems and the moment returns on these investments materialize, and farmers will need some support during this transition period¹⁶. Furthermore, the introduction of green products in the new production structure will require technical support, dissemination of market opportunities, and capacity building. All of these involve costs which farmers will be unable to meet without significant upfront government financial support (TEEB 2011).

Lessons drawn from the implementation of a sample of projects promoting mainstreaming biodiversity among small- and medium-sized farmers in Latin America¹⁷ would indicate that well targeted government support schemes are an essential element in the successful implementation of these projects. As the adoption of biodiversity friendly production systems usually involves changes in well-established habits of farmers, success is highly dependent on the existence of effective, reliable and well-targeted technical and financial support systems that can accompany farmers during the implementation of mainstreaming initiatives. Therefore, in the implementation of mainstreaming initiatives, governments (or government agencies) have a

income transfers when natural resources or services are not priced at full provisioning cost (e.g. water, energy) (TEEB 2011). They can also involve transfer of resources from the central government to municipalities to finance conservation areas, as in the case of Brazil (OECD 2013 Box 3.1). The choice of subsidy will depend on the particular biodiversity conservation activity that is being promoted and the specific local conditions, but the general guidelines discussed in the main text are expected to apply to any type of government support scheme.

15 See TEEB 2011, Box 6.18

16 This time lag will be particularly important when farmers are involved in reforestation project or wetlands recovery initiatives

17 See, for example, World Bank (2002a), World Bank (2002b), and World Bank (2005)

central role to play either in the direct operation of financial and technical support programs, especially for small-scale farmers, or as sponsors of private sector and NGOs involvement in the execution of support programs. In this context, seed funding for mainstreaming initiatives can be a highly effective means of kick-starting activities.

THE WAY FORWARD

The difficulties of achieving sustainable social, economic, and environmental development based on the rational use of biodiversity should not be underestimated, especially in the context of a market-driven, perpetual growth economy. At present, biodiversity is still viewed by most as a luxury (Martens *et al.* 2003) and to overcome this will require time, effort and innovative approaches towards biodiversity conservation and sustainable use (Cowling 2005).

Although we strongly adhere to the notion that successfully mainstreaming biodiversity considerations into all aspects and levels of society and governance will be the surest way to sustain conservation gains in the long term, reality might force a more modest and pragmatic approach. In any given country, without a well-established tradition of mainstreaming biodiversity, the best way forward might not be to attempt the introduction of mainstreaming into all aspects of society. But instead start with the development of pilot projects involving groups of progressive farmers, who could, in alliance with NGOs, lead the process of mainstreaming biodiversity in the agricultural sector. Successful examples of role models and pilot projects can have a demonstration effect that will trigger an expansion of biodiversity mainstreaming initiative among the wider farming population.

Projects, by definition, will operate primarily at a local level. Nonetheless they need to influence the decision-making at regional, national, and even international levels to promote an enabling environment. A multi-scale approach to mainstreaming is important, with site-specific interventions both being responsive to and informing higher-lever policy and programs. Thus, mainstreaming initiatives should use a combination of "bottom-up" and "top-down" approaches. In the absence of an enabling environment and fully developed strategic framework that lays out a clear vision of the national biodiversity goals and targets, local biodiversity mainstreaming initiatives (such as pilot projects) will become a constellation of potentially very challenging projects, struggling to demonstrate impacts and without any bearings on the situation of biodiversity at the national or global levels (Dublin *et al.* 2004)

As discussed in previous sections, an effective mainstreaming process requires an enabling environment which improves the policy framework and institutional capacity, and the creation of markets for biodiversity goods and services or the implementation of an effective government-financed incentive schemes. In other words, what is required is a coherent set of economic and regulatory tools and incentives that promote and reward integration and added value, while discouraging inappropriate behaviors (TEEB 2011)

Government's main contribution to biodiversity mainstreaming initiatives should be the imple-

mentation of an enabling framework that provides incentives to farmers, including innovative tax and fiscal policies, to adopt biodiversity friendly production systems. Within this enabling framework, government policies should include the operation of technical and financial assistance and support programs aimed at helping farmers to develop green products. Additionally, government should also support the design and implementation of standards and verification systems that explicitly include biodiversity conservation, which are essential for marketing green products. Finally, public business advisory and support programs should be geared to help farmers meet the needs of new markets for green products and services.

Many of the difficulties facing mainstreaming are linked with the ignorance of ordinary people regarding the importance of biodiversity to their livelihoods. The biodiversity community has failed dismally to communicate its messages effectively. This is largely because of the use of inappropriate media, norms, values, and messages in most communications. Communication needs to strike the right emotional chords by telling stories that touch people's values. The biodiversity sector probably needs to take a leaf out of the advertising industry's book and start investing in more effective use of the media to change human behavior (Cowling 2005)

Finally, there is a general difficulty with assessing biodiversity conservation (market-based or otherwise) due to the lack of agreed targets or performance indicators that are applicable at a local or enterprise scale, together with a weak record of evaluation against those targets and indicators. Unless we can overcome this limitation we will never be able to argue convincingly about the benefits of mainstreaming biodiversity (Bishop *et al.* 2008). Critical to the evaluation and adaptive management of mainstreaming initiatives is having clearly defined outcomes and means to measure them. In addition to outcomes defined and measured in terms of market placement and economic gains, mainstreaming projects should define and measure both behavioral changes (among producers, consumers and decision- and policy-makers) and biodiversity impacts.

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ANNEX I

RELEVANT WEB SITES

1. Agricultura orgánica. <http://www.fao.org/organicag/oa-faq/oa-faq3/es/>
2. Alliance for the Grasslands. <http://www.pastizalesdelconosur.org/index.php>
3. Assessing Certification as Governance: Effects and Broader Consequences for Coffee. <http://jed.sagepub.com/content/19/2/215.abstract>
4. Biodiversity Conservation in Southeast Asian Timber Concessions: a Critical Evaluation of Policy Mechanisms and Guidelines <http://www.ecologyandsociety.org/vol13/iss1/art25/>
5. Certificación & temas forestales. <http://www.fao.org/docrep/008/y5918s/y5918s08.htm>
6. Certification seals (Sellos de certificación): <http://www.rainforest-alliance.org/es/marketing/marks/certified>; http://es.wikipedia.org/wiki/Sello_de_comercio_justo; <http://www.greenlivingprojects.com/blog/2011/12/07/del-registro-a-la-certificacion-leed-una-cuestion-de-metodo/>; <http://www.oia.com.ar/prog-organicos-ue.htm>; http://www.innovacionambiental.cl/newsletter/newsletter.php?id_news=13;
7. Criterios de Basilea. http://www.iese.edu/es/files/Art_Soley_Basilea_Jul04_ESP_tcm5-7365.pdf
8. Does forest certification conserve biodiversity? <http://www.cbd.int/doc/articles/2003/A-00137.pdf>
9. El Marketing-Mix Internacional. <http://www.monografias.com/trabajos31/marketing-internacional/marketing-internacional.shtml>
10. ENVIRONMENTAL CERTIFICATION AND THE GLOBAL ENVIRONMENT FACILITY: A STAP ADVISORY DOCUMENT. http://www.thegef.org/gef/sites/thegef.org/files/documents/C.39.Inf_.15%20STAP%20-%20Environmental%20Certification.pdf
11. Forest Stewardship Council. <http://www.fsc.org/>
12. <http://www.nodo50.org/espanica/cjust.html>; http://www.fairtrade.net/about_fairtrade.html?&L=1; http://www.economiasolidaria.org/comercio_justo
13. Incorporación de la Biodiversidad en los paisajes cafeteros en Colombia. http://www.pnud.org.co/img_upload/36353463616361636163616361636163/00062581_incorporacion_bdv_cafeteros_1_.pdf
14. Information on fair trade (Información sobre comercio justo):
15. Innovative financial mechanisms. <http://www.cbd.int/financial/doc/norway-innovative-financial-mechanisms-01-2011-en.pdf>
16. Life Certification (Instituto Life) <http://www.institutolife.org.br/>
17. Main markets. Supporting biodiversity conservation. <http://www.fao.org/es/esa/pesal/ESmarkets7.html>
18. Market Transformation Strategy for Cocoa. [http://www.ifc.org/ifcext/sustainability.nsf/AttachmentsByTitle/ref-Biodiversity_BACP_MTS-Cocoa/\\$FILE/BACP.Market+Transformation+Strategy+for+Cocoa.pdf](http://www.ifc.org/ifcext/sustainability.nsf/AttachmentsByTitle/ref-Biodiversity_BACP_MTS-Cocoa/$FILE/BACP.Market+Transformation+Strategy+for+Cocoa.pdf)
19. Pesquerías y certificación. <http://www.fao.org/fishery/topic/12283/en>
20. Promoting Policies and Markets for Ecoagriculture / Monitoring and Evaluation (M&E) of Biodiversity Impacts of Certification Systems: Biodiversity and Agricultural Commodities" http://www.ecoagriculture.org/programs_sub.php?id=100
21. Rain Forest Alliance / SmartWood Program. <http://www.rainforest-alliance.org/>
22. Responsible Biofuel Certification. http://www.scscertified.com/lcs/biofuel_certification.php
23. Results Based Management in the Biodiversity Focal Area at the GEF. <http://www.environmentalevaluators.net/wp-content/uploads/2011/02/Driving-Adoption-of-RBM-in-the-Biodiversity-Conservation-Community.pdf>
24. Round Table for Responsible Palm Oil www.responsiblepalmoil.com
25. Round Table for Responsible Soybean (RTRS). <http://www.responsiblesoy.org/>
26. Smallholder Biodiversity Food Certification Project (SBFCP) http://www.adkn.org/assets/adkn_63.pdf
27. Tourism and certification <http://www.turismo-sostenible.co.cr/index.php?lang=es>; <http://www.tourismcertification.org/>; <http://www.certificationnetwork.org/> ; <http://www.cbd.int/doc/publications/development/brochure-tourism-en.pdf>
28. Visión general del sector acuícola nacional México. http://www.fao.org/fishery/countrysector/naso_mexico/es

ANNEX II

RETAIL/CONSUMER MARKET REVIEW ELEMENTS

The success of mainstreaming initiatives is underpinned by the clear identification and prioritization of market entry points. This is best achieved through a market review and key issues analysis. Such a review should clearly identify the opportunities that exist in the market, primarily oriented to consumer segment and consumer need opportunities that aren't being met by current competitors in the market. It could also involve new marketing approaches, such as taking a branded, educational consumer marketing approach to a commodity-orientated category. The following list the key elements to be considered in a market review.

1. Market Size and Trends
 - a. Total Market Size and Growth (Current, Past, and Projected)
 - b. Market Size & Growth by Specific Segments
 - i. Types of Retail Outlets (supermarkets, regular food stores, meat markets, etc.)
 - ii. Price/Quality Segments
 - iii. Types of Products and Consumer Uses
 - iv. Fresh vs. Frozen
 - v. Types of Packaging and/or Package Sizes
 - vi. Distribution Methods to Retail Outlets (Producers/Cooperatives direct to Retailers, Wholesalers/Distributors, Others)
 - vii. Others that may be appropriate
 - c. Seasonality
 - d. Regional Factors Influencing Market (For example, a consumer preference for certain product types may vary by area of the country.)
2. Competitive Framework and Business Approaches: Producers/Cooperatives, Wholesalers/Distributors, and Others (as appropriate)
 - a. Producers/Companies in Business
 - i. Market Shares, Volumes, and Growth Trends
 - ii. Strengths and Weaknesses
 - iii. Overall Important Producer/Company Facts that may be Relevant to Market Entry
 - iv. Overall Producer/Company Profitability (if available) in Category
 - b. Overall Business Strategies/Marketing Approaches of Competition
 - c. Products (Specific Products and Quality Levels)
 - d. Positioning/Advertising
 - e. Packaging/Sizing
 - f. Pricing
 - i. Producer/Cooperative, Distributor/Wholesaler and Retail Pricing
 - ii. Trade Margins
 - iii. Terms, Freight Policies, etc.
 - g. Advertising Spending
 - h. Total and Percent of Sales
 - i. Media Used and Spending
 - j. Promotion Spending
 - i. Total and Percent of Sales
 - ii. Trade versus Consumer Spending Split
 - iii. "Percent of Product" Promoted to the Trade Using Promotional Allowances
 - iv. Types of Programs Used
 - k. Public Relations
 - l. Other Programs

3. Retail Trade Situation
 - a. Number of Brands Carried
 - b. Shelf Space Allocation
 - c. Factors Affecting the New Product Item Purchase Decision
 - d. Importance of Trade Featuring/Merchandising
 - e. Importance and Nature of In-Store Display
 - f. In-Store Servicing Requirements
 - g. Buyer & Store Location Issues
 - h. Trade Problems

4. Wholesaler/Distributor Trade Situation

A similar analysis would be conducted here as in the “Retail Trade Situation” on elements relevant to wholesalers/distributors.

5. Consumer Situation
 - a. Consumer Market Segmentation Analysis to Identify Opportunities
 - b. Trends Affecting Consumer Usage, Purchase, etc. (For example, demographic changes, population movement, etc.)
 - c. Consumer Needs, Wants, Product Usage, Category/Brand Attitudes, Product Satisfaction Levels, etc.
 - d. Other Factors Affecting Consumer Usage Patterns (For example, technological developments, etc.)

6. Key Functional Areas
 - a. Production/Processing
 - b. Research and Development
 - c. Marketing
 - d. Sales
 - e. Finance
 - f. Logistics (Warehousing/Order Processing/Distribution)
 - g. Others

7. Technology and Raw Materials Issues

8. Legal/Government Environment