Institute for European Environmental Policy


# Potential of sectoral resource mobilisation to implement the Aichi targets in developing countries: A scoping study

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## EXECUTIVE SUMMARY

Information identified and analysed in the context of this scoping study indicates that sectoral resource mobilisation provides a viable approach for complementing the financing of global 2020 biodiversity targets, including mobilising funding from developed to developing countries. In addition, with overall investment in most of the biodiversity-relevant sectors increasing, it is also essential to ensure biodiversity proofing of sectoral flows to prevent negative impacts on biodiversity.

The projected global needs of US$150 - 440 billion per year[1] to implement the 2020 Aichi Targets for biodiversity are currently only partially met. Globally, an estimated US$51.5-53.4 billion is allocated annually to fund biodiversity and ecosystem services (Parker et al. 2012). A significant amount of the global needs (US$74 - 191 billion in 2014-2018) is foreseen to take place in developing countries[2]. Most of the current financing for biodiversity, however, is delivered in the developed countries while economically developing regions with the highest predicted loss of biodiversity, such Africa, Asia, Latin America and the Caribbean, continue to suffer from the lack of resources. This suggests that, from the perspective of resource mobilisation for biodiversity, there is slight a mismatch between the current direction of flows and global threats to – and therefore also needs for – biodiversity conservation (Figure E1.1). Consequently, there is an urgent need to find additional and sufficient resources to enable developing countries to implement the 2020 Aichi Targets for biodiversity and, at the same time, fulfilling the commitments by developed countries to provide additional finance to match the costs of implementing the global targets.

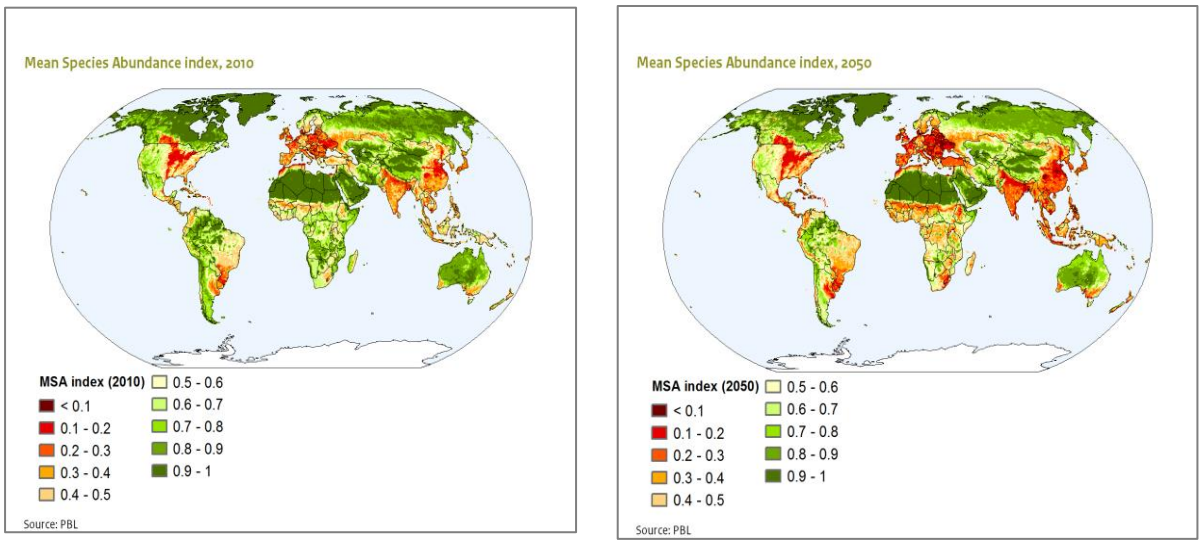



**Figure E1.3** Current and projected global loss of biodiversity, based on the Mean Species Abundance Index (Source: PBL)

[1] UNEP/CBD/COP/11/INF/20

[2] Estimated total investment needs for the Global Environment Facility (GEF) in 2014-2018 to achieve the Aichi Biodiversity Targets (UNEP/CBD/COP/11/INF/35)

Two different types of funding for biodiversity can be distinguished: 1) dedicated support to biodiversity under a dedicated budgetary heading and 2) financing mobilised to support conservation and sustainable use of biodiversity within different biodiversity-relevant sectors (i.e. sectoral resource mobilisation, see Box E1.1). With additional financial resources dedicated to conservation being hard to come by in times of tight budgets, sectoral resource mobilisation for biodiversity is considered to provide a possible alternative. However, there are still several questions regarding the possible scope of and arrangements for such an approach.

**Box E1.1 Sectoral resource mobilisation**

Sectoral resource mobilisation refers to financing the conservation and sustainable use of biodiversity from different biodiversity-relevant sectoral funding flows (agriculture, forestry, fisheries, climate change, tourism etc.). Such funding can be domestic or international and originate from public or private sources.

Sectoral resource mobilisation can be achieved using a variety of instruments and approaches, such as innovative financial mechanisms (IFM) including payments for ecosystem services (PES), biodiversity offsetting, green taxation, markets for green products, certification of products and production sites, and integrated funding for biodiversity and climate change adaptation. Such approaches and mechanisms are foreseen to increase contributions from public as well as private funding sources (mostly businesses and privately financed development initiatives and projects) to supplement the existing public funding specifically earmarked for biodiversity.

The uptake of instruments above can be based on the increasing understanding of the benefits and socio-economic value of biodiversity. This information can be used as a leverage point for accessing different domestic and international sectoral budgets. Quite a number of sectors have – in different ways and to different extents – a relationship with biodiversity, providing a rationale for mainstreaming biodiversity into their processes and thereby mobilising their resources biodiversity conservation and sustainable use

In general, the spending on biodiversity (conservation and sustainable use) is several orders of magnitude smaller than the current and future spending in a number of other sectors (Figure E1.2). Furthermore, the size of flows to sectors traditionally considered as the most biodiversity-relevant (e.g. agriculture and forestry) seem significantly smaller than the size of flows to a number of other sectors, such as energy, water and sanitation, and climate change. Consequently, in addition to the sectors traditionally targeted in the context of biodiversity integration increasing attention should also be given to a range of 'new' sectors. For example, there are significant synergies between biodiversity, ecosystem services and tourism and these synergies could be used as a basis for channelling funding to conservation objectives. Sectoral developments – supported by sectoral investments – are also often primary drivers for biodiversity loss. Therefore, significant financial flows towards sectors such as energy and climate change mitigation also mean that, in addition to increasing resources allocated for biodiversity within these sectors, there is also a need to put further emphasis on preventing, mitigating and/or compensating for possible negative impacts associated with sectoral investment (biodiversity proofing).

For most of the sectors, a significant part of the resources appears to come from domestic sources (e.g. agriculture 95% and climate change mitigation 60%). For several sectors, a considerable amount of the domestic funding - in developed and developing countries alike - appears to be originating from private sources. Even sectors that have traditionally been

depending on public sources (e.g. water and sanitation) seem to be shifting towards private funding base. Foreign financing seems several orders of magnitude smaller than domestic financing in all sectors. However, both continued needs for foreign public financing and increased interest in FDI have been identified across all sectors, particularly in developing countries. Public sources (ODA) seem to remain the most important component of foreign funding flows, especially in the context of developing countries. FDI appears to be a growing source of funding, although data limitations make it difficult to draw very concrete conclusions across sectors.

There is scope for mobilising additional funding for biodiversity under different sectoral EU Official Development Assistance (ODA) flows, both in terms of increasing financial allocations within sectors and also extending the number of sectors providing funding. The majority of biodiversity related EU ODA is provided under the budget category 'general environmental protection' suggesting that further efforts are required to mainstream biodiversity into other areas of ODA (E1.3). Importantly, the allocations for biodiversity within different biodiversity-relevant sectors remain low compared to the overall sectoral ODA. The water and sanitation sector and the agricultural sector play a role in financing biodiversity, with an increase in allocations under the latter during the past years. There is also a recent increase in financing biodiversity in the context of the energy sector. Rather surprisingly, however, the allocations for biodiversity in the context of fisheries and forestry seem rather limited. Similarly, the role of health and tourism sectors in delivering funding for biodiversity is currently close to negligible.

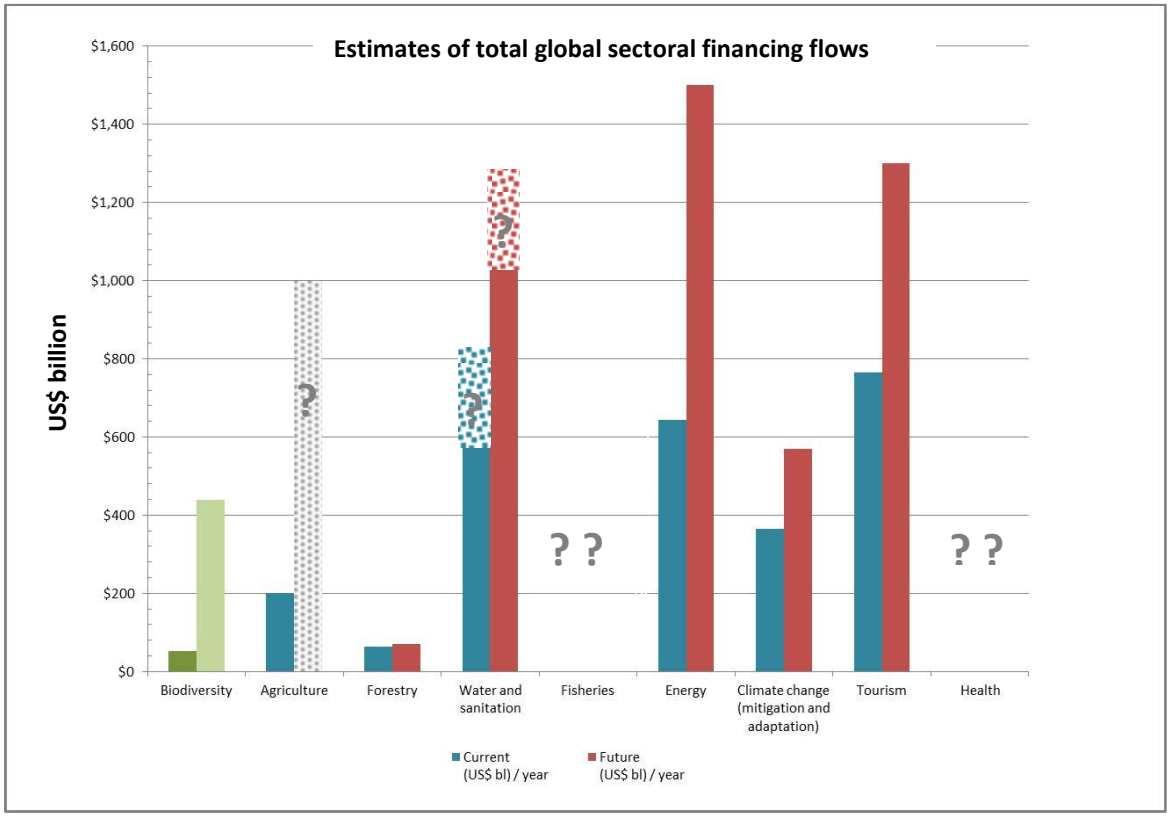



**Figure E1.2** Visualisation of the existing estimates of total (including domestic and foreign, public and private) global sectoral financing flows, reflecting the orders of magnitude. Note: information originates from a range of different sources and therefore the different flows / sectors are not directly comparable. Depending on the

source of information, current flow refers to a year between 2005 - 2013 and future flow to a year between 2025 – 2035 (Table 4.1). For biodiversity, the available estimate for future funding needs only covers developing countries. For water and sanitation, the available estimate covers OECD and BRIC countries only.

*Source:* own presentation based on information presented in Table 4.1. Biodiversity: 'current' based on Parker et al. (2012) in Chapter 3 and 'future' based on the high bound estimate of the High Level Panel US$440 billion / year for implementing the global Aichi Targets (UNEP/CBD/COP/11/INF/20); Agriculture: FAO (2012a); Forestry: UN (2006) with 'future' based on the high bound estimate of US$70 billion for forestry and sustainable forest management; Water and sanitation: OECD (2011) including OECD and BRIC countries only; Energy: 'current' based on subsidies to fossil fuels (IEA 2011) combined with investment in renewable energy (Frankfurt School-UNEP Centre/BNEF 2013) and 'future' based on the calculation of annuity for US$38 trillion investment needs between 2011-2035 (24 years) (IEA 2011); Climate change: based on World Economic Forum (2013); Tourism: WTTC (2013)

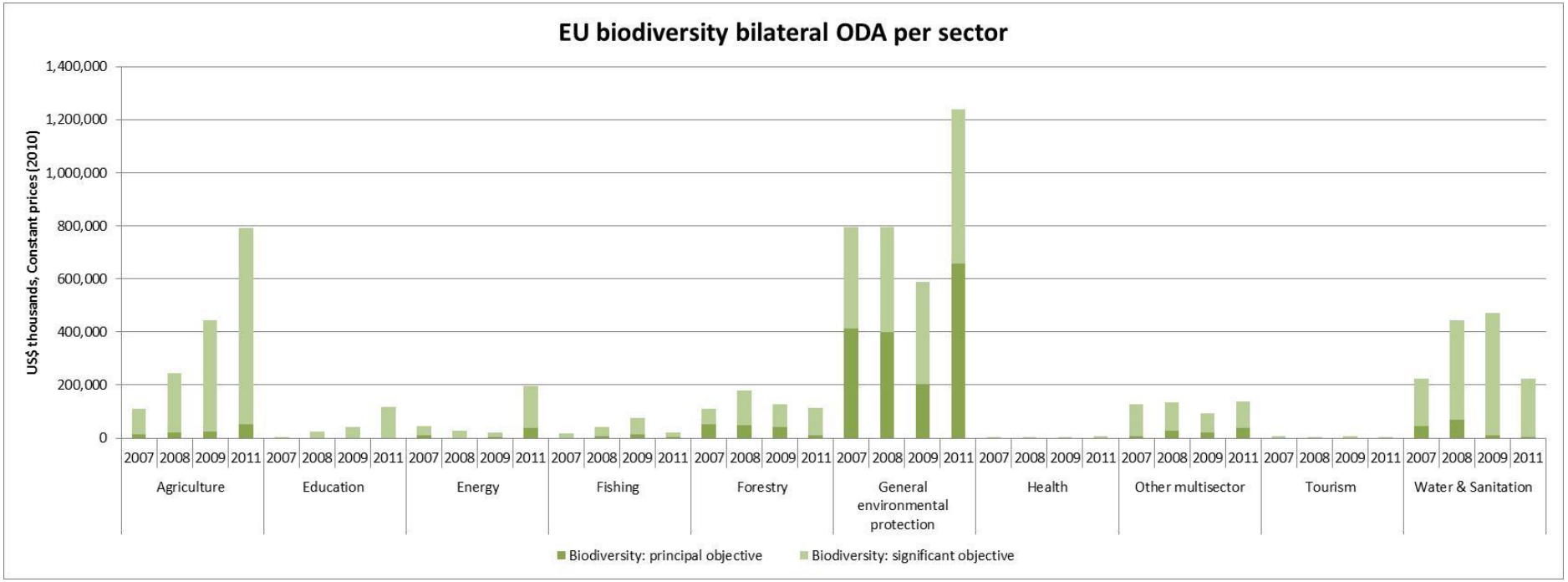



**Figure E1.3** EU biodiversity bilateral ODA per relevant sectors in 2007-2011 (US$ thousands, constant prices 2010). Note: does not cover all sectors receiving ODA funding but only those that provide the most funding for biodiversity. *Source*: own analysis based on data from OECD-DAC (2010a): EU Biodiversity aid for 2007-2009; OECD.stat Extracts (2013a): EU Biodiversity aid for 2011; OECD.stat Extracts (2013b): EU Total aid 2007-2011

A few interesting observations can be made based on sector specific insights and projected trends in biodiversity loss (Figure E1.1). As regards the global distribution of funding within different sectors, both agriculture and forest seems to be the targeted sectors for foreign flows in sub-Saharan Africa whereas foreign funding - and foreign direct investment in particular - in Central and South America and Asia appears more focused on forestry only. On the other hand, future investments in water and sanitation are likely to focus on the Western Pacific and Africa whereas investments in energy (e.g. renewable energy) are taking prominence in China. China, together with India, will also be among the key regions for future investment in travel and tourism. (See Chapter 4 for references). This information suggests that in some regions / countries targeting specific sectors, such as water and sanitation and tourism, could be used as regionally dedicated means to leverage funds to halt the projected biodiversity loss.

Sectoral resource mobilisation can be supported using the increasing understanding of the benefits and socio-economic value of biodiversity as a leverage point for accessing different domestic and international sectoral budgets. Investment in conserving, maintaining and/or restoring nature provides benefits to a range of economic sectors. Consequently, sectoral resource mobilisation can both support global biodiversity targets and lead to sector-specific public benefits (e.g. health sector) and benefits to businesses, enterprises and individuals.

For example, agriculture, forestry and fisheries all rely on ecosystems' ability to maintain and preserve sustainable stock levels, fertile soils, pollination and fresh water. Similarly, the water and sanitation sector benefits from the natural water and waste management functions of ecosystems that help to deliver sectoral policy objectives at comparatively low costs. Building on the knowledge on the socio-economic benefits of nature, sectoral resource mobilisation can be further aided with the help of new approaches and innovative financial mechanisms (IFM), including payments for ecosystem services (PES), biodiversity offsetting, green taxation, markets for green products, certification of products and production sites, and integrated funding for biodiversity and climate change adaptation. Such approaches and mechanisms are also foreseen to increase contributions from private funding sources (mostly businesses and privately financed development initiatives and projects) to supplement the existing public funding. Furthermore, the new mechanisms are aimed at internalising the costs of biodiversity loss into prices, giving right signals to different sectors and consumers and this way helping to avert further losses.

Based on the insights gathered in the context of this study, a number of conclusions and recommendations have been drawn regarding the future steps for sectoral resource mobilisation. These include:

- Sectoral resource mobilisation provides a viable approach for complementing the financing of global 2020 biodiversity targets, including mobilising funding from developed to developing countries. It ties in with sectors that interact closely with biodiversity and ecosystems, this way supporting the overall mainstreaming agenda. Furthermore, it creates opportunities for obtaining funding from private sources.

- The increasing evidence on the socio-economic role and value of nature should be used as a leverage point for accessing different domestic and international sectoral funding sources. Furthermore, the understanding of linkages between nature and different economic sectors provides the basis for the uptake of concrete instruments facilitating sectoral resource mobilisation in practice.

- Given the projected increase of financial flows within a number of biodiversity-related sectors (agriculture, water and sanitation, tourism etc.) there is a clear need to prevent negative impacts of these sectoral investments on biodiversity. Such biodiversity proofing is of fundamental importance to ensure that the investments in achieving biodiversity targets are not jeopardised by perverse measures within sectors and that sectoral resource mobilisation, therefore, leads to final net benefits for biodiversity. Sectoral resource mobilization can also contribute to biodiversity-proofing future investments in these sectors.

- There are significant gaps in information regarding the current flows of funding for biodiversity within different sectors. More detailed information on the sources, sizes and global distributions of funding is needed to help develop approaches and strategies for future resource mobilisation.

- Foreign investment – both public and private alike – can help to pioneer novel and innovative approaches and instruments within different sectors, proving their cost-effectiveness and facilitating further uptake supported by domestic investment. For example, even as ODA comprises a relatively minor share of the overall sectoral investment it can be of high strategic significance for several countries, helping to leverage future funding from domestic and/or private sources to support the 'greening' of the sector. Consequently, effective strategies for sectoral resource mobilisation require systematic consideration of the roles of and interlinkages between different funding sources in the long-term.

- There is a need for more in-depth assessment of the most suitable use of different approaches and instruments for sectoral resource mobilization within the different sectors. Furthermore, it might also merit assessing in more detail the roles different sectors can play in the overall implementation of biodiversity goals. For example, motivated by the prospects of cost-effective water management, the water and sanitation sector seems better suited for mobilising resources for conservation and restoration of ecosystems whereas investment in the context of tourism sector is likely to be driven by concrete business opportunities. Furthermore, the mitigation of and adaptation to climate change can provide a range of suitable avenues for resource mobilisation whereas biodiversity proofing might be the most important consideration for the energy sector. This is because the former can be linked to the protection and restoration of nature in a more concrete and pro-active manner while the latter mainly deals with mitigating negative impacts.

- Building on the information on overall sectoral flows, the role of EU ODA in the context of future resource mobilisation should be strategically assessed in order to determine where it can deliver the most value added for global biodiversity conservation.

Furthermore, it is critical to ensure that the observed overlap between biodiversity, climate and desertification objectives within ODA will yield real successful synergies in practice.

- Instruments, such as development of certified markets, biodiversity offsets, PES schemes, pro-biodiversity businesses and biodiversity investment funds can be used to leverage sectoral funding from public to private sources in the context of both international and domestic flows. However, in order to be fully effective further development is needed to ensure that these tools deliver concrete benefits for biodiversity. For example, while the existing sectoral certification schemes support sustainable exploitation of natural resources their concrete contribution to biodiversity conservation and/or restoration measures remains limited. Furthermore, existing policy approaches and instruments for biodiversity conservation and environmental protection can function as instruments for sectoral resource mobilisation. For example, protected areas (PAs), while conserving biodiversity, also create several business opportunities and/or offer cost-effective management solutions for several sectors.

# 1 INTRODUCTION

## 1.1 Resource mobilisation: the why and the how

The global biodiversity targets, adopted as a part of the Strategic Plan for Biodiversity 2011-2020 in the 10th Conference of Parties (COP10) to the UN Convention on Biological Diversity (CBD) in Nagoya in 2010, state that '*By 2020, at the latest, the mobilisation of financial resources for effectively implementing the Strategic Plan for Biodiversity 2011-2020 from all sources, and in accordance with the consolidated and agreed process in the Strategy for Resource Mobilisation, should increase substantially from the current levels*' (Strategic goal E, Target 20).

The need for increased funding originates from the wish to achieve the internationally agreed ambitious biodiversity targets by 2020 (so called 'Aichi Targets'), which especially require an up-scaling of the implementation of CBD in many developing countries. Financial resources required to meet the needs of developing countries for implementing the Aichi Targets have been estimated as US$74 - 191 billion for 2014 – 2018 (155 GEF eligible countries)[3]. The resources currently mobilised to protected biodiversity across the world are only a fraction of the estimated needs (ten Brink 2011). According to the recent information by Parker et al (2012), the global scale of funding for biodiversity and ecosystem services in 2010 was US$51.5-53.4 billion. Most of this finance is delivered in the US, China and Europe with the economically developing but highly biodiverse regions, Africa, Asia and Latin America and the Caribbean, each receiving around 6-7% of the world total (Figure 1.1). In the light of this, the adoption of the Aichi Targets in 2010 was accompanied with the commitment of developed countries to provide new and additional finance for implementing the targets in the developing countries.

While there is a consensus and commitment on the need for funding, different perspectives on how the necessary funds are to be mobilised persist. Developing country governments prefer the 'traditional' route of (public) funding, including the instalment of a specific biodiversity fund to attain the Aichi Targets and/or considerably higher international funding via the Global Environment Facility (GEF). It is foreseen, however, that due to the global economic crises the EU and other developed country governments are unlikely to pledge significant additional resources for global biodiversity conservation. On the contrary, developments since 2008 show declines in international (public) financial flows to biodiversity, for instance in terms of official development assistance (ODA) and World Bank assistance (CBD 2010). Furthermore, biodiversity financing from public sources (e.g. in the context of ODA) is increasingly competing with priorities to support climate change mitigation. This might lead to addressing one environmental concern at the cost of another if project selection does not appropriately take into account potential synergies and trade-offs. Given the on-going discussions, there is a need for the EU and other developed country

[3] UNEP/CBD/COP/11/INF/35, See also The High Level Panel on Global Assessment of Resources for Implementing The Strategic Plan For Biodiversity 2011-2020 which provides global cost ranges for each of the targets. It does not provide a global total range for the 20 targets combined as there are overlaps, but it is clear from the ranges that some experts foresee that the gross costs (i.e. not including benefits of action) may be higher still. See http://www.cbd.int/doc/meetings/fin/hlpgar-sp-01/official/hlpgar-sp-01-01-report-en.pdf

governments to find ways dealing with the foreseen lack of direct (public) resources for biodiversity and explore other forms of financing to achieve the Aichi Targets (EC 2011a, EC 2011b).

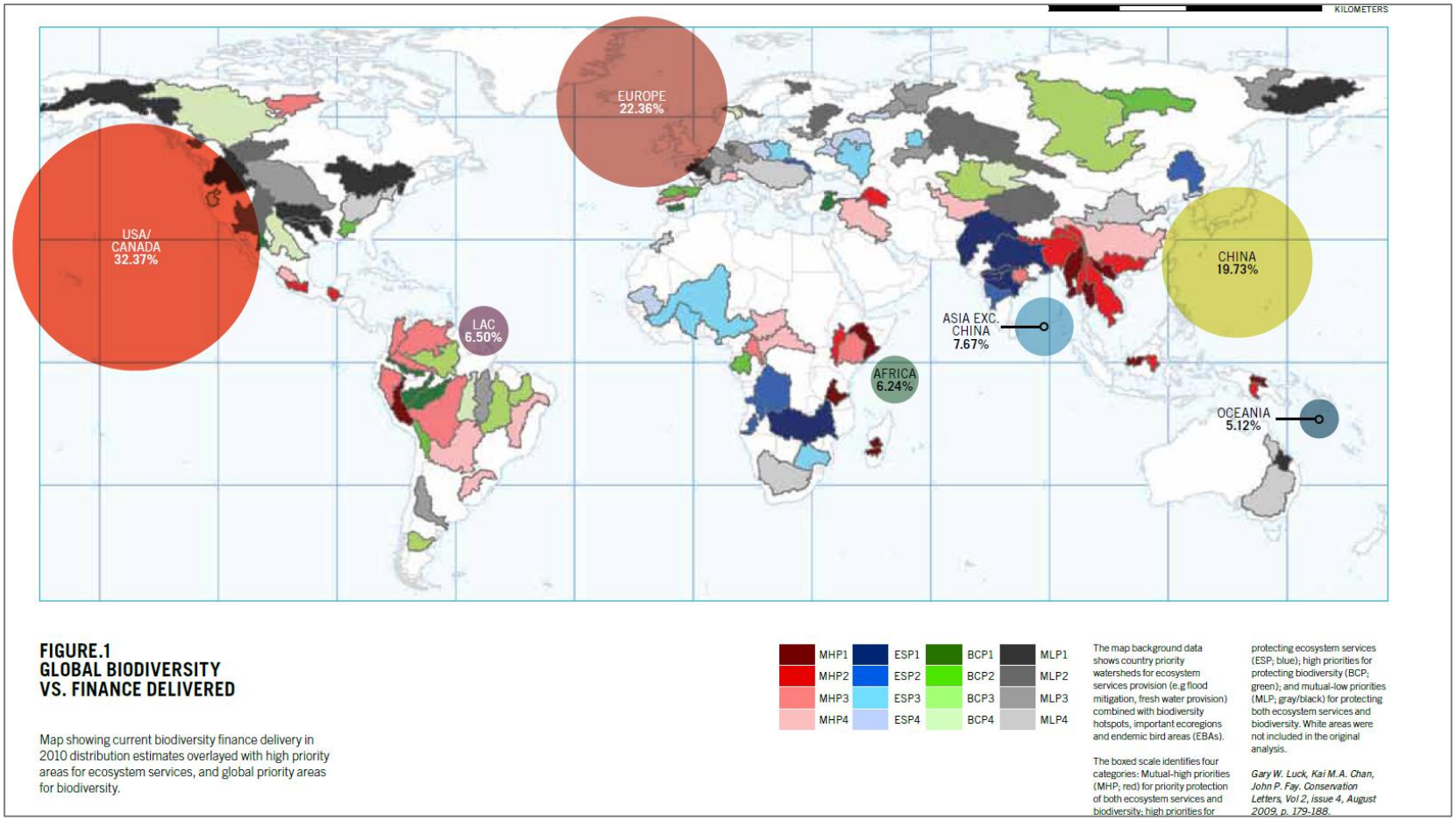



**Figure 1.1** Distribution of global biodiversity and ecosystem services vs. distribution of financing for biodiversity. The map background data shows country priority watersheds for ecosystem services provision (e.g. flood mitigation, fresh water provision) combined with biodiversity hotspots, important eco-regions and endemic bird areas (EBAs). The boxed scale identifies four categories: Mutual-high priorities (MHP; red) for priority protection of both ecosystem services and biodiversity; high priorities for protecting ecosystem services (ESP; blue); high priorities for protecting biodiversity (BCP; green); and mutual-low priorities (MLP; grey/black) for protecting both ecosystem services and biodiversity. White areas were not included in the original analysis. *Source:* Luck et al. (2009) in Parker et al (2012)

## 1.2 Mainstreaming biodiversity into sectoral funding

### *1.2.1 Sectoral resource mobilisation*

In general, two different types of funding for biodiversity can be distinguished: 1) dedicated support to biodiversity under a dedicated budgetary heading and 2) financing mobilised to support conservation and sustainable use of biodiversity within different biodiversity-relevant sectors (i.e. sectoral resource mobilisation). This funding can be domestic or international and originate from public or private sources.

Given the limited political appetite for increasing dedicated funding for biodiversity, sectoral resource mobilisation – supported by a greater integration of biodiversity into developed and developing countries' sectoral policies – could be a complementary means to support the achievement of Aichi Targets.

Sectoral resource mobilisation can be achieved by using the increasing understanding of the benefits and socio-economic value of biodiversity (see section 1.3) as a leverage point for accessing different domestic and international sectoral budgets. Quite a number of sectors have – in different ways and to different extents – a relationship with biodiversity, providing a rationale for mainstreaming biodiversity into their processes and thereby mobilising their resources biodiversity conservation and sustainable use. Sectoral resource mobilisation can be achieved using a variety of instruments and approaches, such as innovative financial mechanisms (IFM) including payments for ecosystem services (PES), biodiversity offsetting, green taxation, markets for green products, certification of products and production sites, and integrated funding for biodiversity and climate change adaptation (UNEP 2010). Such approaches and mechanisms are foreseen to increase contributions from public as well as private funding sources (mostly businesses and privately financed development initiatives and projects) to supplement the existing public funding specifically earmarked for biodiversity. Furthermore, the new mechanisms could internalise the costs of biodiversity loss into prices, giving price signals to different sectors and consumers.

Mainstreaming biodiversity benefits and concerns into different policy sectors is crucial for sectoral resource mobilisation. However, only a few countries so far have elaborated integration strategies that would bring biodiversity objectives and sectoral development together (CBD 2010). As for the EU, integration of biodiversity into sectoral policies is in the core of the Union's biodiversity policy (e.g. Targets 3, 4 and 5 of the EU 2020 Biodiversity Strategy) (EC 2011a). Several concrete measures have been taken during the past decades to ensure that biodiversity concerns are taken up in the context of policies governing agriculture, fisheries and cohesion etc. within the Union. As for the global dimension, the 2020 EU Biodiversity Strategy (EC 2011a) recognises that EU consumption and production patterns, including commodities such as soybeans, fish, cotton and palm oil are responsible for contributing to the global biodiversity loss. However, the strategy does not systematically outline sector-specific policy actions that are required to be taken to improve global biodiversity conservation, outlining only general considerations regarding biodiversity

proofing, use of positive incentives, and the reform of environmentally harmful subsidies (EHS).

### *1.2.2 Biodiversity proofing sectoral funding to ensure net benefits*

Further to the above, sectoral developments – supported by sectoral investments – in areas such as forestry, agriculture, energy, fisheries and water are often primary drivers for biodiversity loss, undermining the achievement of biodiversity goals at all levels of decision-making and governance. Therefore, in order to be effective sectoral resource mobilisation needs to be supported by the broader integration (or mainstreaming) of biodiversity into sectoral policies, legislation and funding (CBD 2010). Consequently, in addition to stimulating concrete investment biodiversity within sectors there is also a need to simultaneously prevent, mitigate and/or compensate for negative impacts on biodiversity of investment within different sectors (biodiversity proofing). In other words, the sectoral resource mobilisation leverages further financial support to biodiversity within a sector while biodiversity proofing aims to ensure that the conservations goals – including investment in achieving these goals - are not jeopardised by perverse measures within the sector. Furthermore, biodiversity proofing also aims to ensure that additional pressures from sectoral developments on biodiversity are minimised. Together the two interlinked elements, i.e. sectoral resource mobilisation and biodiversity proofing of all sectoral funding, help to ensure that sectoral resource mobilisation leads to final net benefits for biodiversity under different sectors (Figure 1.2 below).

In practice, sectoral resource mobilisation can take place through a range of mechanisms including, for example, investment in natural 'green' infrastructure (e.g. supporting the management of protected areas with benefits to water management, tourism, climate change adaptation etc.), opting for / accepting lower levels of sectoral income (e.g. setting aside a part of a forestry concession to protect it from logging) and business sector sponsorships (e.g. financial support to conservation actions linked to corporate image and/or reputation) (see Chapters 6 and 7). Biodiversity proofing, on the other hand, is commonly carried out by using impact assessments or other screening tools aimed at identifying the foreseen impacts of strategies, projects and/or investment on the environment. For example, in the context of EU the procedures for Strategic Environmental Assessment (SEA) and Environmental Impact Assessment (EIA) can be used to proof Union's support to sectoral strategies and projects (IEEP et al. 2012).

Given its importance, the need for biodiversity proofing is addressed by a separate Aichi Target calling for phasing out or reforming all incentives, including subsidies harmful to biodiversity, in order to minimize or avoid negative impacts (Strategic Goal A, Target 3). This goal is further supported by dedicated, sector-specific targets aimed at making agriculture, fisheries and forestry more sustainable (Targets 5-7).

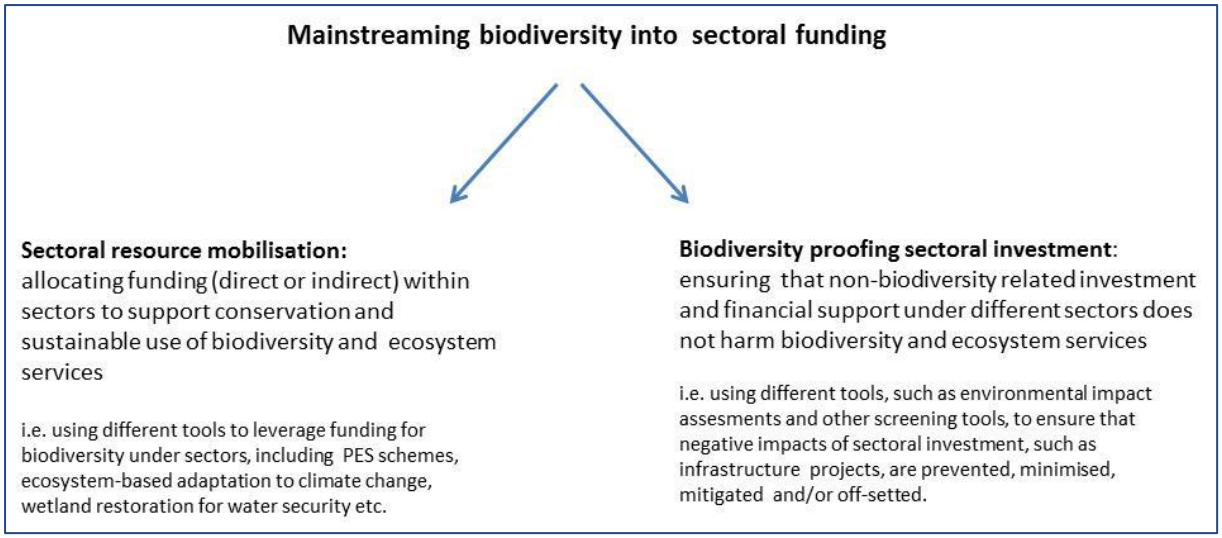



**Figure 1.2** Schematic of mainstreaming biodiversity into sectoral funding

## 1.3 Benefits of funding biodiversity to sectors

The importance of a healthy environment to sustainable economies and the socio-economic benefits of maintaining well-functioning ecosystems are increasingly recognised (e.g. ten Brink 2011, Bishop 2012). Nature underpins our socio-economic systems, creating a range of jobs and business opportunities within different sectors and providing cost-effective solutions such as nature-based management of water resources and mitigation of environmental risks. Consequently, sectoral resource mobilisation and biodiversity proofing can lead to a range of benefits beyond conservation, including public benefits (e.g. health) and benefits to businesses, enterprises and individuals.

Investment in conserving, maintaining and/or restoring nature provides immediate benefits to a range of economic sectors. In terms of agriculture, forestry and fisheries (and also several other sectors), biodiversity and ecosystem processes support the maintenance of productive land and marine ecosystems, helping to preserve sustainable stocks, fertile soils, pollination of crops, clean air and fresh water. Biodiversity is also the foundation for long-term survival of species, helping to maintain a healthy genetic basis of crops and husbandry animals. Well-functioning ecosystems also play an important role in controlling environmental risk factors to these sectors such as climate change, floods and droughts. Similarly measures to restore land, and manage land in environmental friendly fashions can also help with soil stability, fertility, avoiding erosion and hence preserve the natural capital upon which agricultural and forestry production relies. All these aspects are important contributors to food security at both local and regional level.

As for water security and sanitation, natural ecosystems can perform a range of beneficial water and waste management functions at comparatively low cost while at the same time maintaining their biodiversity values. For example, sites such as wetlands and sandy ridges can be important contributors to water security, retaining water quality through capturing excess nutrients and/or maintaining water quantity through groundwater renewal. In a number of cases, maintaining or restoring ecosystems' natural functions and/or structure

can be used to complement and reduce the cost of operating conventional 'grey' infrastructure or even completely replace it.

Nature-based solutions are also an integral part of climate change mitigation and adaptation, contributing to the overall sustainability of the climate and energy sector. Sustainable management, conservation and restoration of ecosystems such as tropical forests and peat bogs provide significant benefits in terms of carbon storage and sequestration. Furthermore, the ability of well-functioning ecosystems to protect against natural hazards also make them an integral part of nature-based strategies to adapt to climate change. For example, forested mountain areas and fire resistant vegetation can help to protect against natural hazards such as wild fires, mud floods, avalanches and extensive erosion while the structure and vegetative cover of floodplains can help to mitigate flooding.

Areas of natural beauty (e.g. several protected areas) are one of the key drivers for tourism, influencing significantly sector's viability. Green space can also improve life expectancy, contribute to wellbeing and decrease health complaints, therefore investing in the conservation and/or restoration of (semi) natural areas can represent a cost-effective means of improving public health. Furthermore, nature also benefits the health sector by providing biomedical resources and basis for pharmaceutical innovations, such as access to inexpensive natural medicines or the development of new more effective drugs.

Finally, there is also growing evidence that the maintenance of biodiversity and a range of ecological functions confer greater overall resilience within ecosystems. Protecting biodiversity, for example through investment in managing protected areas, functions as an insurance for the long-term sustainability of all sectors, in the face of environmental change and increasing number of extreme events.

# 2 OBJECTIVES, SCOPE AND STRUCTURE OF THE STUDY

## 2.1 Objectives of the study and structure of the report

The objective of this study is threefold: firstly, to carry out a scoping assessment of the current and future extent of financial flows to and investments in global sectors relevant to biodiversity. Secondly, to assess the status of current sectoral funding streams for biodiversity and to estimate the potential role of sectoral resource mobilisation for biodiversity. Finally, to identify and highlight instruments that can facilitate sectoral resource mobilisation for biodiversity conservation and sustainable use.

Chapter 3 aims to estimate the magnitude of current funding flows for biodiversity. Furthermore, by using the information on overall financial flows to different sectors (Chapter 4) the study aims to explore the future potential - or indeed need - for further mainstreaming biodiversity into these sectors (Chapter 5) and identify key approaches and tools for doing so (Chapters 6 and 7).

The conclusions of this study highlight possible ways in which the international flows, in particular flows originating from EU and its Member States, could be influenced so that they could further contribute to attaining the global biodiversity objectives in developing countries, which is an integral part of EU Member States' resource mobilisation commitments under the CBD. The study focuses primarily on the international public and private flows. Some consideration will also be given to the domestic public and private sectoral flows.

Summarising, the specific objectives for the study include:

- **Assessment of current status:** identification and quantitative assessment of current funding flows for biodiversity (Chapter 3) and identification and quantitative overview of current overall sectoral financial flows (types of flows and their extent and magnitude) most relevant and/or interesting for mobilising resources for biodiversity (Chapter 4).

- **Assessment of future potential**: based on the information above, preliminary conclusions on the current level of and future potential / needs for the mobilisation of further resources for biodiversity within sectors (Chapter 5).

- **Assessment of mechanisms:** identification of policy instruments, tools and approaches that can support sectoral resource mobilisation, including outlining key conditions conducive to broader sectoral integration (Chapters 6-7).

- **Discussion and conclusions**: drawing conclusions related to the opportunities to employ sectoral resource mobilisation to support Aichi target implementation on a global scale, especially from the EU perspective (Chapter 8).

## 2.2 Approach, methodology and data

### *2.2.1 Classification of sectors and funding flows*

Two different types of funding for biodiversity can be distinguished: 1) dedicated support to biodiversity under a distinguished budgetary heading or 2) financing mobilised to support biodiversity conservation and sustainable use within different biodiversity-relevant sectors. The latter type of funding (i.e. sectoral resource mobilisation) can be further divided into direct and indirect funding for biodiversity, depending on the nature of support provided to conservation goals. In other words, direct funding is typically associated with biodiversity conservation actions whereas indirect funding links to supporting sustainable use of biodiversity and/or biodiversity-friendly use of natural resources.

Relevant sectors considered in the context of this study have been selected based on the existing information on sector's relevance for biodiversity, including the current and foreseen extent of sectoral funding and/or broader integration. The key sectors assessed

include environmental protection (e.g. climate change), agriculture, fisheries, forestry, energy and climate, water and sanitation, tourism and health[4].

In terms of sources for funding, domestic funding is the main distinct source for biodiversity funding in both developed and developing countries. Domestic funding can be divided into public and private sources with the former consisting of financial support from national governments' budgets and the latter originating from both profit and not-for-profit sources. For developing countries (i.e. the specific focus of this report) domestic funding is often supported by international financing flows from developed countries. The international flows are generally considered to take place through three channels: ODA (public), not-for-profit organisations (private) and/or for-profit foreign direct investments (FDI) by companies (private).

### *2.2.2 Data sources and analyses*

This scoping study is based on the review and assessment of existing information related to the current level of and/or possibilities for mobilising resources for biodiversity under different sectors. Similarly, quantitative considerations presented in the report are based on the compilation, consideration and comparison of existing data.

As an exception to the above, dedicated quantitative analysis has been carried out to estimate the level of sectoral resource mobilisation by EU OECD countries in the context of ODA. The treatment of OECD data for the purposes of this quantitative analysis is outlined in Annex I.

The data sources used in the context of the study, including sector-specific literature and databases and relevant policy documents, are detailed in the chapters. In general, information used to assess the existing level of funding flows (Chapters 4 and 5), including quantitative information, was gathered by using a range of authoritative sources such as different UN organisation, OECD, World Bank, European Commission and a number of independent not-for-profit research institutes. The overview of and insights on the current and future use of different instruments available for sectoral resource mobilisation (Chapters 6 and 7) was based on the most recent assessments available, complemented by qualitative information and illustrative examples from relevant web-based sources.

It is to be noted that given the variability of sources for information, quantitative information and/or analysis outlined in different parts of this study are not directly comparable. Furthermore, the possibilities for comprehensive, in-depth assessment were significantly limited by the lack of existing assessments and data on overall funding allocated for biodiversity within different sectors. In particular, very limited information could be found for the overall role of private sector funding for biodiversity.

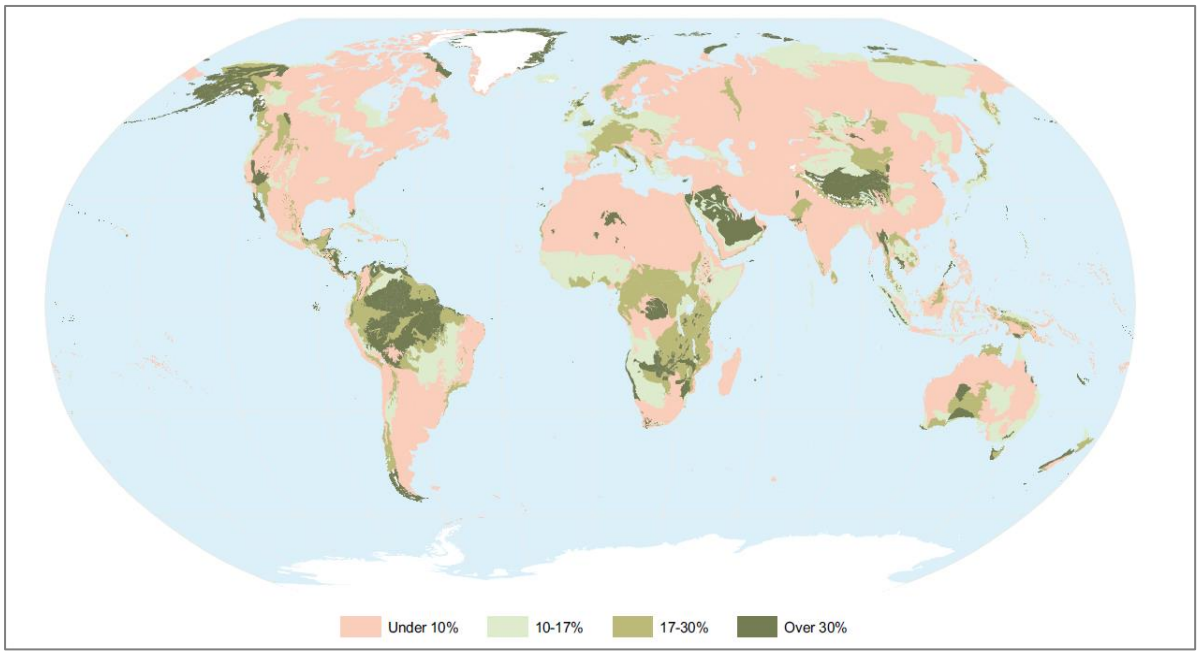
[4] In the context of this study, health sector refers to both public and private elements of the sector. The benefits of biodiversity to heath sector are defined broadly as the support of well-functioning ecosystem to public health (e.g. securing / improving public health through natural hazards and disaster mitigation) and private sector (e.g. bioprospecting and development of pharmaceuticals).

# 3 CURRENT STATUS OF BIODIVERSITY FUNDING

## 3.1 Current status: funding flows

Current funding for biodiversity has been estimated to be around US$51.5-53.4 billion (Table 3.1 by Parker at al. 2012). Around 78% of this is generated in developed economies, while about 22% is generated in emerging or developing economies. The projected global needs to implement the 2020 Aichi Targets for biodiversity have been estimated as US$150 - 440 billion / year[5]. In general, the available funding appears to cover only 7-35% of the total global funding needs and 30-70% of the estimated US$74 - 191 billion financial resources required to meet the needs of developing countries for implementing the Aichi Targets[6] (see Chapter 1).

As regards the direction of flows, 59% of biodiversity finance is delivered in developed economies while 41% is delivered in emerging or developing economies (Parker at al. 2012). Economically developing but highly biodiverse regions of Africa, Latin America and the Caribbean (LAC), and Asia (excluding China) each receive between 6-7% of the world's biodiversity finance (Parker et al. 2012). In practice this means that the divide of global financing between developed and developing regions does not fully correspond with the distribution of required global conservation efforts. For example, the coverage of protected areas is higher in developing regions than in developed regions (Figure 3.1) with 13.3% and 11.6% of total terrestrial area covered, respectively, with by far the highest national protection levels achieved in Latin America (20.4%) (Bertzky et al. 2012).




[5] UNEP/CBD/COP/11/INF/20
[6] UNEP/CBD/COP/11/INF/35

**Figure 3.1** Percentage of terrestrial ecoregions covered by nationally designated protected areas in 2010. *Source:* WDPA (2011) in Bertzky et al. (2012)

Of the global funding for biodiversity in emerging and developing economies (above 41%), a significant share (approximately US$9.8 billion, nearly 19% of total global finance) comes from international sources, flowing from developed countries to Africa, Asia and LAC with each receiving roughly an equal share of funding. The majority of this flow consists of public funding provided in the context of ODA (Table 3.1 by Parker at al. 2012). In general, ODA supporting biodiversity has been noted to have increased steadily over the past decade, perhaps partially due to better and wider reporting in the recent years (CBD 2010).

The Global Environment Facility (GEF), established in 1991, is a dedicated funding body to support the implementation of the CBD global biodiversity targets. In this capacity, it functions as a major avenue for mobilising international public funding, including ODA. By the end of the year 2009, GEF had provided total grants of US$2.8 billion in the focal area of biodiversity, with co-financing of US$7.85 billion (CBD 2010). The approved annual GEF grants to biodiversity have averaged within the range between US$100 million and US$200 million and, while the overall trend is not noticeably upward, co-financing for biodiversity projects has grown steadily during the past decade.

As for the EU, in 2011 the European Commission estimated that over the period 2002 to 2008 the EU provided over US$1 billion for global (non-EU) biodiversity annually as ODA (EC 2011b). However, it was also noted that biodiversity is a relatively low priority for EU external aid, as it gets less than 1/50th of EU and Member States' total annual development aid budgets. As regards global distribution, Sub-Saharan Africa receives most of the EU ODA allocations with even a slight increase in total funding during the recent years (Figure 3.2). The next biggest recipient region is Latin-America followed by North Africa and Asia.

In terms of international private funding, flows include both for-profit investment (i.e. FDI flows from business) and not-for-profit investment (i.e. flows from NGOs, foundations, individuals and academia). The scale of private not-for-profit flows may range considerably from in-kind payments to large investments from foundations and can be quite substantial. For example, it has been estimated that UK NGOs spend £144 million domestically and £15 million overseas on biodiversity, constituting between 39% and 75% of the UK Government's respective domestic and overseas spend on biodiversity (Morling 2008). For-profit sources of private finance for biodiversity range from SMEs to large international corporations. There is also a small but growing number of 'pro-biodiversity businesses'[7] (see Chapter 7) (Bishop et al. 2008). In general, FDI inflows by companies to developing countries and countries with economies in transition reached over US$600 billion in 2010, mainly in green-field investments[8] and grew by 21% in 2011 (CBD 2012). It is however still rare for FDI finance measures to deliver for conservation of biodiversity and ecosystem services.

[7] Pro-biodiversity businesses are defined as commercial enterprise that generates profits via activities which conserve biodiversity, use biological resources sustainably, and share the benefits arising from this use equitably

[8] A form of foreign direct investment where a parent company starts a new venture in a foreign country by constructing new operational facilities from the ground up

Finance created through less traditional and/or more innovative financing mechanisms (section 1.2.1 above) - including both public and private sources - is delivered mainly in the developed countries (US, Canada and Europe) (Parker at al. 2012). For example, the largest market for biodiversity offsetting is in the US. Similarly, over 88% of certified forest area is in the US, Canada and Europe (including Russia) and at least a quarter of certified agricultural production also occur in these regions.

There are no existing syntheses or datasets available that would allow drawing comprehensive conclusions on how the above funding flows for biodiversity are spread across different sectors. Quantitative information on sectoral flows is available only in the context of ODA, covering one of the identified key avenues for mobilising funding (i.e. international public funding) (see section 3.2 below).

**Table 3.1** Finance flows for biodiversity and ecosystem services in developed and developing countries (values in US$ billions per year). Direct market mechanisms establish a direct link between the beneficiary/polluter of biodiversity or ecosystem services and the provider (e.g. biodiversity offset market), indirect market mechanisms raise finance by implicitly linking the value of biodiversity and ecosystem services to more traditional markets (e.g. green commodities), other-market mechanisms do not centre their existence on the provision of biodiversity, and have a wide variance in their relationship to biodiversity (e.g. a tax on all financial transactions), finally non-market mechanisms generate revenue from traditional sources of finance (e.g. ODA, Philanthropy). *Source:* Parker et al. 2012

| | **Generated** | | **Delivered** | | **Sources/data** |
|---|---|---|---|---|---|
| | Developed | Developing | Developed | Developing | |
| **Direct** | | | | | |
| Direct Ecosystem Service Fees | <0.1 | <0.1 | <0.1 | <0.1 | Stanton et al., 2010 |
| Direct Biodiversity Fees | 0.1 | 0.2 | 0.1 | 0.2 | Bovarnick et al, 2010; WDPA, 2011 |
| Offset Markets | 2.1-3.7 | 0.4 | 2.0-3.6 | 0.5 | Madsen et al, 2011; Diaz et al, 2011 |
| Bio-prospecting | <0.1 | 0 | 0 | <0.1 | WWF, 2009; INBio, 2012 |
| Subtotal | 2.3-3.9 | 0.7 | 2.2-3.8 | 0.8 | |
| **Indirect** | | | | | |
| Green commodities | 6.4 | 0.2 | 4.0 | 2.6 | Ecosystem Marketplace, forthcoming; UNECE and FAO, 2010 and 2011; FSC, 2008; FAO, 2012 |
| **Other Market** | | | | | |
| Auctioning of allowances | <0.1 | 0 | 0 | <0.1 | ICI, 2012 |
| **Non- Market** | | | | | |
| Domestic budget allocation | 15.0 | 10.6 | 15.0 | 10.6 | Walls et al, 2009; James et al, 1999; Stanton et al, 2010 |
| Agricultural Subsidy Reform | 7.8 | 0 | 7.8 | | Monke and Johnson, 2010; Cooper et al, 2009; Stanton et al, 2010 |
| ODA | 6.2 | <0.1 | 0 | 6.3 | OECD, 2012; Castro and Hammond, 2009; Strecken, 2009 |
| Debt-for-nature | <0.1 | 0 | 0 | <0.1 | US State Department, 2012 |
| Philanthropy | 1.5-1.8 | 0 | 0.5-0.6 | 0.9-1.1 | Gutman and Davidson, 2008; Financial Statements of various international conservation NGO |
| Subtotal | 30.5-30.8 | 10.7 | 23.3-23.4 | 17.8-18.0 | |
| **Total** | **39.3-41.2** | **11.5** | **29.5-31.2** | **21.3-21.5** | |

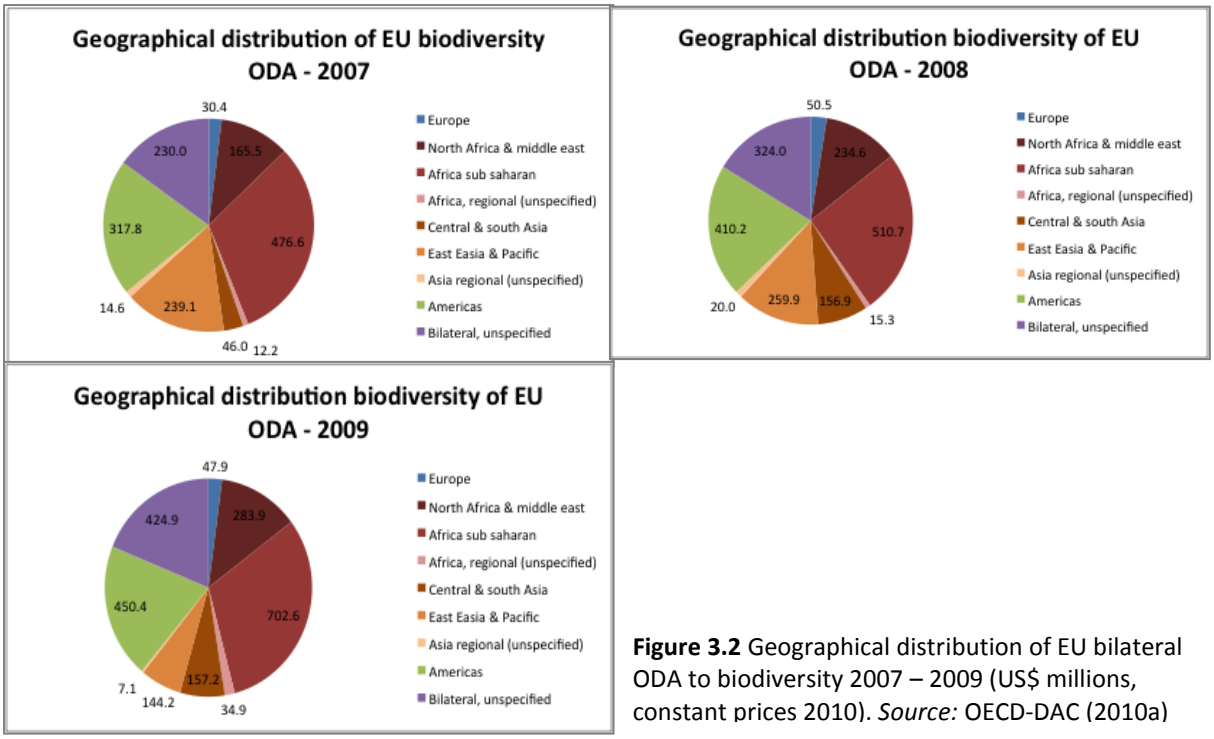



**Figure 3.2** Geographical distribution of EU bilateral ODA to biodiversity 2007 – 2009 (US$ millions, constant prices 2010). *Source:* OECD-DAC (2010a)

## 3.2 Current status: sectoral resource mobilisation in the context of ODA

International flows – and ODA in particular - play a significant role at global level, being of high relative importance to several countries such as the least developed and middle income countries (LDCs and MICs). Consequently, insights related to ODA allocations can be used as an indicator of the overall importance and/or level of integration of biodiversity within different sectors.

The analysis of EU ODA during the period of 2007 – 2011, including 14 EU OECD members with altogether 147 developing country recipients, shows that funding for biodiversity forms a fraction of the total EU ODA with only a marginal increase in the allocations during the past years (1.5 – 2.8 billion US$, 3% - 5% of total ODA) (Figures 3.3 and A1.1 in Annex 1). Furthermore, the majority of these documented ODA allocations is provided to initiatives and projects with biodiversity as secondary objective indicating that a significant part of the funding is not specific to biodiversity and/or benefits biodiversity only indirectly (Figure A1.1 in Annex 1).

As regards the sectoral allocations, the majority of biodiversity related ODA seems to be provided under the budget category ‘general environmental projection’ indicating that global biodiversity objectives, as supported by international public funding, are mainly delivered in the context of environmental protection rather than as a part of the support to other sectors (Figure 3.4). There is also a wide overlap between ODA targeting biodiversity, climate and desertification with 94% of the aid for biodiversity in 2009 (as primary and significant goal) at the same time targeting both desertification and climate also (Figure A1.2). This overlap indicates that, at least in principle, there seem to be considerable synergies between funding the three global environmental objectives. However, the overlap

detected does not tell to what extent and how successfully these synergies are delivered in practice[9].

As for broader sectors, ODA for the water and sanitation sector and the agricultural sector also provide funding for biodiversity, with an increase in allocations under the latter during the past years. There is also a recent increase in financing biodiversity from the energy sector ODA. Rather surprisingly, however, the allocations for biodiversity in the context of ODA for fisheries and forestry seem rather limited. Similarly, the total amount of funding delivered for biodiversity in the context of ODA for the health and tourism sectors is currently close to negligible, despite of possible synergies between wellbeing and biodiversity outlined in section 1.3 above. In addition to the sectors included in Figure 3.4 biodiversity seems to feature as an indirect objective for some initiatives and projects dealing, for example, with trade, commodity aid, humanitarian aid and industry. However, the total funding for biodiversity under these sectors is only marginal.

Based on the above, the use of environmental protection as the principle avenue of funding for biodiversity seems to indicate limited sectoral integration in the context of ODA. However, further conclusions would require a more in-depth assessment of how countries are allocating the funds in practice (e.g. which criteria they are using to allocate spending to different Rio markers categories). As in terms of the relative prominence of biodiversity within broader sectors, the analysis indicates that, based on the application of Rio markers, up to 45% of the total ODA allocated to agriculture, forestry and fisheries sectors and 10-15% of the total ODA for water and sanitation have direct or indirect (i.e. biodiversity as principle or significant objective) relevance to biodiversity (Figure 3.4 and A1.3 in Annex 1). Interestingly, while in absolute terms the financial support to biodiversity in the context of tourism related ODA is very low; in relative terms 5 to 15% of the total ODA for this sector seems to be of relevance to biodiversity.

[9] Based on the use of Rio markers, see Annex I for further explanation

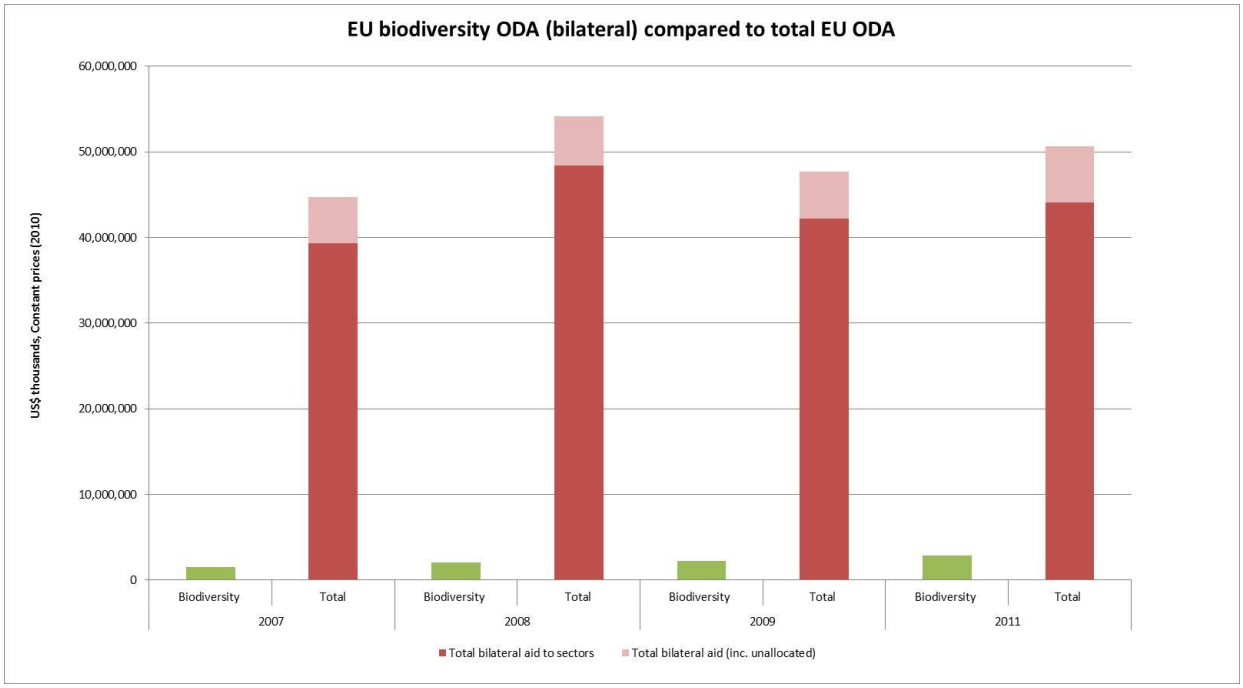



**Figure 3.3** EU biodiversity ODA (bilateral) compared to total EU ODA 2007-2011 (thousand US$, constant prices 2010). Note: covers only 14 EU countries that are part of OECD-ODA. *Source:* own analysis based on data from OECD-DAC (2010a): EU Biodiversity aid for 2007-2009; OECD.stat Extracts (2013a): EU Biodiversity aid for 2011; OECD.stat Extracts (2013b): EU Total aid 2007-2011

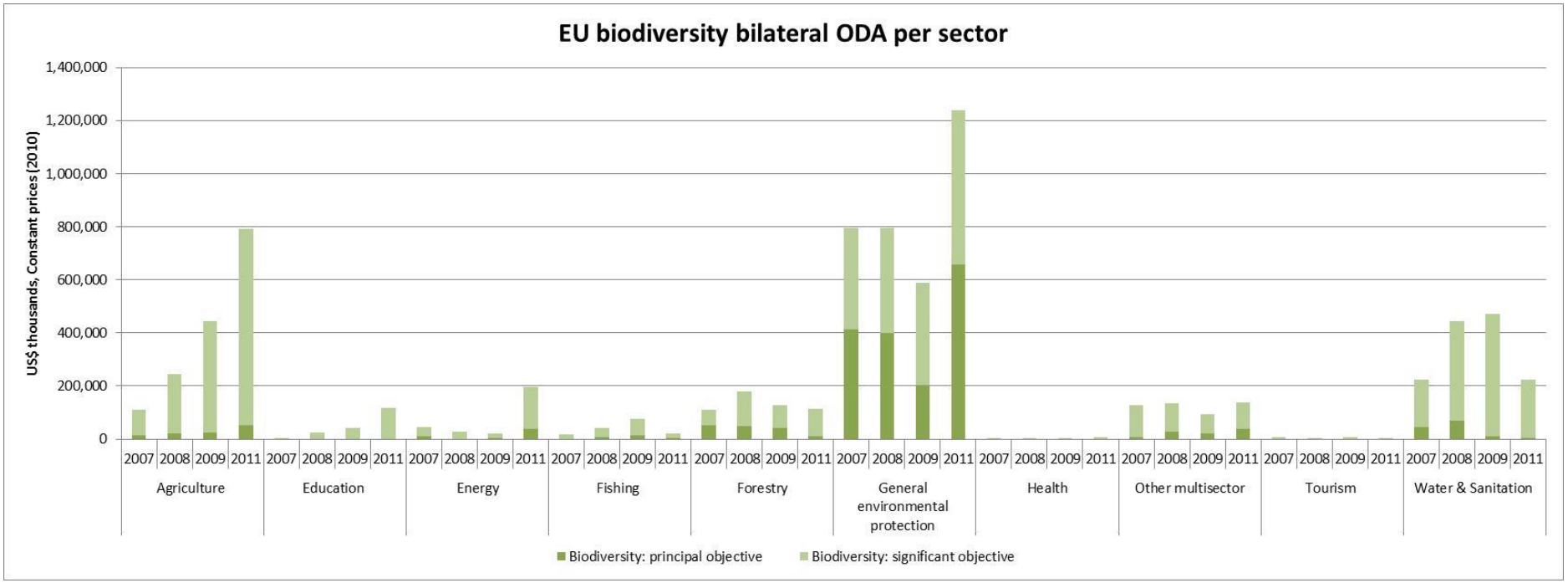



**Figure 3.4** EU biodiversity bilateral ODA per relevant sectors in 2007-2011 (US$ thousands, constant prices 2010). Note: does not cover all sectors receiving ODA funding but only those that provide the most funding for biodiversity. *Source*: own analysis based on data from OECD-DAC (2010a): EU Biodiversity aid for 2007-2009; OECD.stat Extracts (2013a): EU Biodiversity aid for 2011; OECD.stat Extracts (2013b): EU Total aid 2007-2011

# 4 CURRENT STATUS OF OVERALL SECTORAL FUNDING FLOWS

In addition to the analysis of current EU ODA flows for biodiversity in Chapter 3, information on the overall investment flows in biodiversity-relevant sectors (public and private, foreign and domestic) can be used to place global funding for biodiversity into the broader context. Furthermore, such analysis also helps to identify the potential for resource mobilisation in these sectors (Chapter 5). In other words, data on the overall sectoral flows can give an indication of the trends in supporting or investing in different sectors, helping to identify sectors that receive and/or will continue to receive financial support and can be considered as possible target areas for resource mobilisation.

Chapter 4 summarises available information regarding the overall sectoral flows for a number of biodiversity-relevant sectors, including agriculture, forestry, water and sanitation, energy and climate, fisheries, health and tourism. Key conclusions, including some reflection in relation to biodiversity, are provided in section 4.7 and further discussion on the future potential and needs for resource mobilisation within different sectors is carried out in Chapter 5.

## 4.1 Agriculture

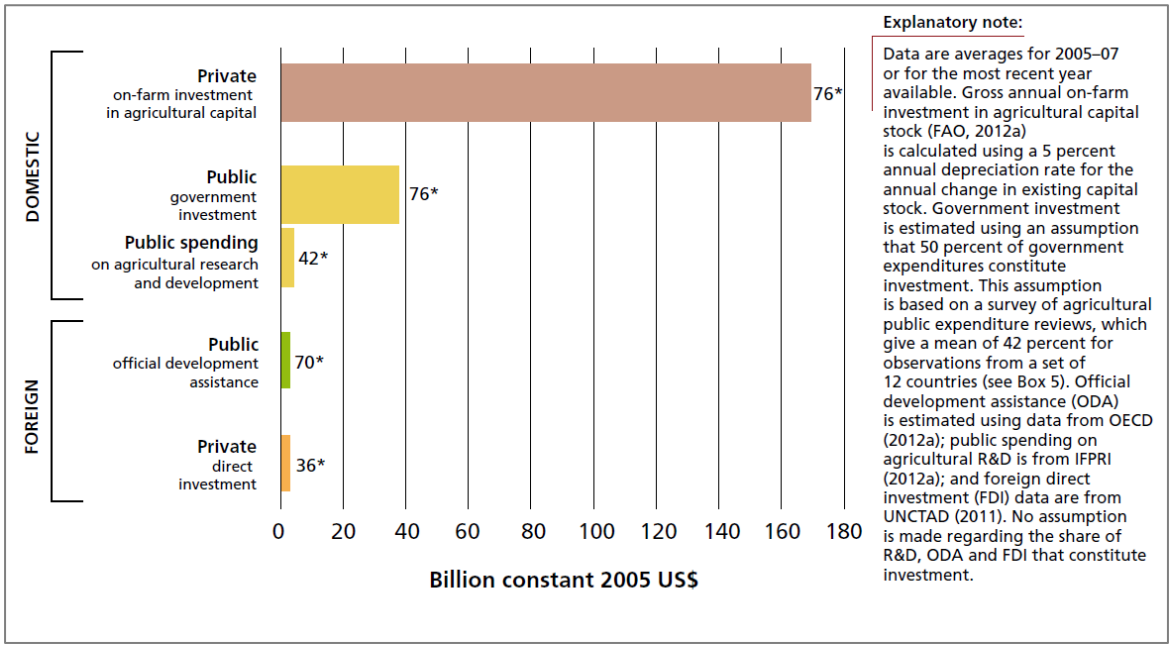
Based on the data synthesised by FAO in 2012, overall investment in agricultural sector amounts to over US$200 billion per year (FAO 2012a) (See Table 4.1). A significant part of this resource flow (over 95%) consists of domestic investment, most of which is farmers' investment in on-farm capital stock (private investment), followed by government expenditures (public investment). Foreign financial flows form an estimated US$10 billion (only 5%) of the total investment flow for agriculture. This total estimated foreign investment seems equally divided between private (FDI) and public (ODA) funding (See Figure 4.1).

While the overall domestic public (i.e. government) expenditures in the low- and middle-income countries have been growing in real terms over the last three decades (IFPRI 2010) agricultural expenditures have been increasing more slowly than expenditure in other sectors. Furthermore, the share of agriculture in overall government expenditures has consequently declined in all regions, reflecting larger increases in other sectoral areas (eg health and education) that have gained higher priority over time. Only South Asia seems to have seen a renewed increase in the share of agricultural expenditures in the most recent years. Domestic public investment in agriculture is foreseen to be necessary to promote private investment in the sector (FAO 2012a). Therefore, the declining share of government expenditure to agriculture is rather alarming, for example with the regions with the highest incidence of undernourishment (sub-Saharan Africa and South Asia) also being the ones that devote the smallest share of expenditure to agriculture relative to agriculture's share in GDP.

For the foreign investment, public investment (ODA) comprises a relatively minor share of the overall agricultural investment but can be significant for some countries. After years of continuous decline, in recent years ODA to agriculture has increased both absolutely and as a share of total ODA, while still remaining below the levels of the 1980s. The analysis by FAO (2012a) indicates that on a regional level sub-Saharan Africa receives the largest share of current agricultural ODA (over 25% of the total) and LAC countries, South Asia, and East-Asia and Pacific each receiving roughly 10-15% of the total (FAO 2012a, p. 34).

Regardless of its relatively low level of current contribution, private foreign investment (FDI) appears to be a growing source of investment in agriculture with recent comparable data (available for 44 countries) indicating that FDI has more than doubled between 2005–06 and 2007–08. Average global inward FDI flows in 2007-2008 were estimated at US$922.4 billion per year of which FDI to agriculture (including hunting, forestry and fisheries) represented only 0.4% of the total (UNCTAD 2011 in FAO 2012c). However, data limitations make it difficult to draw solid and detailed conclusions about the magnitude of FDI investment in agricultural sector globally (eg long-term trends). In general, however, the existing estimates are likely to underestimate actual FDI flows in agriculture because data are missing for so many countries and only direct investment by private companies is included. For example, increasing investments made by large institutional investors, such as mutual funds, banks, pension funds, hedge funds and private equity funds are not included in estimates of FDI (Miller et al. 2010 in FAO 2012a).

As for the future projections, it has been estimated that an investment of US$209 billion per year is needed to meet projected demand for agricultural products in 93 developing countries in 2050 (Table 4.1). Furthermore, US$50.2 billion per year of incremental public expenditures on agriculture and safety nets needed to reach a world free of hunger by 2025.




*Number of countries

**Figure 4.1** Investment in agriculture in selected low- and middle-income countries, *Source:* Lowder, Carisma and Skoet (2012) in FAO (2012a)

## 4.2 Forestry

According to the UN (2006), around US$64 billion per year (all domestic and foreign sources) is allocated to finance the forestry sector (Table 4.1). Of this total sum around US$18 billion is estimated to benefit forestry (including sustainable forest management (SFM)) while about US$46 billion is allocated to forest-based industry and trade. As for the future, estimates of the financial needs for forestry and SFM worldwide point out to between US$33 billion and near US$70 billion, depending on whether environmental externalities (e.g. compensation for deforestation and forest degradation) are included in the calculations.

Private investment is the main source of funding for the forest sector (UN 2006). Despite its relative importance, the available data on such investments is limited. It has, however, been estimated that during the last decade a majority of private investment (on average 90%) has originated from domestic sources (UN 2006). This is explained by the fact that these investments take place in developed countries, i.e. result from developed country investors and businesses supporting the domestic forest sector. Recently, however, the share of domestic private funding as a share of total funding in developing countries and emerging economies has increased from 24% in 1995 to 27% in 2004 (UN 2006). This has mainly been the result of growing investments in emerging countries such as China, Mexico and Brazil.

Private foreign investment in the forest industry (94% targeted to developing countries) reached US$2.3 billion in 2001-03[10], being approximately five times the public foreign investment (UN 2006). Foreign private investment has been rapidly increasing in developing countries but is concentrated in a few countries such as Brazil, Uruguay, Chile and New Zealand (UN 2006). Those countries receive most of the private financing, while low-income countries are largely dependent on public foreign investments.

According to FAO (2010) the total global public expenditure on forestry (including both domestic and foreign investment) in 2005 was just over US$19 billion (Table 4.1), with most of this expenditure in Asia, Europe and North and Central America (36, 27 and 33% of total, respectively) and with the remaining funding going to Africa and South America (3 and 1%, respectively). The assessment of funding sources (domestic vs. external/foreign) and the uses of this expenditure indicate that the majority of public expenditure on forestry comes from domestic sources with the amount of external public funding being only about 4% of the total (Table 4.1). However, it is to be noted that the figures on foreign public assessment do not include assistance in-kind and development assistance that is provided through non-governmental institutions, therefore being an underestimate of total foreign assistance to forestry sector. As might be expected, Africa receives the highest contribution of external funding to public expenditure on forestry at US$175 million (28% of the total) indicating a

[10] does not include investments and financing in trade of forest products

rather high reliance of the region on foreign assistance for the implementation of forestry policies, programmes and projects.

### 4.3 Water and sanitation

In the developing countries, water and sanitation developments have traditionally been prominently financed by the public sector. It was estimated that as late as the mid-1990s, 65–70% of water and sanitation projects were financed by domestic public funding, 5% by the domestic public sector, 10–15% by international donors and 10–15% by international private companies (World Bank 2004). However, since the 1990s this trend seems to be changing as in 2012 the analysis by WHO indicated that in some cases domestic financing in low income countries could cover most of the water and sanitation expenditure with private sector (i.e. household contributions, collected through the payment of tariffs) comprising 44% and public sector (i.e. government expenditure) 18% of the total expenditure (WHO 2012)[11]. Furthermore, with the introduction of various forms of public-private partnership in project design, development, finance, production, and service provision, private participation in water and sanitation has grown. Between 1990 and 2001, the private sector invested US$40 billion in 203 water and sanitation projects in developing countries (World Bank 2004).

As regards the trends in international public funding, after a temporary decline in the 1990's global aid to water and sanitation has risen sharply since 2001. In 2007-08, total global ODA commitments to water and sanitation amounted on average to US$7.4 billion per year (OECD 2011). The largest donors in 2007-08 were Japan (on average US$1.9 billion per year), Germany (US$771 million), and the United States (US$644 million). The share of aid to water and sanitation in OECD DAC (Development Assistance Committee) members' aid programmes has also risen since 2001, but at a more modest pace; in 2007-08, aid to water and sanitation represented 7% of DAC members' bilateral sector-allocable aid (OECD 2010).

As for the future, it has been estimated that substantial investments are needed in order to deliver expected benefits from water and sanitation services (Baietti and Raymond 2005, Hutton and Bartram 2008, OECD 2011). This is due to key current and coming challenges which include the need to expand access to water and wastewater services (particularly in developing countries), invest in replacing and maintaining ageing infrastructure and address water security and environmental concerns. Throughout the world, the challenges of providing access to safe water and sanitation are further accentuated by increasing demands from other water uses due to a variety of factors, such as population increase, agricultural water needs for food production, rapid urbanisation, degradation of water quality, and increasing uncertainty about water availability, potentially exacerbated due to climate change. Addressing these challenges will require both large capital investments for new infrastructure, and on- going investments in maintenance, repair, upgrading and operation of existing facilities.

[11] Countries covered in the study Iran (Islamic Republic of), Bangladesh, Thailand and Lesotho

In developing countries, estimated total spending required on new coverage to meet the MDG target is US$42 billion for water and US$142 billion for sanitation, a combined annual equivalent of US$18 billion (Hutton and Bartrand 2008). The total cost of maintaining existing services in developing countries totals an additional US$322 billion for water supply and US$216 billion for sanitation, a combined annual equivalent of US$54 billion. On the other hand, WHO has estimated that achieving the MDGs for water and sanitation could generate an estimated US$84 billion per year in benefits, with a benefit to cost ratio of 7 to 1 (as in OECD 2011). As for regional distribution of investment needs, it has been estimated that the Western Pacific Region[12] needs 48% of the total spending to meet the MDG target for water, followed by 28% for the African Region. For sanitation the picture is different, with the Western Pacific Region and South-East Asia requiring 30% of total spending each, followed by the African Region needing 24% (Hutton and Bartrand 2008).

To reflect the investment needs for developing countries in a broader picture, the estimated capital costs of (i.e. investment needs in) maintaining and developing global water infrastructure in the OECD and BRIC countries were US$576 billion in 2006 (OECD 2011). These costs have been estimated at projected annual needs of around US$780 billion by 2015 and US$1 037 billion by 2025.

### 4.4 Energy and climate

No estimates for total global investment in energy sector were found in the context of this scoping study. However, the information about energy subsidies indicates that the overall flow of investment in the sector is significant. For example, the global annual subsidies to fossil fuels in 2010 were estimated to be around US$409 billion, which is around US$100 billion more than in 2009 (IEA 2011). The IMF have provided a recent update (IMF 2013) estimating that energy subsidies reached US$480 billion in 2011, equivalent to 0.7% of global GDP. The IMF also noted that if negative externalities are taken into account, the defacto subsidy would rise to US$ 1.9 trillion or 2.5% of global GDP (Oosterhuis and ten Brink 2014). According to IEA Global Energy Outlook (IEA 2012), global energy demand continues to grow with a projected one-third increased between 2012 - 2035, with China, India and the Middle East accounting for 60% of the increase. In terms of required future investments, it has been estimated that the needs for energy supply infrastructure only would already amount to US$38 trillion over the period 2011 to 2035 with most two-thirds of this total investment taking place in non-OECD countries (IEA 2011).

In terms of renewable sources, the investment in renewable power and fuels was US$244 billion showing an 8% increases since 2010 (Frankfurt School-UNEP Centre/BNEF 2013). There seem to have also been a shift in activity from developed to developing economies with the total investment in developed economies in 2012 being down 29% at US$132 billion while investment in developing economies increased by 19% at US$112 billion, making the highest ever. China was the dominant country in 2012 for investment in renewable energy, its commitments rising 22% to US$67 billion, thanks to a jump in solar

[12] Refers to regions according WHO classification

investment. Increases in investment in several other emerging economies were also noted in 2012, including South Africa, Morocco, Mexico, Chile and Kenya.

Investment in climate change mitigation and adaptation are increasing rapidly. A recent study from the World Economic Forum (2013) estimates that total investment in these themes in 2011 amounted US$268 billion from the private sector and US$96 billion from the public sector (US$364 in total, of which US$14 billion was for adaptation), reaching a record annual increase (17% higher than in 2010). This represented a six-fold increase from 2004 and was 93% higher than in 2007.

Presently, most investment for climate change mitigation (75–80%) occurs in developed countries (UNFCCC 2007). Globally, about 60% of total investment comes from domestic sources. The share of domestic investment ranges between regions, with 20% in the EU and 90% in Africa and the Middle East. These domestic sources are spread rather evenly to fund mitigation measures across different sectors. As for international sources, about 20% of investment in climate change mitigation originates from FDI and another 20% from international debt. FDI tends to be most relevant funder for the mining sector (including oil and gas production), manufacturing and financial services. Only small amounts of FDI are invested in agriculture, forestry and construction. Public funding (ODA) funds less than 1% of investment globally but this rises to over 2% in Africa and over 6% in least developed countries, targeting specifically challenges related to energy and water supply (UNFCCC 2007).

In terms of private and public sources, private funding (domestic and international corporations) is responsible for about 60% of total investment however this varies between 50–75% deeding on regions with Africa at the low end and developing Asia at the high end. Other private (domestic) sources for funding include households, individuals, farmers and small businesses that are responsible for 26% of global investment, ranging from 20% in developing countries to 30% in OECD countries. Public sources (domestic and international) are responsible for the remaining 14% of total investment, ranging from 10% in some regions to 25% in Africa.

As for the future, it is estimated that global additional investment and financial flows of $US 200–210 billion will be necessary in 2030 to return global greenhouse gas (GHG) emissions to current levels (UNFCCC 2007). According to the UNFCCC, particular attention should be given to developing countries in the future: although they currently account for only 20–25% of global investments in climate change mitigation their expected rapid economic growth means that they will require a large share of investment and financial flows (UNFCCC 2007). Additional investment flows in developing countries are indeed estimated at about 46% of the total $US 200–210 billion needed in 2030, for emission reductions expected to be achieved by these countries of 68% of global emission reductions (UNFCCC 2007). Domestic and international funding originating from public and private sources is needed to be mobilised to cover these investment needs (See Chapter 5).

## 4.5 Tourism

Worldwide, tourism has been increasing steadily over the past decades with tourist arrivals forecasted to reach nearly 1.6 billion people annually by 2020 (UN 2010). As a direct consequence, all world regions - with the exception of Western Europe - have seen solid growth in travel and tourism investment. According to World Travel and Tourism Council, global travel and tourism capital investment[13] rose by 41.8% between 2000 and 2010 with the annual investment peaking at US$726.8 million in 2008 (WTTC 2011). In 2012 travel and tourism is expected to have attracted capital investment of US$764.7 billion with an expected to rise by 4.2% in 2013 (WTTC 2013).

As regards regional distribution, the Americas and Asia Pacific each accounted for 34% and Europe for 23% of the total investment in 2008. As for the future, the highest percentage growth rates in travel and tourism investment are predicted to be seen in Asia and in some parts of Africa and the Middle East. For example, in 2000-2010 the overall growth of travel and tourism investment was over 600% in India and 230% in the United Arab Emirates[14]. Between 2013 and 2023, global travel and tourism investment is forecast to increase by an average of 5.3% per year amounting to US$1 341 billion by 2023 (WTTC 2013) (see also Table 4.2).

It is known that shortage of capital is a major obstacle for tourism development, and many countries – especially in the developing world – increasingly look to investors to provide capital that will help development of their tourism industries (UN 2010). While existing information indicates that there has not been much foreign private investment in tourism so far, it also shows that foreign private investment to the sector is growing in many countries, including developing countries (UN 2010). The true extent of foreign private investment in the tourism sector may be underestimated, partly because many countries lack comprehensive data on tourism FDI, and partly because much transnational activity in tourism takes place through non-equity modes (i.e. unless there is an equity purchase the activity does not show up in foreign private investment statistics).

**Table 4.2** Country ranking for annual growth in travel and tourism contribution to total national capital investment in 2011-2021

| Ranking | Country | % of total national capital investment |
|---|---|---|
| 1 | Montenegro | 16.4% |
| 2 | Singapore | 9.3% |
| 3 | Azerbaijan | 9.1% |
| 4 | Thailand | 8.8.% |
| 5 | India | 8.7% |
| 6 | Lithuania | 8.5% |
| 7 | China | 8.5% |
| 8 | Egypt | 7.8% |
| 9 | Myanmar | 7.7.% |

[13] Includes capital investment spending by all sectors directly involved in the travel and tourism industry. This also constitutes investment spending by other industries on specific tourism assets such as new visitor accommodation and passenger transport equipment, as well as restaurants and leisure facilities for specific tourism use.

[14] It is to ne noted that this rapid growth stemmed from a very low base and annual investment is still, in absolute terms, a small fraction of that made in the USA or Europe (WTTC 2011)

| | | |
|---|---|---|
| 10 | Fiji | 7.6% |

*Source:* WTTC (2011), analysis by Oxford Economics

## 4.6 Other

Apart from the ODA data presented in Chapter 3 no information on global investment in fisheries sector was found. In quantitative terms, world trade of fish for human consumption is expected to expand by 25% in the period 2012–2021 (FAO 2012b). Developing countries will continue to account for about 67% of world exports while the developed countries continue to dominate fisheries imports with a foreseen 56% share of global imports in 2021 (FAO 2012b). Exports will be driven by Asian countries with 55% of world fish exports for human consumption originating from Asia, with China as the world's leading exporter. There is no data available about the investment and funding flows from the developed countries to support the fisheries sector in the developing countries. However, in 2000 over US$10 billion in subsidies were provided to fisheries sector in 2000 almost 80% by developed countries (World Bank 2009). This indicates a considerable role of domestic public sources in financially supporting the sector.

The availability of data over the financing of the health sector is also limited. According to the Institute for Health Metrics and Evaluation (IHME 2010), overall domestic public (government) spending on health doubled in low-income countries over 12 years to reach US$18 billion in 2006. For the BRIC countries, the average public health care expenditure is projected to increase from 2.4% of GDP in 2010 to more than 4% in 2060 (OECD 2010). As for international public finance, ODA forms a major source of investment to global health sector. According to the World Bank, health related ODA grew from US$2.5 billion in 1990 to almost US$14 billion in 2005 (World Bank 2007). From the perspective of private funding, the growing potential of the sector coupled with the boost in privatisation of the sector and the huge infrastructure needs make investment in the healthcare sector a highly lucrative venture and have resulted in increased foreign private players to enter the market (Chaudhuri and Mukhopadhyay 2012). Given the rapid development of this area however, there are little empirical data available over foreign direct investment within the health sector (Smith 2004).

## 4.7 Conclusions

Given the wide range of and gaps in the information, it is not possible to make in-depth conclusions regarding the status of and trends in sectoral financial flows, in particular when it comes to comparing sectors. However, some preliminary conclusions can be drawn regarding the role of different funding sources within sectors (domestic vs. foreign and public vs. private) and the order of magnitude of different sectoral flows.

For most of the sectors, a significant part of the resources appears to come from domestic sources (e.g. agriculture 95% and climate change mitigation 60%). This conclusion is also supported by the recognition that several sectors, such as fisheries and energy, continue to be supported by subsidies (i.e. type of sectoral support than mainly originates from

domestic sources). While domestic flows clearly dominate the scene in developed countries, they are also of increasing importance in several developing countries. For example, agriculture investment in developing countries is already largely domestic (see Figure 4.1) and the significance of such funding is also increasing in forestry, water and sanitation etc. For several sectors, a considerable amount of the domestic funding - in developed and developing countries alike - appears to be originating from private sources. Even sectors that have traditionally been depending on public sources (e.g. water and sanitation) seem to be shifting towards private funding base.

Foreign financing seems several orders of magnitude smaller than domestic financing in all sectors. However, both continued needs for foreign public financing and increased interest in FDI have been identified across all sectors, particularly in developing countries. Public sources (ODA) seem to remain the most important component of foreign funding flows, especially in the context of developing countries. It is also to be noted that even as ODA comprises a relatively minor share of the overall sectoral investment it can be of high strategic significance for several countries, helping to leverage future funding from domestic and/or private sources to support the 'greening' of the sector. FDI appears to be a growing source of funding, although data limitations make it difficult to draw very concrete conclusions across sectors. There seems to be, however, notable difference between sectors in the importance of FDI. For example, FDI in forestry sector has been estimated around five times the public foreign investment, with a distinct increase in developing countries, while the share of FDI in financing global agriculture sector seems far modest (see sections 4.1 and 4.2).

When looking at the available global estimates for overall flows to different sectors (Figure 4.2), it seems that the funding for and investments in agriculture and forestry are overshadowed by investments in sectors such as water and sanitation, energy, climate change and tourism. In particular, the future projections seem to indicate significant investment in the aforementioned sectors. It is also very apparent that the spending on biodiversity (conservation and sustainable use) is several orders of magnitude smaller that the spending (current and future) in different biodiversity-relevant sectors. This indicates that mainstreaming of biodiversity into sectoral funding streams is of high significance, both in order to utilise the potentials for resource mobilisation and to ensure biodiversity proofing sectoral investment. Further consideration of these opportunities and needs is provided in Chapter 5.

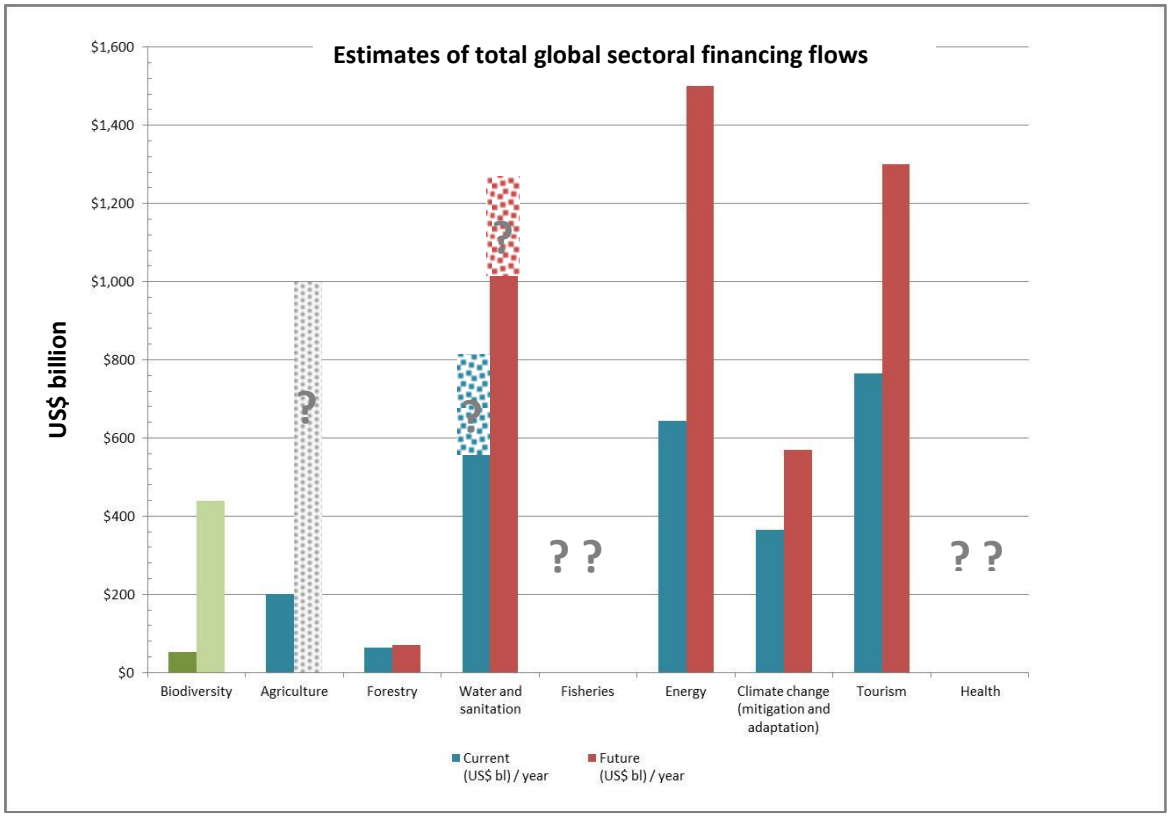



**Figure 4.2** Visualisation of the existing estimate of total (including domestic and foreign, public and private) global sectoral financing flows, reflecting the orders of magnitude. Note: information originates from a range of different sources and therefore the different flows / sectors are not directly comparable. Depending on the source of information, current flow refers to a year between 2005 - 2013 and future flow to a year between 2025 – 2035 (Table 4.1). For biodiversity, the available estimate for future funding needs only covers developing countries. For water and sanitation, the available estimate covers OECD and BRIC countries only.

*Source:* own presentation based on information presented in Table 4.1. Biodiversity: 'current' based on Parker et al. (2012) in Chapter 3 and 'future' based on the high bound estimate of the High Level Panel US$440 billion / year for implementing the global Aichi Targets (UNEP/CBD/COP/11/INF/20); Agriculture: FAO (2012a); Forestry: UN (2006) with 'future' based on the high bound estimate of US$70 billion for forestry and sustainable forest management; Water and sanitation: OECD (2011) including OECD and BRIC countries only. Energy: 'current' based on subsidies to fossil fuels (IEA 2011) combined with investment in renewable energy (Frankfurt School-UNEP Centre/BNEF 2013) and 'future' based on the calculation of annuity for US$38 trillion investment needs between 2011-2035 (24 years) (IEA 2011); Climate change: based on World Economic Forum (2013); Tourism: WTTC (2013)

**Table 4.1** Information on current and projected future financial flows to different sectors (total flows to sector, not specifically targeted to biodiversity)

| Sector | Current financial flow | | | Projected financial flow | | |
|---|---|---|---|---|---|---|
| **Agriculture** | Amount and type of investment[1] | Reference year | Source | Amount and type of investment | Reference year | Source |
| | Overall investment: > US$200 billion per year<br>Domestic private: > US$160 billion (constant 2005 prices)<br>Domestic public: > US$40 billion<br>Foreign private (FDI)[2]: < US$5 billion<br>Foreign public[2]: < US$5 billion | Averages for 2005–07 or for the most recent year available | FAO (2012a) | US$209 billion / year investment needed to meet projected demand for agricultural products in 93 developing countries. Of which US$83 billion represent net investment, with the residual corresponding to the cost of replacing depreciating capital.<br><br>US$50.2 billion / year of incremental public expenditures on agriculture and safety nets needed to reach a world free of hunger | 2050<br><br>2030 | Schmidhuber, Bruinsma and Bödeker (2009) in FAO (2012)<br><br>Schmidhuber and Bruinsma (2011) |
| **Forestry** | | | | | | |
| | Estimate of the global amount invested in forestry and in the forest-based sector of US$64 billion / year<br><br>Public expenditure[3]: US$19 billion (30%), including operational expenditure and transfer payments[4]<br><br>In 1993 public foreign investments (ODA) accounted for 14% of the total public expenditures. | 2005<br><br>2005<br><br>1993 | UN (2006)<br><br>FAO (2010)<br><br>UN (2006) | Estimated financial needs for forestry and sustainable forest management worldwide between US$33 billion and near US$70 billion | n/a | UN (2006) |
| **Water and sanitation** | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Estimated capital costs of / financing needs for maintaining and developing water infrastructure: US$576 billion in 2006 in OECD and BRIC countries<br><br>In 2007-08, total global annual average aid commitments (ODA) to water and sanitation amounted to US$7.4 billion. | 2006<br><br>2007-08 | OECD (2011)<br><br>OECD (2010) | Estimated investment needs in OECD and BRIC countries in order to maintain and expand drinking water supply and sanitation services: US$780 billion by 2015 and US$1 037 billion by 2025[6]<br><br>In developing countries, estimated total spending required on new coverage to meet the MDG target is US$42 billion for water and US$142 billion for sanitation, a combined annual equivalent of US$18 billion. The total cost of maintaining existing services totals an additional US$322 billion for water supply and US$216 billion for sanitation, a combined annual equivalent of US$54 billion. | 2015 - 2025<br><br>2015 | OECD (2011)<br><br>Hutton and Bartrand (2008) |
| **Tourism** | | | | | | |
| | Global travel and tourism capital investment rose by 41.8% between 2000 and 2010.<br><br>In 2012 travel and tourism is expected to have attracted capital investment of US$764.7 billion with an expected to rise by 4.2% in 2013. | 2011<br><br>2012-2013 | WTTC (2011)<br><br>WTTC (2013) | Global travel and tourism investment forecasted to increase by an average of 5.3% per year amounting to US$ US$1,341 billion by 2023.<br><br>The number of international tourist arrivals worldwide is forecasted to increase by 3.3% a year, on average, in the period 2010-2030, compared to an average of 3.9% a year in the period 1995-2010.<br><br>Global spending for ecotourism is expected to grow by 20% annually. | 2011<br><br>2030<br><br>2012 | WTTC (2013)<br><br>WTO (2011)<br><br>CBD (2012) |
| **Energy and climate** | | | | | | |
| | In 2011, annual subsidies to fossil fuels amounted to over US$400 billion.<br><br>Investment in the sustainable energy market estimated was as $148-155 billion in 2007-2008.<br><br>In 2012, investment in renewable power and fuels was US$244 billion showing an 8% | 2011<br><br>2007-2008<br><br>2012 | IEA (2011)<br><br>UNEP (2009)<br><br>Frankfurt School-UNEP | Financial needs for energy supply infrastructure estimated to amount to US$38 trillion between 2011 - 2035.<br><br>It is estimated that global additional investment and financial flows of US$200–210 billion will be necessary in 2030 to return global greenhouse gas (GHG) emissions to current levels. Additional investment flows in developing countries are | 2011-2035<br><br>2030 | IEA (2011)<br><br>UNFCCC (2007) |

| | | | | | | |
|---|---|---|---|---|---|---|
| | increases since 2010 | | Centre/BNEF (2013) | estimated at about 46% of the total needed in 2030. | | |
| | The 2011 total investment in climate-change mitigation and adaptation was estimated as US$268 billion from the private sector and US$96 billion from the public sector (US$364 in total). | 2011 | World Economic Forum (2013) | | | |
| | 75–80% of the total investment in climate change occurred in developed countries (corporations: 60%, individuals: 26%, governments 14%, domestic sources 60%, FDI 20%, ODA less than 1%) | 2006 | UNFCC (2007) | | | |
| **Fisheries** | | | | | | |
| | Over US$10 billion in subsidies were provided in 2000. Close to 80% of the total global subsidy is provided by developed countries. | 2000 | World Bank (2009) | *Data not found in the context of this scoping study* | | |
| **Health** | | | | | | |
| | Domestic government spending on health doubled in low-income countries over 12 years to reach US$18 billion in 2006. | 2006 | IHME (2010) | For the BRICs, the average public health care expenditure is projected to increase from 2.4% of GDP in 2010 to more than 4% in 2060. | 2060 | OECD (2010) |
| | Official development assistance for health grew from US$2.5 billion in 1990 to almost US$14 billion in 2005 | | World Bank (2007) | | | |

1 Investment in selected low- and middle-income countries, as in FAO (2012a) based on Lowder et al. (2012)
2 Includes also investment in forestry and fisheries
3 Only includes funding that is provided to governments, does not include assistance in-kind and development assistance that is provided through non-governmental institutions
4 Operational expenditure refers to expenditure on regulation and facilitation of forestry and transfer payments refer to financial incentives (for sustainable forestry)
5 US$13to 14 billion of these amounts includes agriculture and aquaculture biodiversity funding as well
6 OECD + BRICS countries

# 5 FUTURE OPPORTUNITIES: POTENTIAL FOR FUTURE RESOURCE MOBILISATION WITHIN BIODIVERSITY-RELEVANT SECTORS

## 5.1 Potential and needs for sectoral resource mobilisation based on insights from ODA

The assessment of ODA in Chapter 3 provides an indication of the current level of and trends in global funding for biodiversity. In general, information synthesised in Chapter 3 indicates that there is further scope for mobilising funding for biodiversity under different sectoral ODA flows, both in terms of increasing financial allocations within sectors and also extending the number of sectors providing funding (section 3.4). The majority of biodiversity related ODA is provided under the budget category 'general environmental protection' suggesting that further efforts are required to mainstream biodiversity into other areas of ODA. Importantly, the allocations for biodiversity within different biodiversity-relevant sectors remain low compared to the overall sectoral ODA.

Despite the increasing consensus of nature's role in supporting welfare (section 1.3) only a fraction of total sectoral ODA is allocated to initiatives and projects supporting the sustainable use and conservation of biodiversity. Funding for biodiversity in the context of forestry and fisheries (both in total and relative terms) seems surprisingly limited, in particular given the prominent role of healthy ecosystems and sustainably managed stocks in maintaining the viability of these sectors. Given the role of ecosystems in maintaining water security (e.g. providing cost-effective solutions for water retention and purification) the share of biodiversity-relevant support within the water and sanitation sector could be further increased. This is especially the case in the light of the increasing trends in ODA to water and sanitation (see section 4.1).

Furthermore, as outlined in Chapter 1, health sector benefits from biodiversity and well-functioning ecosystems in several ways, however biodiversity conservation receives very limited attention in the context of its - rather considerable - ODA allocations. Similarly, nature provides a number of business opportunities benefiting to both economic development and conservation (see Chapter 6). Despite this fact, no ODA is currently allocated to support biodiversity under the business and services sector. For example, insurance sector can significantly benefit from cost-effective, nature-based solutions and therefore mobilising funding for biodiversity via integration of such aspects into the insurance schemes and payments could be promoted under the public support to business.

Finally, the majority of funding for biodiversity under different sectors addresses biodiversity only as a secondary and/or indirect objective. For example, even though a significant part of total ODA for agriculture[15] is linked with biodiversity

[15] Based on Rio indicators, see Annex II for further detail

conservation only a fraction of the funding is directly focused to support this policy goal. Consequently, it is very difficult to judge which share of the total overall funding actually delivers for biodiversity in practice. One of the immediate objectives for resource mobilisation should, therefore, be to try to increase the transparency regarding the share and true effectiveness of existing funding for biodiversity.

## 5.2 Potential and needs for sectoral resource mobilisation based on broader sectoral insights

Domestic private investment forms the key source for funding to the agriculture sector. Despite the small - and in relative terms declining - share of domestic public funding, this source is foreseen to play an important role in promoting and steering the sustainability of the sector in the future. Therefore, the low levels of public expenditure in the regions with the highest incidence of undernourishment and high levels of biodiversity (e.g. sub-Saharan Africa and South Asia) can be considered alarming. As highlighted in Chapter 4, US$50.2 billion per year of incremental public expenditures on agriculture and food security has been estimated as needed to reach a world free of hunger by 2025. This indicates that increasing investment in agricultural sector in the developing countries, including a range of world's biodiversity hotspots, is needed in order to reach the high level political commitments on sustainable development. Foreign public investment (ODA) comprises a relatively minor share of the overall agricultural investment and therefore cannot be considered to directly address the funding gap. Foreign public funding can, however, help to catalyse the up-take of sustainable agricultural practises (e.g. practises with clear built-in biodiversity component) this way 'greening' the domestic sector. Furthermore, the relative importance of foreign funding to the sector increases with the decline in importance at domestic level.

Private foreign investment (FDI) for agriculture sector appears to be a growing. This indicates that there are increasing opportunities to try to encourage the use of approaches and tools suitable for mobilising funding for biodiversity from private funding sources. Given the relatively small size of FDI flows to primary agriculture reported in the international dataset, especially in low-income countries, it is unlikely that FDI can contribute significantly to raising capital stock in agriculture in the near future. Nevertheless, this investment can still have significant impacts at the local level. According to FAO (2012c), FDI in agriculture may offer opportunities for developing countries in terms of employment and technology transfer, but potentially negative social and environmental impacts of such investments (e.g. impact on biodiversity) remain to be addressed.

As with agriculture, domestic private investment forms the key funder of forestry sector with increasing importance also in developing countries and emerging economies (see Chapter 4). While the total contribution of FDI is much more limited, it can be considered of high relative importance for future resource mobilisation: FDI is approximately five times the size of the public foreign investment and 94% of it is estimated to target to developing countries. This information indicates that, while

ensuring continued support from public source, enhancing the uptake of innovative approaches and tools for mobilising funding for biodiversity from private sources is particularly relevant in the context of forestry.

As for the public investment, Table 5.1 below provides information on how the total amount of US$19 billion of public investment to forest sector in divided terms of transfer payments (i.e. financial incentives) and operational expenditure (i.e. regulation and facilitation, most of which expenditure on the former). According to FAO (2010), this gives a broad indication of how much of the government investment is focusing on restricting the behaviour (i.e. through regulations) as opposed to investment in encouraging certain types of behaviour through financial incentives. In general, it seems that Asia is more focused on supporting the forestry sector with financial incentives whereas other regions (Africa in particular) rely on more traditional, regulative policy tools. From the perspective of biodiversity financing this can provide a rough indication of the most suitable and/or commonly acceptable possibilities for resource mobilisation within different regions, indicating the applicability of regulation-based funding mechanisms in the African context and perhaps more innovative, market-based approaches for resource mobilisation in Asia.

| Region | Public expenditure on forestry in 2005 | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Operational expenditure (million US$) | | | Transfer payments (million US$) | | | External funding (%) | Transfer payments (%) |
| | Domestic | External | Total | Domestic | External | Total | | |
| Africa | 418 | 122 | 541 | 31 | 53 | 84 | 28 | 13 |
| Asia | 1 699 | 12 | 1 712 | 4 999 | 43 | 5 041 | 1 | 75 |
| Europe | 2 266 | 151 | 2 417 | 1 468 | 263 | 1 731 | 10 | 42 |
| North and Central America | 5 505 | 30 | 5 535 | 751 | 17 | 769 | 1 | 12 |
| Oceania | 15 | 1 | 15 | 0 | 0 | 0 | 4 | 0 |
| South America | 98 | 5 | 103 | 60 | 2 | 63 | 5 | 38 |
| **World** | **10 001** | **321** | **10 323** | **7 309** | **378** | **7 687** | **4** | **43** |

**Table 5.1** Sources and uses of public expenditure on forestry by region. *Source:* FAO (2010). Note: the world totals presented in this table are less than the estimated total of US$19 billion outlined in the text above. This is because a number of countries did not provide a breakdown of public expenditure and this data has been omitted from the table above. Also, Europe has a relatively high proportion of external funding. This is because some public expenditure on forestry in member states of the European Union comes from common funds administered by the European Commission.

Substantial investments continue to be required to deliver global policy goals on water and sanitation, indicating the potential for and importance of the sector in terms of resource mobilisation. Contrary to agriculture and forestry, water and sanitation developments in the developing countries seem traditionally to be more predominantly financed by the public sector. From the perspective of resource mobilisation this highlights the importance of public (domestic and foreign) investment and the need for biodiversity proofing all these funding flows to mitigate negative impacts of water and sanitation developments to biodiversity. In addition, private sector investment based on a range of public-private partnerships to the sector is steadily increasing. This open up a range of future opportunities for

mobilising resources for biodiversity, for example based on the cost-effective use of nature-based solutions for water management (see Chapters 6 and 7 for PES). Finally, the identified investment needs in the Western Pacific, African and South-East Asian regions (see section 4.3 above) seem to indicate specific focus to be given to ensure synergies between water and biodiversity related policy objectives in these regions.

There seems to be a significant increase in, and also need for, financing climate and/or energy sectors making these sectors a potential avenue for resource mobilisation. In addition to the opportunities, there is also a need to ensure that supporting the shift to sustainable energy use and financing initiatives for climate change mitigation and adaptation does not result in negative impacts on biodiversity. In general, biodiversity proofing might be the most important consideration in the context of energy sector whereas resource mobilisation can be linked with investments in climate change mitigation and adaptation. This is because activities carried out under the energy sector, including the uptake of renewable energy sources, are unlikely to increase biodiversity as such but rather focus on ensuring sustainable production and/or mitigating negative impacts. On the other hand, activities related to the mitigation of and adaptation to climate change can be linked to the protection and restoration of nature in a more concrete manner. International sources are foreseen to play an important role in helping developing countries to formulate and implement national policies on climate change, with possible opportunities for promoting ecosystem-based mitigation and adaptation strategies. Public resources will also be important in implementing policies or regulations to encourage the investment of private resources in adaptation measures. However, given the rather limited public funding (foreign public investment in particular, see Chapter 4) there is also a need to find approaches and tools that encourage the uptake of actions that benefit biodiversity in the context of private funding streams. Such approaches can build on the increasing understanding and appreciation of cost-effective, nature-based approaches to mitigation and adaptation (see Chapters 6 and 7).

Fish and fishery products are among the most-traded food commodities worldwide. Capture fisheries and aquaculture supplied the world with about 148 million tons of fish in 2010 with an export value of world trade more than the combined value of net exports of rice, coffee, sugar and tea (FAO 2012b). Aquaculture also forms one of the fastest-growing animal food sectors in the world. Consequently, despite of the lack of data in total investment in fisheries it is clear that the sector is of high future importance for biodiversity - both from the perspective of resource mobilisation and mitigating negative impacts of investment in biodiversity. As with agriculture and forestry public funding is likely to continue to be an important catalyst for making the fisheries sector more biodiversity-friendly. In addition, a range of tools are available to increase private funding for biodiversity within the sector (see Chapters 6 and 7).

Finally, investment both tourism and health sectors are clearly increasing. This makes both of the sectors interesting targets for resource mobilisation. As for the

health sector, the existing information does not allow to make very detailed conclusions on the size and distribution of the flows. However, ODA seems to remain a key source of funding for the sector suggesting that public foreign financing could be used as a strategic 'gateway' to explore possible synergies between the health sector and biodiversity conservation.

Tourism sector in particular provides a wealth of opportunities for engaging with the private sector (see also Chapter 7) while the benefits of nature to public health gives a rational for directing funding from governments' budgets to this area. As highlighted in Chapter 4, the worldwide tourism has been increasing steadily over the past decades with capital investment forecasted to increase by an average of 5.3% per year between 2012-2023 (WTTC 2013). Furthermore, global spending for ecotourism is expected to grow by 20% annually (CBD 2012). As regards regional distribution, the Americas and Asia Pacific account for close to 70% of the current total global investment (section 4.5), however the highest future percentage growth rates in travel and tourism investment are predicted to be seen in Asia and in some parts of Africa and the Middle East. These future growth areas include biodiversity rich and/or pristine areas such as India, Thailand, Myanmar and China (Table 4.2).

## 5.3 Conclusions for future potential and needs

The global estimates of overall sectoral flows (Figure 4.2) highlight that there are both a pressing needs and increasing chances for sectoral resource mobilisation. In particular, it seems evident that the financing flows traditionally considered as the most biodiversity-relevant (agriculture, forestry and fisheries) are substantially smaller than flows within other sectors such as climate change, tourism and energy. From the perspective of opportunities for resource mobilisation this suggests that in addition to targeting the former increasing attention should also be given to the latter sectors. For example, there are significant synergies between biodiversity, ecosystem services and tourism and these synergies can be used as a basis for channelling funding to conservation objectives (see Chapters 1 and 7). In the broader context, the significant financial flows towards sectors such as energy and climate change mitigation also mean that it is crucial to continue mainstreaming and improving mechanisms for biodiversity proofing.

From the perspective of global resource mobilisation for biodiversity, the share of and trends in foreign investment to different sectors are relevant indicators for future priorities and possible opportunities to mobilise funding. The existing information suggests that foreign investment – and foreign private investment (FDI) in particular - is increasing in several biodiversity-related sectors. This suggests that in addition to improving integration of biodiversity into ODA (section 5.1) there is a need to find mechanisms for accessing – and also biodiversity proofing - different sectoral FDI flows. For example, FDI for climate change adaptation, tourism and health could provide significant future avenues for delivering funding for biodiversity.

In addition to foreign investment, the trends in domestic public investment are also relevant when assessing the opportunities for mobilising funds to implement the global biodiversity objectives. From the perspective of developed countries, foreign public investment, such as funding from GEF, can be used to encourage mainstreaming of biodiversity into domestic investment, both helping to make the latter more biodiversity friendly (promote biodiversity proofing) and leverage further funding for biodiversity within a sector. In a similar way, domestic public investment can also be considered important to promote sustainability in domestic private investment in a given sector. Consequently, information of the trends in domestic funding can be used to target foreign support towards the most domestically important and/or emerging sectors relevant to biodiversity, with a view of securing the sustainability and biodiversity-friendliness of these sectors. For example, the increasing importance of domestic investment in water and sanitation suggests that foreign funds (e.g. ODA) could be strategically targeted towards this area to pioneer approaches and mechanisms for leveraging further funding for biodiversity within the sector.

A few interesting observations can be made based on sector specific insights and projected trends in biodiversity loss (Figure 5.1). As regards the global distribution of foreign funding within different sectors, both agriculture and forest seems to be the targeted sectors for foreign flows in sub-Saharan Africa, whereas foreign funding (mainly FDI) in Central and South America and Asia appears more focused on forestry only. On the other hand, future investments in water and sanitation are likely to focus to Western Pacific and Africa, whereas investments in energy (e.g. renewable energy) are taking prominence in China. China, together with India, will also be some of the key regions for future investment in travel and tourism. This information suggests that in some regions / countries targeting specific sectors, such as water and sanitation and tourism, could be used as a dedicated means to leverage funds to halt the projected biodiversity loss at regional level.

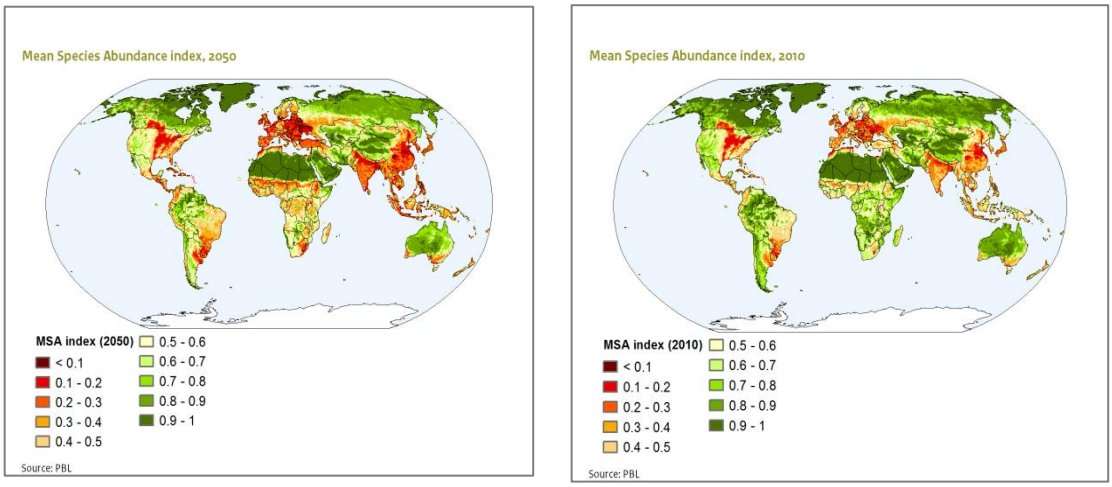



**Figure 5.1** Current and projected global loss of biodiversity, based on the Mean Species Abundance Index (Source: PBL)

# 6 FUTURE OPPORTUNITIES: APPROACHES AND TOOLS FACILITATING INTEGRATION

## 6.1 Overview of available approaches and tools

A range of approaches and tools for mobilising funding, including several innovative funding mechanisms (IFMs), can be used to access sectoral funding from both public and private sources, in the context of both international and domestic flows (Table 6.1). While the application of these approaches and instruments in practice is still limited it is foreseen that interest in their uptake is growing (section 6.1 below).

In terms of public funding, the realisation that biodiversity and well-functioning ecosystems deliver a range of public benefits offer the potential to use sectoral budgets for climate and energy, public health, and water management, among others, to finance conservation efforts. In general, the on-going reform of environmentally harmful subsidies (EHS) provides a suitable framework for redirecting public funding to the implementation of biodiversity policy objectives. In practice, funding can be mobilised by earmarking a certain proportion of the sectoral budget to initiatives and projects (directly or indirectly) supporting the biodiversity agenda. Alternatively, a number of instruments, such as publically funded payments for ecosystem services (PES), can be used to channel public funding to addressing biodiversity concerns.

Nature also provides benefits to private individuals and/or companies, offering potential for private funding through new funding mechanisms and market creation. Opportunities for private sector funding may occur through a range of mechanisms such as the development of product markets, corporate sponsorship, biodiversity offsets, visitor payback schemes and privately funded PES schemes. In cases where financial investment in sustainable use and conservation of biodiversity (e.g. restoration) can generate market returns, possible loan funding from public and/ or private sources are also a possibility. Furthermore, when the global market for green products and ecosystem services expands, a credit and security market may emerge for their producers, market operators and other providers of associated services; corporations offering green products and ecosystem services may be able to raise funds through share offering at domestic and international stock markets; while merger and acquisition activities may also emerge (CBD 2012).

Existing policy approaches and instruments for biodiversity conservation and environmental protection can already provide a good basis for resource mobilisation. In particular, protected areas (PAs) are responsible for maintaining a range of benefits that support socio-economic prosperity and human wellbeing, e.g. create business opportunities and/or offer cost-effective management solutions for several sectors (Kettunen et al 2013, Kettunen et al. 2012). Consequently, the maintenance and management of the global PA network, either through direct investment or with

the help of different policy tools (see Table 6.1), offers multiple opportunities for mobilising funding from different sectors.

As already highlighted in Chapter 5, there are often considerable interlinkages between mobilising public and private funding for biodiversity with the former often functioning as a catalyst for the latter. For example, the establishment of pro-biodiversity business and uptake of PES schemes can be initiated and/or supplemented by sectoral public funding with an agreement with the private sector of moving towards privately funded schemes in the future. Support from public sources can also be used to reduce the risk of investment to the private sector (e.g. public guarantees to encourage loans from private sector etc.). Consequently, coordinated efforts to mobilise funding from both public and private sources, using a combination of approaches and tool, is likely to provide the most effective outcomes for a given sector.

Finally, it should be noted that using approaches and tools outlined in Table 6.1 to fund nature-based solutions does not automatically guarantee benefits to biodiversity. In some cases, conflicts between biodiversity conservation and enhancing ecosystem services might arise. For example, rapidly growing forest plantations are often very effective in sequestrating carbon but they are also rather biodiversity poor and, therefore, funding from climate and energy budgets to support initiatives on carbon sequestration might yield zero benefits to biodiversity. Therefore, careful consideration of synergies and establishment of appropriate safeguards (i.e. biodiversity proofing of sectoral investment) are needed to ensure positive effects of funding on biodiversity. Chapter 7 provides more detailed consideration on how to ensure the delivery of true biodiversity benefits by a number of key approaches and tools facilitating sectoral resource mobilisation.

**Table 6.1** Synthesis of some key approaches and instruments available to leverage funding of biodiversity within different sectors considered in the context of this report

| Sectors | Approaches and tools | |
|---|---|---|
| | **Public financing / investment** (domestic and foreign, inc. ODA)<br>**Not-for-profit private financing / investment** (domestic and foreign) | **Private investment (business / for profit)**<br>(domestic and foreign) |
| **Agriculture** | | |
| | − Earmarked direct financing / investment under sectoral budget to support initiatives benefiting both biodiversity conservation and agricultural production, productivity or food security (e.g. management of PAs hosting wild crop varieties)<br>− Public support to market creation for / certification of sustainable agricultural products (e.g. capacity building and training, support to cover the costs of certification process for organic food)<br>− Establishment of public PES schemes supporting ecosystem services / public benefits maintained by extensive agriculture (e.g. PES schemes maintaining pollination)<br>− Loan and investment funding from public sources to support profit creating pro-biodiversity businesses within the agriculture sector, such as agri-tourism, production of value-added certified products etc.<br>− In domestic context, creating tax incentives to support private pro-biodiversity funding and investment | − Investment in market creation for / certification of sustainable, pro-biodiversity agricultural products<br>− Opportunities for private PES schemes (e.g. payment schemes established between producers of organic food and the related organic food industry)<br>− Establishment of offsetting schemes within agricultural context<br>− Investment in initiatives that support pro-biodiversity business opportunities indirectly, for example in situ conservation as a source for material supporting future 'product' development (e.g. drought resistant crops)<br>− Loan and investment funding from private sources to support profit creating pro-biodiversity businesses |
| **Forestry** | | |
| | − Earmarked direct financing / investment under sectoral public budget to REDD+ mechanism and/or national forestry schemes<br>− Public support to market creation for / certification of sustainable timber products (e.g. capacity building and training, support to cover the costs of certification process)<br>− Establishment of public PES schemes supporting ecosystem services / public benefits maintained by sustainable forestry practises (e.g. PES schemes for ecosystem-based water management) | − Creating competitive edge on the markets by investment market creation for / certification of sustainable products such as certified timber<br>− Opportunities for private PES schemes (e.g. payment schemes established between forest conservation initiatives and businesses seeking to offset their carbon footprint)<br>− Establishment of offsetting schemes within forestry context<br>− Investment in initiatives that support pro-biodiversity business opportunities indirectly, for example in situ conservation as a source for |

| | | |
|---|---|---|
| | – Loan and investment funding from public sources to support profit creating, pro-biodiversity businesses<br><br>– In domestic context, creating tax incentives to support private pro-biodiversity funding and investment | material supporting future 'product' development (e.g. pest resistant timber)<br>– Loan and investment funding from private sources to support profit creating, pro-biodiversity businesses |
| **Fisheries** | | |
| | – Earmarked direct financing / investment supporting fisheries closures / Marine Protected Area (MPA) management as mechanism for food security<br>– Public support to market creation for / certification of sustainable fisheries products (e.g. capacity building and training, support to cover the costs of certification process)<br>– Loan and investment funding from public sources to support profit creating, pro-biodiversity businesses<br><br>– In domestic context, creating tax incentives to support private pro-biodiversity funding and investment | – Creating competitive edge on the markets by investment market creation for / certification of sustainable fisheries products<br>– Opportunities for private PES schemes (e.g. payment schemes established between fishermen and related fisheries industry to establish a supply chain of sustainably fished marine resources)<br>– Establishment of offsetting schemes within marine and/or coastal context<br>– Investment in initiatives that support pro-biodiversity business opportunities indirectly, for example in situ conservation of marine resources (e.g. fisheries closures or MPA management) as a source for supporting continuation of sustainable fish supply<br>– Loan and investment funding from private sources to support profit creating, pro-biodiversity businesses |
| **Water and sanitation** | | |
| | – Earmarked direct financing / investment under sectoral budget to support investment in nature-based solutions for water management (e.g. restoration of wetlands for water purification)<br>– Establishment of public PES schemes for water purification<br>– Loan funding from public sources to support profit creating, pro-biodiversity businesses<br><br>– In domestic context, creating tax incentives to support private pro-biodiversity funding and investment | – Opportunities for private PES schemes for water purification (e.g. payment schemes established between watershed's land users and water purification companies and/or businesses requiring high quality water)<br>– Establishment of offsetting schemes relevant in the context of water retention and purification (e.g. wetland ecosystems)<br>– Loan funding from private sources to support profit creating, pro-biodiversity businesses |
| **Climate and energy** | | |
| | – Earmarked direct financing / investment under sectoral budget to | – Diminishing corporate's climate foot print via investing biodiversity-friendly |

| | | |
|---|---|---|
| | support ecosystem-based mitigation and adaptation (e.g. restoration of ecosystem's carbon storage)<br>– Support from public funding to PES schemes for climate change mitigation and adaptation (e.g. global REDD+ mechanism)<br>– Loan and investment funding from public sources to support profit creating, pro-biodiversity businesses<br><br>– In domestic context, creating tax incentives to support private pro-biodiversity funding and investment | carbon compensation schemes, either as direct earmarked investment (one-off) or via PES schemes (ongoing)<br>– Establishment of offsetting and/or carbon trading schemes<br>– Loan and investment funding from private sources to support profit creating, pro-biodiversity businesses |
| **Tourism** | | |
| | – Earmarked direct financing / investment under sectoral budget to support maintenance and restoration of species, natural areas and landscapes and/ or facilitate access to nature.<br>– Loan and investment funding from public sources to support profit creating, pro-biodiversity businesses<br><br>– In domestic context, creating tax incentives to support private pro-biodiversity funding and investment | – Establishment of pro-biodiversity businesses such as businesses focusing on sustainable nature-based tourism, possibly in cooperation with PA management<br>– Market creation for / certification of sustainable tourism products and services<br>– Opportunities for private PES schemes related to tourism (e.g. payment schemes established between businesses and PAs and/or private landowners to guarantee access and/or availability of high-quality and biodiverse tourist destinations)<br>– Establishment of offsetting schemes in the context of tourism<br>– Loan and investment funding from private sources to support profit creating, pro-biodiversity businesses |
| **Health** | | |
| | – Earmarked direct financing / investment under sectoral budget to support ecosystem-based solutions benefiting public health, e.g. ecosystem-based maintenance of air quality and mitigation of natural hazards, access to green areas with a view to support physical and mental health etc.<br><br>– In domestic context, creating tax incentives to support private pro-biodiversity funding and investment in the context of health sector | – Establishment of innovative nature-based businesses such as businesses that utilise natural green spaces (e.g. PAs) for the basis of promoting physical and mental health (e.g. use of 'green gyms'), with possible active contribution from these businesses to the conservation and management of areas they use.<br>– Investment in initiatives that support pro-biodiversity business opportunities indirectly / in the future, for example payments related to bioprospecting or in situ conservation as a source for material supporting future 'product' development within pharmaceutical sector |

## 6.2 Current and foreseen uptake of tools

Based on the available information, significant green markets for approaches and tools facilitating sectoral resource mobilisation, such as PES and offsetting schemes and certified products, already exist. It also seems evident that the interest in and markets for these approaches and tools are growing in the future (Table 6.2).

The proliferation of schemes for ecologically certified products is an indication of changing consumer preferences. In addition to the increased number of schemes, total sales and the market share of certified products are also growing, albeit from a small base. For example, the annual value of certified agricultural products has been estimated to be around US$40 billion with projected increase of five times the current size during the upcoming ten years (Bishop 2012). Similarly, the value of PES-type payments has been estimated to already amount to over US$8 billion per year at a global level. Chapter 7 provides more detailed information regarding the uptake and markets for a number of key approaches and tools facilitating sectoral resource mobilisation, including certification and PES schemes.

However, as highlighted in Chapter 3 (e.g. Table 3.1) the existing markets are mainly based in developed countries. For example, only around 10-16% of the estimated current markets for offsets take place in the developing world. Similarly, only around 3% of the market for green commodities (e.g. certified products) is generated by developing countries. Consequently, there seems to be significant opportunities to apply these approaches and tools in the context of sectoral funding to/within developing countries, with a view to enhance sectoral resource mobilisation.

**Table 6.2** Future increase of green markets

| **Market opportunities** | **Market size (US$ per year)** | | |
|---|---|---|---|
| | **2008** | **Estimated 2020** | **Estimated 2060** |
| Certified agricultural products | US$40 billion (2.5% of global food and beverage market) | US$210 billion | US$900 billion |
| Certified forest products | US$5 billion of FSC certified products | US$15 billion | US$50 billion |
| Bio-carbon / forest offsets | US$21 million (2006) | US$10+ billion | US$10+ billion |
| Payments for water-related ecosystem services (government) | US$5.2 billion | US$6 billion | US$20 billion |
| Payments for watershed management (voluntary) | US$5 million for various pilots | US$2 billion | US$10 billion |
| Other payments for ecosystem services (government-supported) | US$3 billion | US$7 billion | US$15 billion |
| Mandatory biodiversity | US$3.4 billion | US$10 billion | US$20 billion |

| | | | |
|---|---|---|---|
| offsets | | | |
| Voluntary biodiversity offsets | US$17 million | US$100 million | US$400 million |
| Bioprospecting contracts | US$30 million | US$100 million | US$500 million |
| Private land trusts, conservation assessments | US$8 billion in the US alone | US$20 billion | Difficult to predict |

*Source*: Bishop (2012) as adapted from Forest Trends and the Ecosystem Market Place (2008)

# 7 FUTURE OPPORTUNITIES: IN-DEPTH CONSIDERATION OF CERTAIN KEY APPROACHES AND INSTRUMENTS

This Chapter provides further detail on the current status and trends in the market share of some approaches and tools available to facilitate sectoral resource mobilisation. Tools already in use, but in need of further development and mainstreaming, include certified and labelled products, and PES and offsetting schemes. In addition, more innovative approaches, i.e. development of pro-biodiversity business ideas and establishment of biodiversity investment funds, are also considered. Information on status and trends is then used as an indicator for future possibilities to mobilise funding for biodiversity under different sectors via these tools. Furthermore - and rather crucially – the Chapter also highlights some key considerations and criteria for ensuring that the bespoken tools deliver real (net) benefits to biodiversity.

## 7.1 Mobilising resources via selected sectoral labelling and certification schemes

### *7.1.1 Certification of biodiversity-friendly agricultural practices*

Several labels and standards (e.g. 'sustainable farm certification', 'organic', 'free-range' and business-to-business labels) are used to identify farms and products using environmentally favourable practices. Depending on how such standards are implemented, they could enable agri-businesses of all sizes to promote conservation and sustainable use of biological resources (Bishop 2012) and provide incentives to farmers.

Organic agriculture supplying the organic food and drinks industry is the largest type of certified agriculture. As of 2011, approximately 37 million hectares worldwide were farmed organically, representing approximately 1% of total world farmland (FiBL and IFOAM 2013). The increase in organically managed farmland was driven by the demand for organic food and drinks, which has grown over the years 2001-2011 at a rate of 8 to 9% per year (Paull 2001, Willer and Kilcher 2013).

The global organic food market is expected to grow from around 60 billion in 2010 to US$104.7 billion in 2015 (Transparency 2012). Global sales of organic food and drink have indeed been increasing by over US$5 billion a year, reaching US$59 billion in

2010 (Organic Food Monitor 2009). Most are consumed in Europe or North America (Bishop 2012). Royal Wessanen, a leading company in the organic food market in Europe, has estimated that the size of European organic food market was estimated to be EUR 22 billion in 2012, growing approximately 6% in 2011 and thus outpacing growth of the total European food market. In 2012, organic sector represented about 2.5-3% of total European food and beverages spend (Wenassen 2012).

In addition to food and drinks, a recent report estimated that the global biofuels market will double over the next decade reaching US$185.3 billion in 2021 (Pike Research 2011). The report estimates steady growth though to 2016 but rapid production increases between 2017 and 2021 as a result of higher oil prices, emerging mandates, new feedstock availability, and advanced technologies. Total global biofuel production is projected to reach 65.7 billion gallons per year (BGPY) by 2021, and ethanol is expected to maintain its dominance over the industry, with nearly 50 BGPY compared to biodiesel's 16.2 BGPY. Given the increasing markets, there are concerns that the expansion of agricultural activities, fuelled by the need to simultaneously produce food, feed, fibre and fuel, could increasingly encroach into environmentally sensitive areas with the consequence of nullifying and severely reducing the actual contribution of biofuels to GHG reductions. In the worst case scenario, biofuels could even contribute to the overall GHG emissions (e.g. Lehmann et al. 2011, Oosterhuis and ten Brink 2004). In addition, large-scale biofuel feedstock production could lead to considerable environmental degradation, for example loss of biodiversity, excessive use of pesticides or overexploitation of water resources (UNCTAD 2009).

In order to receive government support or count towards mandatory national renewable energy targets, biofuels used in the EU, whether locally produced or imported, have to comply with sustainability criteria. These criteria aim at preventing the conversion of areas of high biodiversity and high carbon stock for the production of raw materials for biofuels. The entire biofuel production and supply chain should to be sustainable. To this end, the sustainability of biofuels needs to be checked by Member States or through voluntary schemes which have been approved by the European Commission (EC 2013). These should be seen as minimum criteria and there are stricter labels which arguably can do more for biodiversity.

The 'Roundtable on Sustainable Biomaterials' (RSB) certification scheme attempts to set a global standard for the sustainable production of biomass and biofuels (RSB 2013). For example, palm oil is one of the crops whose cultivation has increased almost exponentially over the last decade, followed by the adoption of certification schemes. As a result, the share of certified palm oil has been growing in recent years, as illustrated in Box 7.1 below.

**Box 7.1** Palm Oil (Label 'Green Palm')

With its high yield and profitability, palm oil has emerged over the past two decades as a major source of vegetable oil. But the crop's rapid expansion has taken a heavy toll on tropical forests, especially in Malaysia and Indonesia, which are the world's two leading producers. In the past decade, palm oil

production has known be a driver for deforestation, wildlife loss, community conflicts and climate change.

In response to the pressing global call for sustainably produced palm oil, the Roundtable on Sustainable Palm Oil (RSPO) was formed in 2004. The objective of the RSPO is to promote the growth and use of sustainable oil palm products through credible global standards and engagement of stakeholders.

Certified sustainable palm oil (CSPO) is palm oil that has been grown on a plantation that has been managed and certified in accordance with the Roundtable on Sustainable Palm Oil's principles and criteria adopted in 2007. In other words, the plantations used to grow CSPO need to be established on land that was not deforested and converted to plantation after 2005, and that has been well managed with good environmental, social and economic standards.

In 2011, over 5 million tonnes, or 10% of the total amount of palm oil produced globally, was certified through the RSPO (WWF 2013). Moreover, 114 palm oil producing and processing companies were certified to offer fully traceable RSPO-certified palm oil to end users. In 2012, RSPO Annual Production Capacity reached 14% of global crude palm oil.

In 2012, the European Commission has approved palm oil-based biodiesel for the renewable fuels standard provided it is certified under RSPO. In practice this means that the RSPO dominates the market exporting to Europe. The sustainability of RSPO criteria is not, however, perceived without criticism by environmental activists. New RSPO plantations are allowed to remove forest as long as the land is not deemed 'high-value conservation forest.' With RSPO members from the Americas, Africa, Asia, and the Pacific islands, RSPO has allowed each country to interpret 'high value' based on the national situation and criteria (Worldwatch 2013). It is therefore considered that without regulations that place strict limits on expanding plantations at the expense of forest producers of CSPO do not have enough incentive to invest in boosting their yields. Another issue is that the RSPO hasn't yet adopted criteria for greenhouse gas accounting. It is considered that including carbon/greenhouse gas standards in RSPO principles and criteria would essential if palm oil is to be considered sustainable.

Sources: RSB (2013), WWF (2013), Worldwatch (2013)

### *7.1.2 Certification of sustainable forestry products (timber)*

Between 2001 and 2005, global coverage of certified forests expanded by about 50 million hectares per year, mainly due to a rapid increase in North America. By 2009, 325.2 million hectares worldwide (8.3% of total forest area) were certified under various schemes (UNECE/FAO 2009).

As of 2010, the market share of certified timber and timber products in the EU was approximately 6-7%. Although this percentage varies significantly among the different EU countries and between different product groups, in 2012 the market share was growing in all EU Member States (FSC 2010). Two of the lead certification scheme worldwide, the FSC and the PEFC, as well as the trends as regards market share and its growth, are briefly presented in Box 7.2 below.

While forest certification schemes such as the PEFC and the FSC have achieved significant market penetration, the rate of expansion of certified round wood production (i.e. sections of timber in raw unmanufactured state) has decreased in recent years (total increase between May 2008 to May 2009 was under four million

hectares). This may reflect the fact that large forest areas in the developed world are already certified (Table 7.2, Figure 7.1). Certifying forests in developing countries presents challenges linked to lack of capacity, resources and incentives to participate, as a significant proportion of forests are owned by non-industrial and communal sectors. The geographical bias of certified forests towards the northern hemisphere inevitably limits its effectiveness as an instrument to protect biodiversity. Almost 92% of certified forests are in the northern hemisphere. Only 2% of tropical forests are certified (see Table 7.2 below).

In June 2012, the EU released detailed information about the requirements of the EU Timber Regulation (EC 2012). Since then, importers and their suppliers located outside of the EU have started adapting to the new requirements before they enter into force in March 2013. This process is likely to influence the entire timber market and move it in the direction of enhanced focus on both legal and sustainable timber.

**Table 7.2** Global supply of round wood from certified resources (2007-2009)

| Region | Total forest area (million ha) | Total certified forest area (million ha) | | | Total forest area certified (%) | | |
|---|---|---|---|---|---|---|---|
| | | 2007 | 2008 | 2009 | 2007 | 2008 | 2009 |
| North America | 470.6 | 164.2 | 181.7 | 180.3 | 34.9 | 38.6 | 38.3 |
| Western Europe | 155.5 | 80.8 | 84.2 | 82.2 | 52.0 | 54.1 | 52.8 |
| CIS | 907.4 | 20.6 | 24.6 | 25.2 | 2.3 | 2.7 | 2.8 |
| Oceania | 197.6 | 9.9 | 9.4 | 10.3 | 5.0 | 4.8 | 5.2 |
| Africa | 649.9 | 2.6 | 3.0 | 5.6 | 0.4 | 0.5 | 0.9 |
| Latin America | 964.4 | 12.1 | 15.0 | 14.6 | 1.3 | 1.6 | 1.5 |
| Asia | 524.1 | 1.6 | 2.0 | 3.0 | 0.3 | 0.4 | 0.6 |
| World total | **3869.5** | **291.8** | **319.9** | **321.1** | **7.5** | **8.3** | **8.3** |

*Sources:* UNECE/FAO (2009) using individual certification schemes; the Canadian Sustainable Forestry Certification Coalition; FAO and authors' compilations (2009).

*Source*: TEEB (2011)

**Box 7.2** Forest certification schemes

FSC (Forest Stewardship Council) was established in 1993, building on a broad variety of members (e.g. environmental and social groups, timber trade, indigenous people's groups, forest product certification organizations). FSC certification is based on ten principles that encompass sustainable development, equity and environment. In 2009, the value of FSC-labelled sales was estimated at over US$20 billion, representing fourfold growth since 2005. Companies with a combined turnover of over US$250 billion US$ in wood products are committed to FSC certification. FSC's market share in the Netherlands was estimated at 17% in 2007. In Switzerland the total turnover of FSC products was over US$120 million in 2005 (FSC 2009)

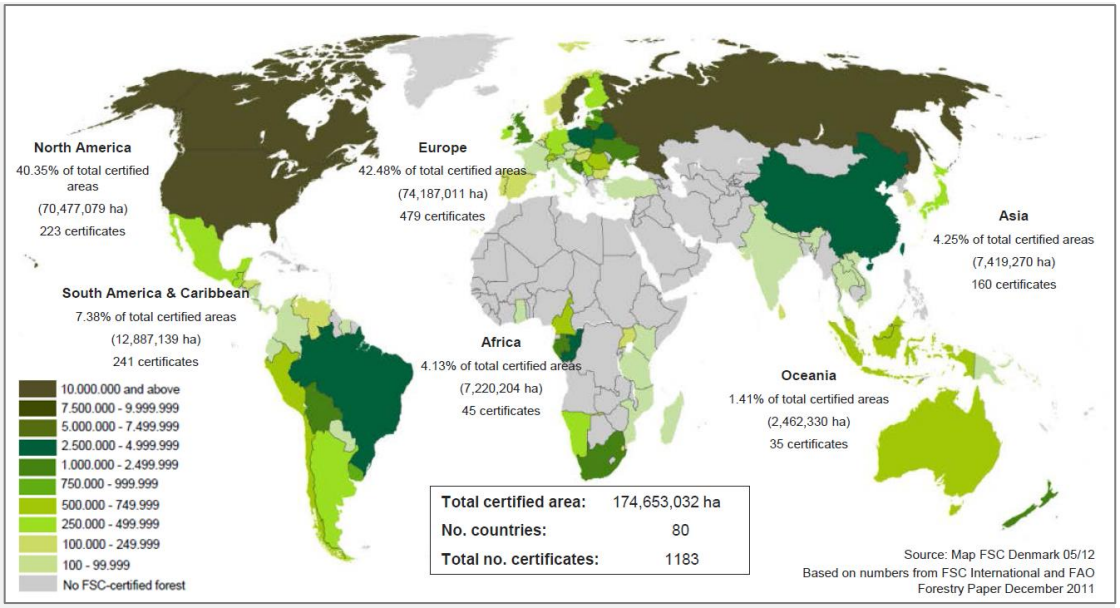



**Figure 7.1** Global FSC Certified forest area by region (FSC 2013a)

PEFC (Programme for the Endorsement of Forest Certification schemes) is an international organization supporting assessment and recognition of currently 25 independent national schemes, including for small forests. These must comply with basic PEFC requirements but may adhere to stricter environmental criteria.

By 2008, 77% of drinks cartons produced by Tetrapak, Elopak and SIG Combibloc (80% of the global market) were made from certified or controlled wood fibres. The companies have pledged to purchase all paperboard from 'legal and acceptable' sources by 2015, using FSC, PEFC or equivalent standards.

*Sources*: FSC (2013), PEFC (2013), FSC (2009), UNECE/FAO (2009) and ENDS Bulletin (2009) as in ten Brink (2011)

### *7.1.3 Certification of sustainable fisheries*

Estimated US$50 billion are lost each year due to poorly managed fisheries (World Bank 2009, IMO 2012). In particular, the depletion of certain high-value fish stocks continues while a number of more sustainable stocks remain under-exploited (World Bank 2009). A range of national and private label associations have attempted to counteract these inadequacies in fisheries management by developing their own standards for sustainable fisheries and aquaculture products.

Market-based initiatives to conserve fish stocks and habitats can build on the FAO Code of Conduct for Responsible Fisheries (1995), the internationally agreed voluntary framework covering sustainable practices and ecosystem approaches to fisheries management. This does not mean, however, that there are not variations across existing labels and in fact, not all ensure sustainability to the same degree (IMO 2012). In terms of fisheries labelling, MSC operates the most widely recognized scheme with the largest geographic coverage (Box 7.3).

**Box 7.3** Volume and value of fisheries certified by the Marine Stewardship Council (MSC)

Of the sustainable fishery standards, the Marine Stewardship Council (MSC) is commonly recognised as the most scientifically rigorous and most important in terms of market share. The MSC standard is based on the following three principles: 1) maintenance of the target fish stock, 2) maintenance of the ecosystem and 3) effectiveness of the fishery management system. Naturland Wildfish is also a well-recognized fishery standard, but currently does not have as large a market share as MSC.

The MSC uses eco-labelling and independently verified certification to recognize sustainable fishing practices. A certified fishery must comply with three principles (sustainable fish stocks; minimizing environmental impact; effective management).

According to MCS, as of 2013 over 200 fisheries were engaged in the independent MSC assessment process, amounting to over 7 million tons per year of seafood landings, about 12% of the wild global annual harvest for direct human consumption and close to 8% of the total wild capture harvest. On the demand side, over 4000 individual labelled product lines are now available in over 60 countries around the world in a market that is worth in the region of US$2 billion annually. More than 18,000 seafood products bear the blue MSC ecolabel. Just five years ago, there were only 17 fisheries in the program and less than 200 labelled products in a handful of countries. (Howes 2013).

MSC has released a five-year strategic plan laying out the sustainable fisheries organization's priorities and goals leading up to 2017. The plan calls for the overall market share for MSC-certified seafood to be doubled over the next five years. That would equate to market share of 30 to 40% in 'advanced' Northern Europe markets; a quadrupling of market share in the U.S. and Canadian markets; significantly growing market share in Australia, New Zealand, Japan and Southern Europe; and introducing the MSC concept in China and certain Asian markets. The plan also calls for MSC-certified product to represent 15% of the world's seafood catch by 2017 and 20% by 2020.

*Sources:* MSC (2013), Seafood Source (2013), IMO (2012)

### *7.1.4 Certification of ecotourism and ecotourism labelling*

The travel and tourism industry is one of the largest and most dynamic industries in today's global economy. It was estimated that it generated about 9% of total GDP and provided more than 235 million jobs in 2010, representing 8% of global employment. According to the World Travel andTourism Council it could grow at around 4% every year globally over the next 10 years (WTTC 2012). By 2022 the industry could generate 10 trillion to the global economy and 328 million jobs.

Beginning in 1990s, ecotourism has been growing 20 - 34% per year. In 2004, the nature and ecotourism market grew three times faster than the tourism industry as a whole. Sustainable tourism could grow to 25% of the world's travel market within six years, taking the value of the sector to £250 billion (US$473.6 billion) a year (International Ecotourism Society 2006). Tourism is a key export for 83% of developing countries and for the 40 poorest countries, the second most important source of foreign exchange after oil. In the last decade, 23 biodiversity hotspots saw over 100% tourism growth (Christ et al. 2003). Nature-based recreation (e.g. hunting, fishing and observing wildlife) accounted for nearly 1% of GDP in the US in 2006 or US$122 billion (US Fish and Wildlife Service 2007).

Despite this growth, ecotourism has lagged behind other sectors in establishing formal certification processes. However, several labelling initiatives could support higher industry standards. The new Tourism Sustainability Council, formed by a merger between the Partnership for Global Sustainable Tourism Criteria and the Sustainable Tourism Stewardship Council in September 2009, has the potential to provide a global accreditation body for ecotourism programmes (ten Brink 2011). One criterion for assessing its effectiveness will be how well it meets the needs of small tourism operators, especially in the developing world.

**Table 7.2** Synthesis of opportunities for biodiversity-friendly certification schemes

| **Sector** | **Agriculture** | | | **Forestry** | **Fisheries** | **Tourism** |
|---|---|---|---|---|---|---|
| **Type of products/Industry**<br>Labelling/certification | **Food & drinks**<br>Organic food & drinks | **Biofuels**<br>Sustainable biofuels | **Palm oil**<br>Sustainable palm oil | **Timber**<br>Certified timber | **Seafood**<br>Sustainable Seafood | **Tourism**<br>Eco-tourism |
| **Impacts on biodiversity of non-certified product (baseline)** | Pollution, habitat destruction (land use changes) | Pollution, habitat destruction (land use changes) | Pollution, habitat destruction (land use changes) | Habitat destruction/ disruption | Depletion of the fish stocks, fishing practices that destroy marine ecosystems | Pollution, habitat destruction/disruption |
| **Would there be net biodiversity gains if certification scheme became minimum standard for the whole industry?** | YES: reduced direct biodiversity loss and increase of biodiversity rich habitats | YES: reduced direct biodiversity loss and reduced indirect loss through reduced pollution | Yes: reduced direct biodiversity loss | YES: reduced direct biodiversity loss and reduced indirect loss through reduced pollution | YES: reduced direct biodiversity loss | Yes: reduced direct biodiversity loss/increased incentives for biodiversity conservation |
| **Examples of certification schemes** | Organic labels | RBS Certification | RSPO Certification | Forest Stewardship Council (FSC); Programme for the Endorsement of Forest Certification schemes (PEFC) | Marine Stewardship Council (MSC) | Global Sustainable Tourism Criteria (GSTC) |
| **Examples of biodiversity criteria in the certification standards** | USDA Organic, Agriculture Biologique, Demeter, Round Table on Responsible Soy Association (RTRS): On-farm biodiversity is maintained and safeguarded through the preservation of native vegetation. | Principle 7 of the RSB Principles & Criteria for Sustainable Biofuel Production is that biofuels operations shall avoid negative impacts on biodiversity, ecosystems, and conservation values. Specific criteria include that conservation values (…) shall be maintained or enhanced and that biofuel operations shall protect, restore or | Sustainable Palm Oil certification (RSPO): The status of rare, threatened or endangered species and high conservation value habitats, if any, that exist in the plantation or that could be affected by plantation or mill management, shall be identified and their conservation taken into account in management plans and operations. | Forest Stewardship Council (FSC), Programme for the Endorsement of Forest Certification schemes (PEFC): Ecological functions and values shall be maintained including genetic, species, and ecosystem diversity (FSC) | Marine Stewardship Council (MSC): The fishery is conducted in a manner that does not threaten biological diversity at the genetic, species or population levels and avoids or minimises mortality of, or injuries to endangered, threatened or protected species (MSC) | Global Sustainable Tourism Council (GSTC): Example criterion 3.1: Wildlife species are only harvested from the wild, consumed, displayed, sold, or internationally traded, as part of a regulated activity that ensures that their utilization is sustainable. |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | create buffer zones, ecological corridors, etc (RSB 2010). | | | | |
| **Share of the current certified market considered to have benefits for biodiversity** | Europe: EUR 21 billion / year(estimate); 2.5-3% of total market (Wenassen 2012)<br><br>Global market: US $59 billion in 2010 (Organic Food Monitor 2009) | Europe: in 2010 14 Mtoe (millions of tonnes of oil equivalent) of biofuels were consumed. The same year, the EC recognized 8 voluntary certification systems (Eurobser'Ver 2012). No available data about the certified volume.<br><br>Global: in 2010 57.5 Mtoe of biofuels were consumed, representing $82.7 billion (Blue Economy 2012). No available data about the certified volume. | In 2011, over 5 million tonnes, or 10% of the total amount of palm oil produced globally, was certified through the RSPO. (WWF 2013) | Europe: As of 2010, the market share of certified timber and timber products in the EU was approximately 6-7%. (FSC 2010)<br><br>Global: in 2009 the value of FSC-labelled sales was estimated at over US$20 billion, representing fourfold growth since 2005. 8% of global forest area has been certified under a variety of schemes (OMT 2012). | Europe: in 2012, 85% of all MSC labelled products were sold in Europe (MSC 2012). | No estimates available for GSTC<br><br>In 2011 Europe accounted for 45 % of the total profits generated by tourism worldwide (OMT 2012).<br><br>In 2010 the total profits generated by tourism worldwide were $928 billion (OMT 2012). |
| **Global market tomorrow** | The global organic food market is expected to grow from US$57.5 billion in 2010 to US$104.7 billion in 2015 (Transparency 2012) | Global biofuels market will double over the next decade reaching $185.3 billion in 2021. (Pike Research 2011) | The world production of vegetable oil is expected to grow by 28% by 2020 compared to 2012 (OECD/FAO 2012). | No estimate available. With deforestation causing ecosystem losses valued at about US$2-5 trillion annually worldwide, there is a significant potential growth to expect (WBCSD Forest Solutions Group 2012) | MSC plans to double the market share of MSC-certified seafood products over the next 5 years. (MSC 2012) | Sustainable tourism could grow to 25% of the world's travel market within six years, taking the value of the sector to £250 billion (US$473.6 billion) a year. (International Ecotourism Society 2006) |

### *7.1.5 Conclusion and future opportunities*

*Possibilities for mobilising biodiversity funding by using certification*

The markets for organic food and drinks are foreseen to increase, indicating that there is potential for using certification as a tool to mobilise funding for biodiversity-friendly products and this way support biodiversity-friendly management practises within agricultural sector. In particular, the estimated market share in Europe seems still rather small but it is expected to grow over the years to come, pending favourable framework conditions and a supporting policy framework. This means that Europe's policy framework and Europe's consumers can play an important role in creating further demand for certified products and, at the same time, influencing the outcome on biodiversity. Out of all the existing labels, certified organic food is probably the one that could most directly, through specific criteria, deliver net benefits for biodiversity by ensuring that currently intensively farmed land becomes farmed in more extensive ways (see Table 7.2).

As regards biofuels, it is clear that a growth in the consumption of non-certified biofuels across the world could have tremendous negative consequences on biodiversity, especially since the global biofuels market is expected to double (from $82.7 billion in 2011 to $185.3 billion in 2021, see Table 7.2). If the EU sustainability criteria regarding biofuels were made more stringent as regards impacts on biodiversity, this would probably have an impact on voluntary schemes, which requires that the schemes be approved by the European Commission in order to count towards mandatory national renewable energy targets. Rather than aiming to mobilise funding for biodiversity, the primary concern in the context of biofuels seems to be to ensure that the expanding sector does not pose a threat to biodiversity, this way undermining conservation efforts elsewhere (e.g. under other sectors). Consequently, biodiversity proofing investment in biofuels is the most pressing priority with further considerations on mobilising dedicated resources for conservation via further improved certification schemes to follow.

With only 2% of tropical forests certified, certification can present a possible tool for resource mobilisation within the forest sector in the future. Growth in certified forests worldwide has grown between 2001 and 2005 by about 50 million hectares per year and by 2009 over 8% of total forest areas were certified under various schemes (Table 7.2). The market share of certified timber and timber products in the EU of about 6-7% in 2010 but it is very variable across Member States, suggesting that there is still much scope in increasing the demand for certified products in EU Member States were market penetration is still low. The certified wood primarily comes from forests in the developed world and therefore the future challenge is not only to increase the share of certified products on European markets but also to ensure that certification progresses in developing countries, in particular for wood from tropical forests. The requirements of the EU Timber Regulation might offer a legislative basis for advancing this objective.

In the area of fisheries, over 10% of annual global harvest of wild capture fisheries has been estimated to receive certification which still leaves lots of room for further increase. MSC, which is the main label in the sector, aims to raise this to 20% by 2020. Given that a significant amount of global fish comes from highly biodiverse areas, it can be concluded that certification provides a possible tool for resource mobilisation under the fisheries sector. However, as with other sectors and schemes, the net impacts on biodiversity will depend on the true biodiversity-friendliness of the schemes (see below).

The tourism sector is growing faster than the global economy. In 2012 it was expected to grow approximately 4% a year globally over the next 10 years, generating $10 trillion to the global economy by 2022. Eco-tourism has historically (since the early 1990s) grown two to three times faster than the rest of the sector (Table 7.2). However, there is no clear label or certificate in place for eco-tourism. Given the likely impact of – and also opportunities created by - this fast growing sector it appears crucial that standards be set and a labelling scheme introduced both to ensure no negative impacts of the sector on biodiversity (i.e. biodiversity proofing investment to the sector) and to use the growing markets to mobilise funding for biodiversity conservation. European has a particular opportunity – and also responsibility - in pushing for these developments given that Europe accounts for about half the total profits generated by tourism worldwide.

*Ensuring biodiversity friendliness and effectiveness of certification schemes*

While the increasing demand and markets for certified products seem to provide a promising avenue for mobilising funding for biodiversity under different sectors a number of aspects need to be secured for this tool to truly benefit biodiversity. Where the criteria associated with the certification are strengthened in the future, then additional contributions to reducing pressures on biodiversity would ensue.

Existing labels and certification schemes (as analysed above) aim to guarantee that resources are used and/or goods are produced in ways that result in less pressure on biodiversity compared to with the traditional production methods. However, categorising them automatically as tools for resource mobilisation might be misleading because it suggests that all investment in and/or resources supporting certification result in net benefits to biodiversity. This, of course, is not the case as different certification schemes require different biodiversity measures. For example, there is much debate about to which extent, in concrete terms, certified food and drinks contribute to biodiversity conservation (Bengtsson et al. 2005, Gibson et al. 2007).

The certified and labelled products analysed above may help reduce the rate of biodiversity loss, in particular where they include criteria that prevent production practices harmful for biodiversity (i.e. biodiversity proofing). As illustrated in Table 7.2, most of the analysed labelling and certification schemes include criteria that relate to reducing the pressure on biodiversity. These criteria illustrate that, while

current sectoral certification schemes generally stand for a more sustainable exploitation of natural resources their contribution to concrete biodiversity conservation and/or restoration measures remains limited.

Thus, in their current form sectoral certification schemes – if mainstreamed in their respective markets - can contribute to slowing the rate of biodiversity loss However, further development of the schemes is required to pro-actively used them as means for resource mobilisation To help ensure that the market shares of labelled and certified products increase – with maximum benefits for biodiversity - a range of issues need to be addressed, including both making existing labelling and certification schemes more biodiversity-relevant, expanding the market share of these products and reducing the share of products associated with biodiversity harmful production practices (Sheil et al. 2010). While governments are not the main actors in this field, they have an important role to play in ensuring that certified products will attain a breakthrough up to a share of 50% or more, instead of serving only a niche market (Vermeulen et al. 2010). In this context, support for certification schemes (supply side) needs also to be accompanied measures such as green public procurement (demand side). Increased levels of vigilance and control for the inappropriate use of labelling (e.g. preventing the use of labels for non-certified goods) are also needed.

In addition, the increase in labelled and certified products is likely to mainly contribute to biodiversity proofing sectors rather than financing concrete conservation measures. Therefore, a small but growing niche of products linked to concrete activities that benefit directly biodiversity could merit a dedicated focus in the future. This is for example the case of pro-biodiversity businesses (PBB), a category of businesses that is presented in more detail in section 7.4 below.

## 7.2 Mobilising resources via sectoral PES schemes

Payments for Ecosystem Services (i.e. PES schemes) are increasingly reagrded as useful mechanisms to compensate those responsible for maintaining ecosystem services and related benefits to people. As such, PES schemes are considered to offer a potential avenue to raise new funds for biodiversity or to use existing funding more efficiently and the approach is encouraged to be pursued by local and national governments as well as the international community (GEF 2010, OECD 2010, World Bank 2007).

The primary markets for PES schemes relate to sustainable watershed management and biodiversity protection. The combined global payments for existing schemes valued around US$11 billion in 2008, composing of an estimated US$1.8 - 2.9 billion for biodiversity conservation and US$9 billion for watershed services that protect and enhance water quality (Worldwatch 2010). By 2010, these payments had

reached US$2.4 to US$4 billion for biodiversity[16] (Worldwatch 2010). It is anticipated that the public-funded PES programmes will amount US$7 billion by 2020 and US$15 billion by 2050 (Table 7.3) (Worldwatch 2010). This represents a growth rate of 3.5% per annum.

The majority of current PES schemes rely on public funding. According to the Forest Trends and the Ecosystem Marketplace (2008), global government expenditures for PES (i.e. all PES schemes) were estimated to be US$6.5 billion per year in total (from national programmes in China, Costa Rica, Mexico, the United Kingdom and the United States). Of this US$6.5 billion per year, it is estimated than less than 12% is spent in developing countries, international public-sector funding (e.g. Global Environment Facility (GEF) and World Bank) being the most important source of finance for PES programmes in developing countries. For example, in 2007 GEF supported 22 projects with explicit PES component (< 3% of GEF 1991-2005 cumulative investment), the most of with located in Latin America (GEF 2010).

In addition to the public funding, the total size of the private regulated and voluntary markets were estimated to be US$370 million and US$17 million in 2008 (respectively) with the former projected to amount to US$10 billion in 2020 (Forest Trends and the Ecosystem Marketplace 2008) (Table 7.3). In general, private sector is becoming increasingly interested in PES markets: a recent survey identified more than 100 types of private environmental service payment programmes with a relatively even distribution across three key focal areas (carbon sequestration, water and biodiversity) (Gutman and Davidson 2007). The private sector is playing an increasingly active role in payment programmes in developing countries. The motivation of the private sector for paying to promote environmental service provision includes concerns about maximizing sales to environmentally aware consumers and pressures from shareholders and consumers for greater corporate social responsibility (Gutman and Davidson 2007).

**Table 7.3** PES for biodiversity conservation in 2008 and 2020

| **Origin of flow** | **Market size** (billion US$/year) | **Reference year** | **Projection 2020** (billion US$/year) | **Source** |
|---|---|---|---|---|
| **Public** | 1.8 – 2.9 | 2008 | 7 | Worldwatch (2010) |
| **Private, regulated** | 0.37 | 2008 | 10 | Forest Trends and the Ecosystem Marketplace (2008) |
| **Private, voluntary** | 0.017 | 2008 | NA | Forest Trends and the Ecosystem Marketplace (2008) |

[16] Based on 45 biodiversity payment programs across the world relative to a total number of PES programs in place the same year

### *7.2.1 Use of PES under different sectors*

No comprehensive sector-based assessment of the PES schemes exist, however according to the available information a majority of PES schemes is carried out in the context of agriculture, forestry and water management. Most existing PES schemes do not target biodiversity directly but rather support the conservation and/or restoration of ecosystems more generally. As highlighted above, the most common themes for PES schemes include water management, support to carbon sequestration and conservation of biodiversity (FAO 2011) (Box 7.4).

During the recent year, two initiatives in particular have facilitated the uptake of carbon related PES schemes within the forest sector, making forest carbon as the flagship PES initiative at the global level. United Nations' Reducing Emissions from Deforestation and Forest Degradation (REDD+) Programme and the World Bank Forest Carbon Partnership Facility. Both of these initiatives were established in 2008 to assist in the development of a global PES scheme that would compensate developing countries for their efforts to conserve tropical forests, which act as important carbon 'sinks.' While the main purpose of REDD+ is to mitigate climate change it can also yield to benefits for biodiversity and ecosystem services, including helping to avoid further losses and - depending on the compensation criteria – even increasing biodiversity (Miles and Dickinson 2010). The international community has discussed scaling up REDD+ finance to US$30 billion per year. Several wealthier governments, including Norway and Germany, are providing funds to help developing countries build the capacity to handle a REDD+ market as well as to provide financial incentives to the best performers (World Watch 2010).

**Box 7.4** Examples of successful private and public PES schemes

*The Ruvu Watershed Water Protection Project in Tanzania*

In the Ruvu watershed in Tanzania, a joint CARE-WWF Programme started in 2006 to promote a PES scheme aimed at enhancing the conservation of the watershed and thereby the water quality of the Ruvu river, which supplies water to over four million people and to the major industries of Tanzania. The water quality in the river was decreasing due to a dramatic increase in sediment loads. A PES scheme was set up between the beneficiaries downstream (industrial Water Supply and Sewerage Corporation (DAWASCO) and Coca Cola Kwanza Ltd.) and the stakeholders responsible for land management upstream (about 265 farmers). Farmers receive payment for the adoption of agriculture practices aimed at controlling runoff and soil erosion, while improving their crop production. Payments are allocated according to how many hectares of land are converted to erosion-friendly practices and the type of agricultural and/or land-use practice adopted.

*Sources:* FAO (2011) and Yanda et al. (2007)

*The Pico Bonito Sustainable Forests Project in Honduras*

Supported by the World Bank and the EcoLogic Development Fund, the overall development objective of this project is to generate 850,000 tons of carbon dioxide equivalent emissions reductions by 2017, while at the same time supporting the restoration of degraded forest habitats and establishment of sustainable income-generation options. Carbon credits are generated by planting native trees to

capture, or sequester, carbon dioxide. The credits are then sold though the World Bank's BioCarbon Fund to countries aiming to meet their carbon emissions reduction targets. The project offers a unique business model because it is owned jointly by investors and the communities near the park. Community members earn income and share profits from implementing the sustainable forestry practices that capture carbon. By 2017, the project is expected to sequester from 45 to 55 Mt of carbon through reforestation and agroforestry and up to an additional 5 Mt of carbon through avoided deforestation.

*Source:* World Bank (2006)

### *7.2.2 Conclusion and future opportunities*

PES schemes have recently attracted attention for their potential to mobilise new sources of finance to support sustainable environmental management in developing countries and to contribute to poverty reduction and agricultural development. However, the actual flow of funds to developing countries via PES remains small and primarily derived from public sector funding in a handful of countries (Gutman and Davidson 2007). The amount of money that has thus far been raised for biodiversity conservation in developing countries through PES is limited but – if well planned and implemented - there is potential for scaling-up the funding to effectively deliver biodiversity benefits in the future.

However, existing evidence indicates that while PES provide an interesting opportunity for mobilising funding for biodiversity the success and cost-effectiveness of these schemes depend greatly on the framework for their implementation (e.g. proper identification of ecosystem services, clear arrangements between users and maintainers of the service, and ensuring land tenure and property rights) (Mayrand and Paquin 2004, Murandian et al. 2010, Murandian et al. 2013). Furthermore, since PES schemes can be targeted to deliver a range of different benefits it is also crucial to ensure due synergies between schemes' primary goals (e.g. water management) and biodiversity conservation.

## 7.3 Mobilising resources via biodiversity offsetting

Offsets[17] are a mechanism to compensate for any residual significant, adverse impacts of (sectoral) land use that cannot be avoided, minimised, rehabilitated and/or restored, in order to achieve no net loss or a net gain of biodiversity (BBOP 2013). Offsets can take the form of management interventions such as restoration of degraded habitat, they can be used to prevent further degradation or avert risk of degradation, or they can be used to protect areas where there is imminent or projected loss of biodiversity.

There are an increasing number of regional and national commitments for achieving no net loss of biodiversity and ecosystem services (BBOP 2013, EC 2011), meaning

[17] The Business and Biodiversity Offsets Programme (BBOP) defined offsets as 'measurable conservation outcomes resulting from actions designed to compensate for significant residual adverse biodiversity impacts arising from project development after appropriate prevention and mitigation measures have been taken.'

that requirements for developers to systematically offset negative impacts on biodiversity and ecosystems are becoming a common practice. This may be facilitated through the emergence of habitat banking schemes that provide a means for developers to compensate their actions by purchasing 'biodiversity credits' established based on already materialised restoration measured.[18]

Biodiversity offsetting is generally associated a wide range of sectors whose impacts need to be mitigated and compensated, for example, based on national legislation. A recent review identified around 45 existing compensatory mitigation programmes around the world with another 27 programs in various stages of development (Ecosystem Market Place 2011). Within each existing offsetting program, there are numerous individual offset sites, including over 1,100 mitigation banks worldwide (Madsen et al. 2011). Globally, Madsen et al (2011) estimate that the annual market for biodiversity offsets would be around UE$2.4 -EU$4.0 billion. This figure is likely to be much larger as 80% of existing programmes were not transparent enough to estimate their market size (Madsen et al. 2011).

Countries with legal requirements for offsets include Brazil, South Africa, Australia and the US, with the latter probably having the most advanced biodiversity banking market (Carroll et al. 2007). In the US more than 400 wetland banks have been established, creating a market for wetland mitigation worth more than US$3 billion/year. There are also more than 70 species banks which can trade between US$100 million and US$370 million in species credits each year.

### *7.3.1 Use of offsetting under different sectors*

A wide range of businesses, irrespective of their sector, size and location, depend - and consequently have an impact - on biodiversity and ecosystems. In principle, offsetting could be used as a tool to mobilise funding for biodiversity under any sector that need access to and/or aims to convert areas of biodiversity value (e.g. agriculture, forestry, extraction industries etc.). In 2013, BBOP offsetting standards were used by companies in the mining, tourism and forestry sectors in, for example, Madagascar, Botswana, Sweden, Romania, Colombia, Indonesia and New Zealand (BBOP 2013). No information is available on the breakdown of existing offsetting schemes per sector; however case studies provide some insights into the role of offsetting within different sectors (BBOP 2009). In most countries, sector-specific laws have been introduced to preserve areas with dedicated national importance and/or areas facing high pressures for biodiversity loss, such as wetlands (Canada, Russia and the United States) and forest (Brazil, India, the Netherlands, Morocco and Russia). These sector-specific laws are either used to specify the offsetting obligations, or to impose the introduction of compensatory measures for the natural environments at stake (CGDD 2012).

[18] It is important that the schemes are well conceived to avoid they result in 'a license to trash'. To ensure this equivalence between the ecological values destroyed and the ecological value created through the restoration measure needs to be ensured. Also, the restoration measures purchased should not be carried out to respond to legal requirements (i.e. need to bring added value on top of environmental baseline requirements) and they should only be applicable to offset impacts from future developments.

As major users of land, agriculture and forestry have known significant impacts on land use conversion and hence on biodiversity. While sustainable management activities can be help to maintain biodiversity, agriculture and forestry also have negative impacts which may need to be compensated for (GHK and BIOIS 2013) (Box 7.5). Consequently, these two sectors play a key role in establishing opportunities for mobilising funding for biodiversity through offsetting. For opportunities relating to REDD+ please refer to the section below on the climate change and energy sectors.

Biodiversity offsets have so far not been used systematically to offset adverse impacts (e.g. bycatch) on biodiversity and ecosystems in the fisheries sector. While recognising the challenge to making biodiversity offsets effective for marine conservation, there might be opportunities for offsetting the bycatch impacts to seabirds and sea turtles via restoring islands as nesting grounds etc.(Donlan 2010). While such measures will not solve the bycatch problem, they might contribute to conservation while finding means to address the more underlying issues(Pascoe 2011).

The tourism sector also has significant impacts on biodiversity, some of which could be offseted via habitat banking. In many coastal areas, for example, infrastructure development for tourism is a major driver for the loss of habitats and biodiversity. Offsetting schemes are not yet common in the context of tourism industry, however the sector could – or indeed even should - play a role in compensating for its impacts on biodiversity and habitats given the growing importance of nature-based tourism.

The water and sanitation sector's activities (operation, maintenance, expansion of water supply networks) also result on impacts on biodiversity for which offsetting could be required. In Germany, where there are stringent requirements for offsetting negative impacts of developments on the environment, water companies have been carrying out restoration projects to offset future impacts from their activities (BBOP 2009, Wende 2005). Similarly, the climate and energy sectors could also generate funds for nature conservation through stringent requirements on avoiding, mitigating and offsetting impacts on biodiversity from development of energy related infrastructure (windmills, dams, solar panel fields, power lines, etc.).

While offsetting is not systematically applied by the extractive industries it has been used in an increasing number of cases (BBOP 2013). It has also a potential to become more widespread when countries continue to tighten their requirements for environmental protection. Rio Tinto together with Birdlife has developed a methodology and global principles and guidance for offsetting the unavoidable biodiversity impacts of its mining operations (Birdlife, 2008). In recent years, these have in particular been disseminated by the BBOP (see for example BBOP 2009).

**Box 7.5** Examples of biodiversity compensation and offsets within forestry sector

**Flanders region in Belgium** is one of Europe's most heavily deforested regions. The Flemish government has therefore prioritised forest protection and preservation. To prevent further decrease in valuable forest areas, three main principles apply: 1) deforestration is in principle prohibited, 2)

when permitted, an authorisation is required and 3) an authorisation for deforestation may not be delivered without compensation (Afdeling Bos and Groen 2002 as in ten Brink 2011). Compensation consists of paying a 'forest preservation contribution' of EUR 1.98/$m^2$ for coniferous forest and EUR 3.96/$m^2$ for indigenous deciduous forest. The Flemish authority uses the revenues to buy land for afforestation (Vlaamse Regiering 2001 as in ten Brink 2011). By 2007, deforestation within the region was almost completely balanced with official afforestation measures (VBV 2008). In 2008, 156 hectares were deforested under permit but only 152 hectares were created through afforestation. As the annual afforestation target of 769 hectares has not been met in recently years (VBV 2009), the Flemish authority has committed itself to revive and broaden the scope of the forest preservation fund (Commissie voor Leefmilieu, Natuur, Ruimtelijke Ordening 2010 as in ten Brink 2011).

Source: ten Brink (2011)

### *7.3.2 Conclusions and future opportunities*

Developments requiring offsetting of impacts on biodiversity may potentially arise in all sectors responsible for changes in land-use. This means that offsetting a relevant conservation tool for most of the sectors considered in the context of this study, both in terms of preventing further (net) losses (i.e. supporting biodiversity proofing) and - depending on the adopted criteria - even functioning as an avenue to gain additional benefits for biodiversity. Furthermore, it also enables engaging sectors with very limited previous involvement in conservation, such as the extractive industries, in funding conservation and sustainable use of biodiversity.

To bring net benefits for biodiversity the offsetting schemes should be very carefully designed (i.e. not only preventing further losses) (ten Brink 2011). The Biodiversity and Business Offsets Programme (BBOP) has developed a set of design principles in consultation with stakeholders to maximize benefits and minimize risks of offsetting (Box 7.6). A key objective of the mitigation hierarchy is to reduce the risk of biodiversity loss from developers taking easy actions, i.e. using offsets and biodiversity banking as a 'licence to trash' (GHK and BIOS 2013).

Within all sectors, a certain share of the financial flows will be international (north to south). Thus, provided a sound legal framework is in place, offsetting bears the potential to become an important tool for mobilising funds for biodiversity conservation and restoration to meet the global biodiversity targets.

**Box 7.6** BBOP Principles on Biodiversity Offsets

1. **No net loss**: A biodiversity offset should be designed and implemented to achieve on-site measurable conservation outcomes that can reasonably be expected to result in no net loss and preferably a net gain of biodiversity.
2. **Additional conservation outcomes**: A biodiversity offset should achieve conservation outcomes above and beyond results that would have occurred if the offset had not taken place. Offset design and implementation should avoid displacing activities harmful to biodiversity to other locations.
3. **Adherence to the mitigation hierarchy**: A biodiversity offset is a commitment to compensate for significant residual adverse impacts on biodiversity identified after appropriate avoidance,

minimization and on-site rehabilitation measures have been taken according to the mitigation hierarchy.

4. **Limits to what can be offset**: There are situations where residual impacts cannot be fully compensated for by a biodiversity offset because of the irreplaceability or vulnerability of the biodiversity affected.
5. **Landscape context**: A biodiversity offset should be designed and implemented in a landscape context to achieve the expected measurable conservation outcomes, taking into account available information on the full range of biological, social and cultural values of biodiversity and supporting an ecosystem approach.
6. **Stakeholder participation**: In areas affected by the project and by the biodiversity offset, the effective participation of stakeholders should be ensured in decision making about biodiversity offsets, including their evaluation, selection, design, implementation and monitoring.
7. **Equity**: A biodiversity offset should be designed and implemented in an equitable manner, which means the sharing among stakeholders of the rights and responsibilities, risks and rewards associated with a project and offset in a fair and balanced way, respecting legal and customary arrangements. Special consideration should be given to respecting both internationally and nationally recognized rights of indigenous peoples and local communities.
8. **Long-term outcomes**: The design and implementation of a biodiversity offset should be based on an adaptive management approach, incorporating monitoring and evaluation, with the objective of securing outcomes that last at least as long as the project's impacts and preferably in perpetuity.
9. **Transparency**: The design and implementation of a biodiversity offset, and communication of its results to the public, should be undertaken in a transparent and timely manner.
10. **Science and traditional knowledge**: The design and implementation of a biodiversity offset should be a documented process informed by sound science, including an appropriate consideration of traditional knowledge.

*Source:* BBOP (2012)

## 7.4 The role of pro-biodiversity business and investment funds in mobilising resources with in sectors

Earmarked direct sectoral financing and/or investment supporting biodiversity conservation, as outlined in Chapter 6, can take several forms. Direct project funding is the most traditional means of funding conservation activities, however in the last decade a range of opportunities linked to investing in biodiversity related businesses have emerged within different sectors, leading to increased consideration of biodiversity concerns by business investors. Some insights in these more innovative means for sectoral resource mobilisation are provided below.

There is increasing recognition that protecting biodiversity can also be beneficial for individual companies. This is reflected by the growing attention paid to pro-biodiversity-businesses (PBBs), i.e. commercial enterprises (generally SMEs) that generates positive financial returns based on activities that conserve biodiversity, use biological resources sustainably, and share the benefits arising from this use equitably (IUCN 2008). These enterprises contribute to biodiversity conservation through their sector-specific core business which is usually highly dependent on biodiversity (Dickson et al. 2007). The development of such businesses reflects a growing recognition of the commercial potential to conserve biodiversity in both the environmental and business communities.

Investing in pro-biodiversity commercial activities is based on identifying and targeting sectors where private profitability of economic activities depends directly on the health of ecosystems (e.g. ecotourism ventures). The expression 'dependent on biodiversity' is intended to capture the many ways in which an enterprise may rely on biodiversity, well-functioning ecosystems and related services. It includes enterprises engaged in primary production such as agriculture to the tertiary sector such as ecotourism firms (RSPB 2009). Furthermore, PBBs operate also between sectors, for example, fishery and agricultural activities are often combined with recreation and tourism services.

The finance sector - one of the most influential business sectors - is able to influence the behaviour of sector-specific businesses. Through biodiversity investments funds, the finance sector has therefore the possibility to provide a positive contribution to biodiversity on a large scale by screening businesses and companies not just on their financial but also on their biodiversity performance. This is more generally known as 'Socially Responsible Investing (SRI)'. The investment products managed under SRI can generally yield a real return for the investing body and therefore should not be seen as charity. These funds can either have a sector-specific or multi-sector biodiversity conservation focus. For example, a fund can be focused solely on investing in ecotourism projects or it can invest in multiple sectors such as sustainable forestry, sustainable agriculture, aquaculture and ecotourism.

No quantitative data exists on SRI focusing on biodiversity. The estimated size of the global sustainable investment market was US$13.6 trillion in 2012 (composed of 89% of institutional assets and 11% of retail assets), increasing by an 486% between 1995 and 2012 (GSIA 2013). This represents 21.8% of the total assets managed professionally in the regions covered by the report, showing that the sustainable investment industry is of a significant scale and has grown rapidly. The global market for sustainable investments is driven by Europe which represents almost two-thirds of the total assets, as shown in Figure 7.2. Other significant regions in terms of proportion of total assets are the US and Canada. These three regions combined account for 96% of the total global SRI assets (GSIA 2013).

SRI has expanded in developed countries over the past decades and it now accounts for a significant part of overall market capitalization. In emerging economies, however, similar growth is yet to occur. Demand for SRI in the developing world is difficult to estimate due to a lack of rigorous market studies. According to the IFC (2003), only 0.1% (US$ 2.7 billion) of all SRI worldwide was allocated to emerging markets in 2003. The study however predicted a sharp increase, since social investors were increasingly turning their attention to global sustainability issues that, by definition, include emerging markets. Since then, net portfolio equity flows to emerging markets indeed increased by 537% to a record US$145 billion in 2007 (IFC 2009). This however still represents a significantly lower share relatively to the share hold by the developed countries.

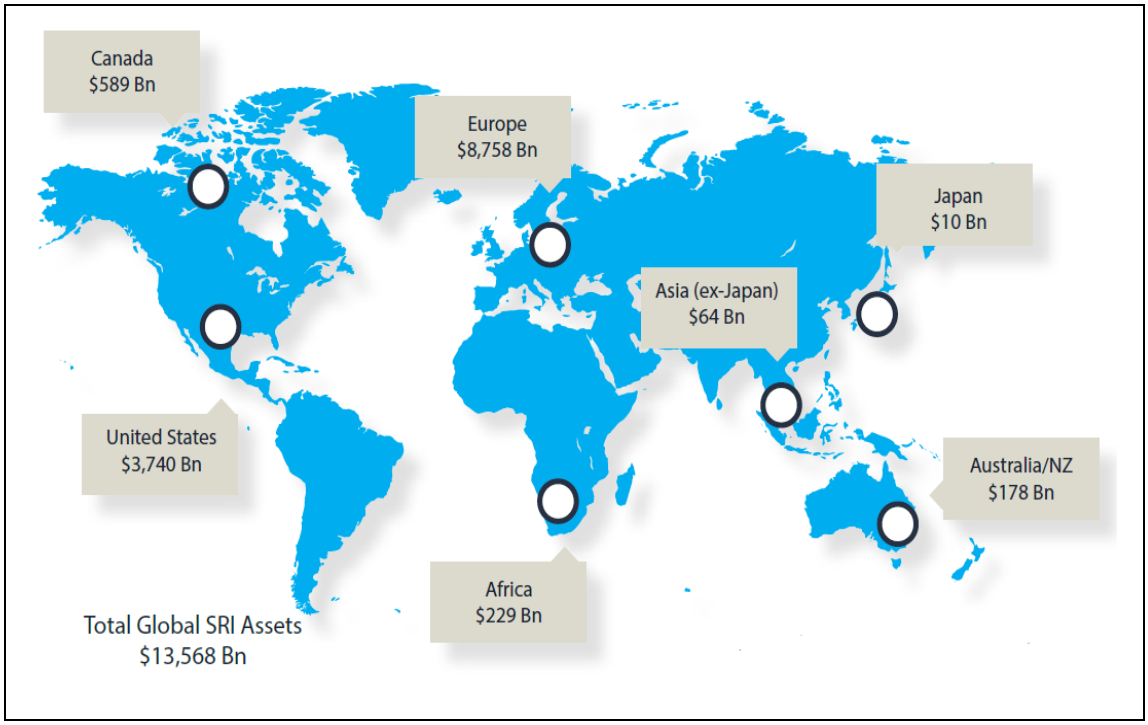



**Figure 7.2** Global SRI assets by region (US$). Source: Global Sustainable Investment Review 2012, GSIA

**Box 7.7** Examples of biodiversity conservation investment funds

*The SRI Fund (Sumitomo Trust and Banking Co.), Japan*

In 2010, The Sumitomo Trust and Banking Co. (STB) has established an investment fund called 'Biodiversity SRI Fund' which invests in the equity of listed Japanese companies that engage in biodiversity and sustainable development. The fund has three focal points for screening investable companies including whether they are (1) working to reduce negative impacts on biodiversity, (2) providing technologies or services that help to preserve biodiversity, and (3) working toward long-term goals such as action plans for biodiversity conservation. STB also plans to invest actively in mid-sized companies whose core business is to provide services that help bring about the conservation and restoration of biodiversity. STB sets strong criteria concerning biodiversity issues, providing related financial products and services, and it has become a leading company in Japan on biodiversity.

*Sources*: Biodiversity in Good Company (2013)

### *7.4.1 Conclusions and future opportunities*

It is difficult to estimate the current – or future - contribution of PBBs to delivering global biodiversity goals. The growing perspectives of such initiatives seem, however, to provide a promising avenue for mobilising private funding for biodiversity. This is especially true for developing countries, where increased private investment in biodiversity business is foreseen to have the greatest impact.

The future development of PBBs will depend on the creation of an enabling environment by establishing a suitable framework of regulations, market-based

measures (taxes and subsidies), social norms and voluntary agreements within which PBBs operate. This will be particularly true in countries where the role of business in conservation is limited by law, or where environmentally harmful subsidies result in continued harm to ecosystems. For businesses to value biodiversity, it must ultimately become more profitable to conserve biodiversity than to ignore or destroy it. A key challenge facing all biodiversity businesses is the lack of agreed standards, methods and accepted indicators for measuring the negative impacts and positive contributions to biodiversity conservation.

PBBs business models are often pioneering and innovative, making the access to traditional sources of financing difficult. While most businesses depend on financial support from banks or investors to cover initial start-up costs, PBBs may accordingly need grant finance or subsidies to help get beyond the pilot and learning phases and to stimulate demand for commercial conservation services. Consequently, as stated above and in Chapter 6, the establishment of pro-biodiversity business might significantly benefit form start-up funding and/or loans from public budgets or private biodiversity investment funds. The time scale is a particularly critical issue for PBBs, because even with the best policies and tools, biodiversity benefits will not materialise or be sustained unless biodiversity businesses survive long enough to become commercially viable. Access to 'patient', biodiversity-oriented capital for investment and expansion is therefore a critical factor in the growth of biodiversity businesses.

SRI market has been developing since the two last decades to the point to account for a significant share of the total global investments. With the attention paid to environmental issues, the increase of SRI is not likely to slow down in the future. Numerous existing SRI funds have proven that investment funds are suitable instruments to enhance sustainable business practices around the world. Biodiversity conservation is one area in which investment funds may positively contribute in the future. The rationale for expecting increasing attention to biodiversity conservation in the future is based on governments putting stricter regulations on the use and trade of biodiversity. In addition, consumers are beginning to use biodiversity-related criteria in their purchasing processes. These two trends are further reflected in the investors' decisions. However, the overall level of concern on biodiversity loss within the investing sector is still low. This is because compared to other environmental risks the effects of biodiversity loss are gradual rather than dramatic one-off events (World Economic Forum 2010). With the recent increased awareness in the socio-economic importance of nature it seems that the situation is slowly improving (Figure 7.3). There is little doubt that social and legal pressures are (and will be) the key drivers for motivating investors in taking biodiversity into account in their investment decisions, pushing businesses to adhere to strict ethical and environmental standards in order to remain able to conduct their business practice. The public legislative and policy frameworks – supported by public funding – are therefore in key role in mobilising funding from the private investment sector.

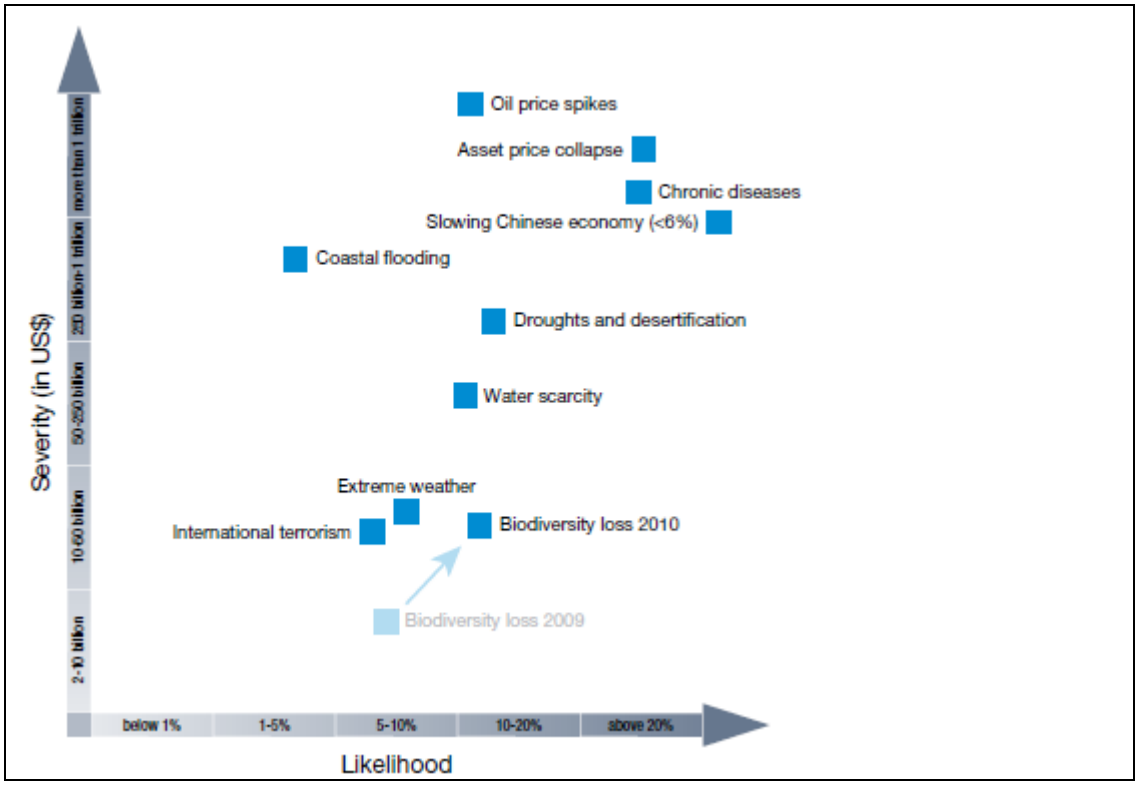



**Figure 7.3** Biodiversity in the global risk landscape. *Source*: World Economic Forum (2010)

## 8 CONCLUSIONS AND RECOMMENDATIONS

It is apparent that the spending on biodiversity (conservation and sustainable use) is several orders of magnitude smaller that the spending (current and future) in different biodiversity-relevant sectors such as agriculture, forestry, energy and climate, and tourism (see Figure 4.2). This indicates that mainstreaming of biodiversity into sectoral funding streams is of high significance, both in order to utilise the potentials for resource mobilisation and to ensure biodiversity proofing sectoral investment.

It is globally acknowledged that there is an urgent need to find sufficient resources that will enable developing countries to implement the 2020 Aichi Targets for biodiversity. The projected needs of US$74 - 191 billion for 2014 – 2018 are currently only partially met with an estimated US$51.5-53.4 billion being allocated annually to fund biodiversity and ecosystem services (Parker et al. 2012). Furthermore, most of the current financing for biodiversity is delivered in the developed countries while economically developing regions with the highest predicted loss of biodiversity (Figure 5.3), such Africa, Asia, Latin America and the Caribbean, continue to suffer from the lack of resources.

Furthermore, the total financial flows into sectors traditionally considered as the most biodiversity-relevant (agriculture, forestry and fisheries) are significantly smaller than the overall flows to some other sectors with high biodiversity relevant.

Consequently, in addition to the sectors traditionally targeted in the context of biodiversity integration, attention should also be given to a range of 'new' sectors such as tourism, climate and energy. The substantial projected increases in financial flows towards most biodiversity-related sectors also mean that it is crucial to continue improving mechanisms for biodiversity proofing.

There is further scope for mobilising funding for biodiversity under EU's different sectoral ODA flows, both in terms of increasing financial allocations within sectors and also extending the number of sectors. The majority of biodiversity related ODA is provided under the budget category 'general environmental protection' suggesting that further efforts are required to mainstream biodiversity into other areas of ODA. Importantly, the allocations for biodiversity within the most of biodiversity-relevant sectors remain low compared to the overall sectoral ODA. The highest allocations for biodiversity (45%) take place in the context of ODA for agriculture, forestry and fisheries (joint allocation for all three sectors, see Annex I), however most of this is indirect funding with unclear concrete benefits. The water and sanitation sector and the agricultural sector play a role in financing biodiversity, with an increase in allocations under the latter during the past years. There is also a recent increase in financing biodiversity in the context of the energy sector. Rather surprisingly, however, the allocations for biodiversity in the context of fisheries and forestry seem rather limited. Similarly, the role of health and tourism sectors in delivering funding for biodiversity is currently close to negligible.

Based on the insights gathered in the context of this study, a number of general – although preliminary – conclusions and recommendations can be drawn regarding the future step for sectoral resource mobilisation:

**Systematic use of the knowledge on socio-economic benefits of biodiversity:** As highlighted in Chapter 1, the conservation of biodiversity and ecosystem services provides co-benefits to a range of economic sectors. Agriculture, forestry and fisheries all rely on ecosystems' ability to maintain and preserve sustainable stock levels, fertile soils, pollination and fresh water. Similarly, the water and sanitation sector benefits from the natural water and waste management functions of ecosystems that help to deliver sectoral policy objectives at comparatively low costs. The increasing evidence based on the socio-economic role and value of nature can be used as a leverage point for accessing different domestic and international sectoral funding sources. Furthermore, the understanding of linkages between nature and different economic sectors provides the basis for the uptake of concrete instruments facilitating sectoral resource mobilisation in practice (Chapters 6 and 7).

**Mobilising resources from different sources – need for strategic long-term planning:** The overall sectoral flows consist of funding from four distinct sources: domestic and foreign, and public and private. While domestic funding is the most sizable source for almost all sectors, foreign investment can play an important strategic role in 'greening' sectors, including leveraging funding for biodiversity. Foreign investment – both public and private alike – can help to pioneer novel and innovative approaches and instruments within different sectors, proving their cost-

effectiveness and facilitating further uptake supported by domestic investment. Consequently, effective strategies for resource mobilisation require systematic consideration of the roles of and interlinkages between different funding sources in a long-term.

**Linking resource mobilisation with other relevant policy agendas**: Related to the above, it is also important to ensure that plans for sectoral resource mobilisation are closely linked with other relevant policy agendas. Such relevant agenda include, for example, the reform of environmentally harmful subsidies (EHS) and the negotiations of EU and/or Member States budgets. In particular, the EHS reform helps to 'free' resources for sustainable management this way providing opportunities for the uptake of approaches and measures with synergies with biodiversity conservation.

**Supporting resource mobilisation with biodiversity proofing**: The very sectors that provide opportunities for sectoral resource mobilisation (forestry, agriculture, energy, fisheries, tourism etc.) are also the drivers for biodiversity loss. Consequently, in addition to stimulating concrete investment biodiversity within sectors there is a need to prevent negative impacts of sectoral investments on biodiversity. Measures for sectoral resource mobilisation should, therefore, be supported by simultaneous policy action aimed at biodiversity proofing sectoral funding. Biodiversity proofing is of fundamental importance to ensure that sectoral resource mobilisation leads to final net benefits for biodiversity.

**Mobilising resources from different sectors via different approaches and instruments – identifying the best combinations and mixes:** The variety of sectors relevant in the context of resource mobilisation, as identified in the context of this study, is considerable. It can be foreseen that certain sectors might be suitable for mobilising resources for conservation and restoration whereas others might be better suited for approaches promoting synergies and sustainable use. Furthermore, there are likely to be differences in the extent of possible biodiversity benefits created between different sectors. For example, motivated by the prospects of cost-effective water management, the water and sanitation sector seems like a suitable 'candidate' for mobilising resources for conservation and restoration of ecosystems whereas investment in the context of tourism sector is likely to be driven by concrete business opportunities. It is also likely that the former will result in more tangible benefits for biodiversity, including concrete increase in habitat coverage etc. Furthermore, for some sectors such as energy biodiversity proofing, rather than resource mobilisation, is likely to be the most important and/or effective means for achieving net benefits for biodiversity. Finally, certain approaches and instruments – or combinations of instruments - as outlined in Chapters 6 and 7 are likely to be more suitable for some sectors rather than others. A systematic analysis of the most suitable roles for different sectors and uptake of different approaches and instruments in the context of resource mobilisation fell outside the scope of this study. Further analysis is therefore recommended to be carried out to gain more insights in these aspects.

**Future priorities for and distribution of ODA funding**: Building on the above, the role of ODA in the context of future resource mobilisation should be considered in order to determine where it can deliver the most value added for global biodiversity conservation. In this context it could be argued that ODA should focus on delivering 'pure' conservation measures and activities required to meet the Aichi Targets (monitoring, capacity-building, awareness raising etc.), i.e. activities that cannot be easily linked to the viability and sustainable development of different sectors. In addition, as suggested above, foreign funding such as ODA could be used to pioneer different approaches and instruments aimed at mobilising resources for biodiversity within sectors (PES schemes, ecosystem-based solutions, pro-biodiversity business ideas etc.). Finally, the current and foreseen global distribution of ODA should also be taken into consideration when considering the future opportunities linked with ODA.

**Ensuring true synergies between ODA for biodiversity, climate change and desertification**: Finally, the analysis carried out in the context of this study shows that there is a wide overlap between ODA targeting biodiversity, climate and desertification with 94% of the aid for biodiversity in 2009 (as primary and significant goal) at the same time targeting also both desertification and climate. This overlap indicates that, at least in principle, there seem to be considerable synergies between funding the three global environmental objectives. It is, however, of critical important to ensure that these synergies are successfully delivered in practice.

**Ensuring further uptake and development of approaches and tools to facilitate sectoral resource mobilisation:** Instruments, such as development of certified markets, biodiversity offsets, PES schemes, pro-biodiversity businesses and biodiversity investment funds can be used to leverage sectoral funding from public to private sources in the context of both international and domestic flows. However, in order to be fully effective further development is needed to ensure that these tools deliver concrete benefits for biodiversity. For example, while the existing sectoral certification schemes support sustainable exploitation of natural resources their contribution to concrete biodiversity conservation and/or restoration measures remains limited. Furthermore, existing policy approaches and instruments for biodiversity conservation and environmental protection – especially when innovatively interpreted and applied - can already function as instruments for resource mobilisation. In particular, protected areas (PAs), while conserving biodiversity, also create several business opportunities and/or offer cost-effective management solutions for several sectors.

**Increasing information on current levels of funding for biodiversity within sectors**: The results of this scoping study clearly show that there are significant gaps in information regarding the current flows of funding for biodiversity within different sectors. ODA is the only flow of funding for which the contributions to global biodiversity conservation are systematic monitored. While improving the monitoring of funding flow should not become the sole purpose of resource mobilisation more detailed information on the sources, sizes and global distributions of funding would help future strategic planning.

The conclusions and recommendations above raise a number of further questions regarding the possible EU approach(es) for mobilising additional financial resources to support the implementation of the Aichi Targets in developing countries. A number of existing policy instruments such as the EU trade regulations and the EU frameworks for aid and bilateral cooperation provide opportunities for influencing the sustainability of several sectoral funding flows, including increasing the level of biodiversity integration within different flows. These existing instruments and frameworks provide a basis for both biodiversity proofing of and exploring ways for sectoral resource mobilisation of EU funding. For example, as outlined above, there seem to be a lot of room for further mainstreaming of biodiversity into and across different sectoral ODA flows. Furthermore, the strategic use of ODA can also indirectly support further integration of biodiversity into FDI and domestic spending within developing countries. However, a more detailed assessment is needed to provide more detailed recommendations for what role sectoral resource mobilisation can play in the overall EU strategy for resource mobilisation, including making clear distinctions between genuine opportunities and tools for resource mobilisation and measures that primarily support biodiversity proofing of sectoral flows.

With additional resources dedicated to conservation being in low supply, mobilisation of resources for biodiversity from the existing sectoral funding sources, including both international and domestic sources, is a global priority. Information identified and analysed in the context of this scoping study indicates that there are a range of future opportunities for sectoral resource mobilisation. In addition, with an increasing overall investment in different sectors it is also essential to ensure further biodiversity proofing of sectors. A key to realising these opportunities is now to systematically identify how working with nature can in practice help to achieve different sectoral policy objectives and which stakeholder and instruments are best placed to realise them.

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## ANNEX 1 ASSESSMENT OF BIODIVERSITY FUNDING IN THE CONTEXT OF EU ODA

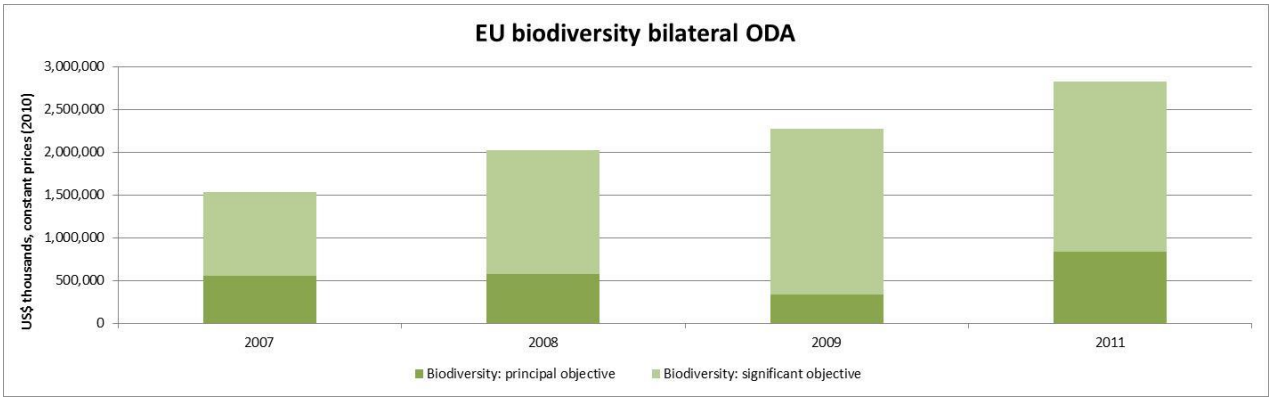


**Figure A1.1** EU biodiversity bilateral ODA per sector 2007-2011 (US$ thousands, constant prices 2010). *Source:* own analysis based on data from OECD-DAC (2010a): EU Biodiversity aid for 2007-2009, OECD.stat Extracts (2013a): EU Biodiversity aid 2011

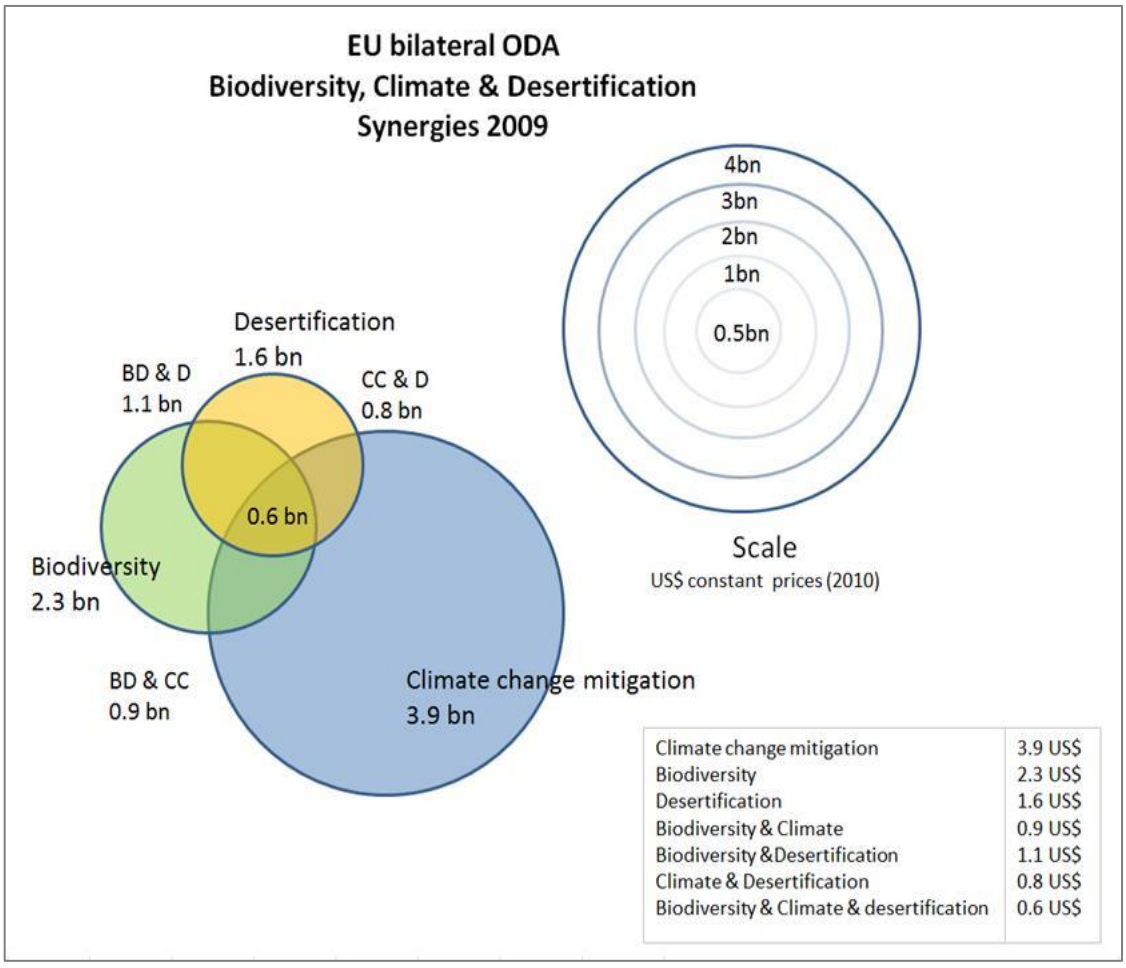


**Figure A1.2** Overlap between European bilateral ODA to biodiversity, climate change mitigation and desertification 2009 (US$ billions, Constant prices 2010), *Source*: own analysis based on data from OECD-DAC (2010a); EU aid for 2009; OECD-DAC (2010b): EU aid for 2009; OECD-DAC (2010c): EU aid for 2009

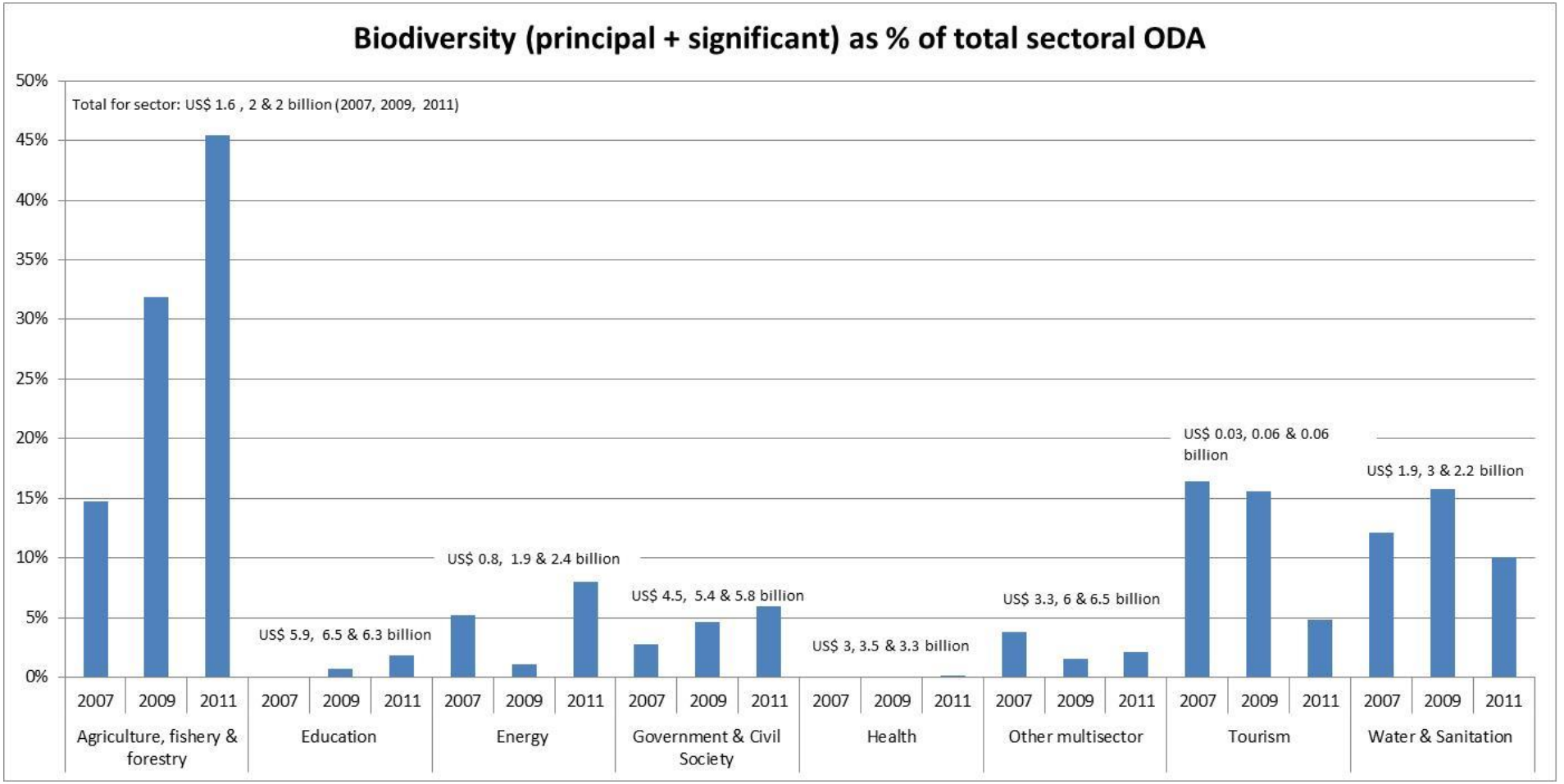


**Figure A1.3** Proportion of EU biodiversity bilateral ODA as % of total ODA per sector in 2007-2011, including biodiversity as principle and significant objective under Rio markers. *Source*: own analysis based on data from OECD-DAC (2010a): EU Biodiversity aid for 2007-2009; OECD.stat Extracts (2013a): EU Biodiversity aid for 2011; OECD.stat Extracts (2013b): EU Total aid 2007-2011

## ANNEX 2 TREATMENT OF OECD ODA DATA IN THE CONTEXT OF THIS STUDY

The amount of biodiversity-related aid delivered by 14 EU OECD countries to 147 recipients among developing countries (see tables below) was estimated based on the available information on biodiversity related commitments by DAC members during years 2007-2009 (OECD-DAC 2010a). The data from 2007- 2009 was complemented by data from 2011, obtained from OECD database (OECD.stat 2013a).

The OECD DAC data consisted of information on dedicated commitments (projects, programmes etc.) by a donor country to specified recipient (country or geographical region). The information on individual commitments was linked to specific sectors based on OECD 'purpose code' (i.e. specific sector or subsector), supported by short project description.

Based on the information above, it was possible to derive estimates for the amount of ODA to biodiversity-related activities by the 14 EU OECD countries with a distinction between different 'Rio markers' (ODA with biodiversity as principal or significant policy objective)[19]. The proportion of biodiversity-related aid per sector was further compared to the total amount of ODA per sector. This latter information was obtained from the OECD database (OECD.stat 2013b).

It is to be noted that combining information from two different data sets (OECD-DAC (2010a) and OECD database (OECD.stat 2013a, b) resulted in some inconsistencies in terms of the treatment of data. For example, OECD-DAC (2010a) allows differentiation between specified recipient countries and/or geographical regions. Unfortunately, it was not possible to carry out a recipient-specific query when downloading data from the OECD database and data for 2011 was only available for 'all developing Countries'. OECD.stat (2013) does not provide a list of countries included in this general entry and therefore it was not possible to compare whether the available data for 2007-2009 and 2001 consisted of the exact same number of recipient countries.

147 recipients of ODA were grouped into geographical macro-areas, following the UN and the World Bank geographical classification (UNstats 2013, World Bank 2013). The macro-areas selected for the analysis were Europe, North-Africa, sub-Saharan Africa, Africa regional (unspecified), central & south Asia, East-Asia & Pacific, Asia regional (unspecified) and Americas. Note the list also includes a number of aid-flows directed to unspecified recipients (see tables below).

Building on the use of Rio markers, it was possible to obtain data regarding the amount of aid to different environment-related activities: biodiversity, climate adaptation, climate mitigation, desertification and general environment data. Using

[19] http://www.oecd.org/dac/environment-development/rioconventions.htm

the markers it was possible to distinguish the amount of aid addressing two or more environmental-related issues.

Finally, the use of different data sources and/or different enquiries from the OECD database are likely to result in variance between different ODA estimates. To crosscheck the results of this scoping assessment, data used in the context of the study (OECD-DAC, 2010) were compared with data on EU's biodiversity-related ODA from other official source (OECD 2008, EC 2012). The figures obtained from two different sources – while not identical – appeared to the same order of magnitude.

**Table A1.1** Estimates of EU biodiversity-related ODA for key sectors, obtained from two different sources

| | **Average 2007-2010 * *Source:* OECD 2008, EC 2012** | **Average 2007-2009 *Source:* OECD-DAC 2010** |
|---|---|---|
| Agriculture | 216.360.000 USD | 266.760.400 USD |
| Forestry | 108.180.000 USD | 139.306.600 USD |
| General environmental protection | 775.290.000 USD | 726.156.040 USD |
| Water & sanitation | 270.450.000 USD | 379.990.200 USD |

*Note: this numbers are obtained as the percentage of biodiversity-related bilateral aid per sector (i.e. agriculture, forestry, general environmental protection, water & sanitation) on the total amount of biodiversity-related bilateral aid for the period 2007-2009. The figures are an approximation, calculated from the information provided by the source.

**Table A1.2 EU OECD ODA donor countries**

| **EU donor Countries** | | |
|---|---|---|
| Austria | France | Netherlands |
| Belgium | Germany | Portugal |
| Denmark | Greece | Spain |
| EU institutions | Ireland | Sweden |
| Finland | Italy | United Kingdom |

**Tables A1.3 EU OECD ODA recipient regions**

| **Europe** | | |
|---|---|---|
| Albania | Europe, regional | Montenegro |
| Belarus | Kosovo | Serbia |
| Bosnia-Herzegovina | Macedonia FYR | States Ex-Yugoslavia |
| Croatia | Moldova | Ukraine |

| **North Africa & middle east** | | |
|---|---|---|
| Algeria | Lebanon | Palestinian Adm. Areas |
| Armenia | Libya | Saudi Arabia |
| Azerbaijan | Middle east, Regional | Syria |
| Egypt | Morocco | Tunisia |
| Georgia | North of Sahara, Regional | Turkey |
| Iraq | Oman | Yemen |

| | | |
|---|---|---|
| Jordan | | |

| African sub-Saharan | | |
|---|---|---|
| Angola | Ghana | Rwanda |
| Benin | Guinea | Sao Tome & Principe |
| Botswana | Guinea-Bissau | Senegal |
| Burkina Faso | Kenya | Seychelles |
| Burundi | Lesotho | Sierra Leone |
| Cameroon | Liberia | Somalia |
| Cape Verde | Madagascar | South Africa |
| Central African Rep. | Malawi | South of Sahara, regional |
| Chad | Mali | St. Helena |
| Congo, Rep. | Mauritania | Sudan |
| Costa Rica | Mauritius | Swaziland |
| Cote d'Ivoire | Mayotte | Tanzania |
| Equatorial Guinea | Mozambique | Togo |
| Eritrea | Namibia | Uganda |
| Ethiopia | Niger | Zambia |
| Gabon | Nigeria | Zimbabwe |
| Gambia | | |

| Central & South Asia | | |
|---|---|---|
| Afghanistan | Kazakhstan | South Asia, regional |
| Bangladesh | Kyrgyz Republic | Sri Lanka |
| Bhutan | Nepal | Tajikistan |
| Central Asia, regional | Pakistan | Turkmenistan |
| India | South & central Asia, regional | Uzbekistan |

| East Asia & Pacific | | |
|---|---|---|
| Cambodia | Malaysia | Solomon Islands |
| China | Micronesia, Fed. States | Thailand |
| Far east Asia, regional | Mongolia | Timor-Leste |
| Fiji | Myanmar | Vanuatu |
| Indonesia | Oceania, regional | Viet Nam |
| Korea, Dem. Rep. | Papua New Guinea | Wallis and Futuna |
| Laos | Philippines | |

| Americas | | |
|---|---|---|
| Americas, regional | Ecuador | Panama |
| Argentina | El Salvador | Paraguay |
| Barbados | Guatemala | Peru |
| Bolivia | Guyana | South America regional |
| Brazil | Haiti | St Lucia |
| Chile | Honduras | Suriname |

| | | |
|---|---|---|
| Colombia | Jamaica | Trinidad and Tobago |
| Cuba | Mexico | Uruguay |
| Dominica | Nicaragua | Venezuela |
| Dominican Republic | North & central America, Regional | West Indies, Regional |

| **Other recipients** | | |
|---|---|---|
| Africa, Regional | Asia, Regional | Bilateral, unspecified |