THE BIOFIN WORKBOOK

A Tool to Mobilize Financial Resources for Biodiversity and Development

BIOFIN – The Biodiversity Finance Initiative

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Cover photo: The cover photo shows boys catching fish off of Atauro Island, Timor-Leste. Ecosystems and biodiversity supply the world with essential ecosystem services, and contribute to national sustainable development, including food security. Photo © UN Photo/Martine Perret

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National perspectives on BIOFIN

Guillermo Zuñiga, Former Minister of Finance of Costa Rica and Lead Expert of BIOFIN Team in Costa Rica

"As Minister of Finance, I learned that you need money to make things happen. If you want to fight against poverty, you need money. If you want to invest in roads or schools, or hospitals, you need money. If you want to develop a strategy for biodiversity, you also need money. The important fact is that a biodiversity strategy must be an integral part of the National Development Plan. This means that biodiversity is not just for environmentalists – it is a central issue for national sustainable development. The money you use for biodiversity is not an expenditure, but rather an investment for the sustainable development of the country.

Protecting and sustainably using biodiversity has become a national issue. The Ministry of Finance is dealing with a projected deficit of -6.7% in GDP for the next year. At the same time, the National Biodiversity Strategy will be concluded, and should be incorporated in the National Development Plan. The Ministry of Finance is working to restore fiscal equilibrium, in part by ensuring that biodiversity conservation is fully mainstreamed into fiscal planning. The National Budget Office is taking the first steps this year by calculating our past biodiversity investments through a biodiversity expenditure review.

We've enjoyed great economic benefits from the unique and beautiful biodiversity of Costa Rica, and we hope to build on these benefits by further investing in biodiversity conservation. The BIOFIN process is helping us build new relations with different government authorities as well as with the business and banking sectors. At the end of the day we all use – and benefit from – biodiversity."

"The Philippines has a population of 100 million, with a poverty rate of nearly 25%. Biodiversity and ecosystems are key to lifting people out of poverty, contributing to our economy, and strengthening our resilience to climate change.

The agriculture and fisheries sectors contribute 15% to the country's Gross Domestic Product, yet fishers and farmers are among the poorest in the country, and the most dependent upon natural resources and biodiversity. Ecotourism to some of our natural destinations, especially to protected areas, is a large and growing part of our local and national economy. The ecosystem services that underpin these sectors are essential to sustaining our country's economic growth and contributing to sustainable development.

Furthermore, the Philippines is one of world's most vulnerable countries to the impacts of climate change. We experience at least 20 typhoons a year, and The Asian Development Bank estimates that losses from typhoons and earthquakes cost the Philippines around $1.6 billion each year.

Ramón J P. Paje Secretary, Department for the Environment and Natural Resources, the Republic of the Philippines

Conserving and sustainably using biodiversity is a double imperative for us. Ensuring that our ecosystems, especially forests and mangroves, remain robust and healthy will help to buffer the adverse impacts of natural calamities while contributing to our development. We hope that the inclusive and strategic process that the BIOFIN methodology encourages will bring in more stakeholders, both government and non-government, into the biodiversity conservation discourse."

Biodiversity, ecosystems and sustainable development

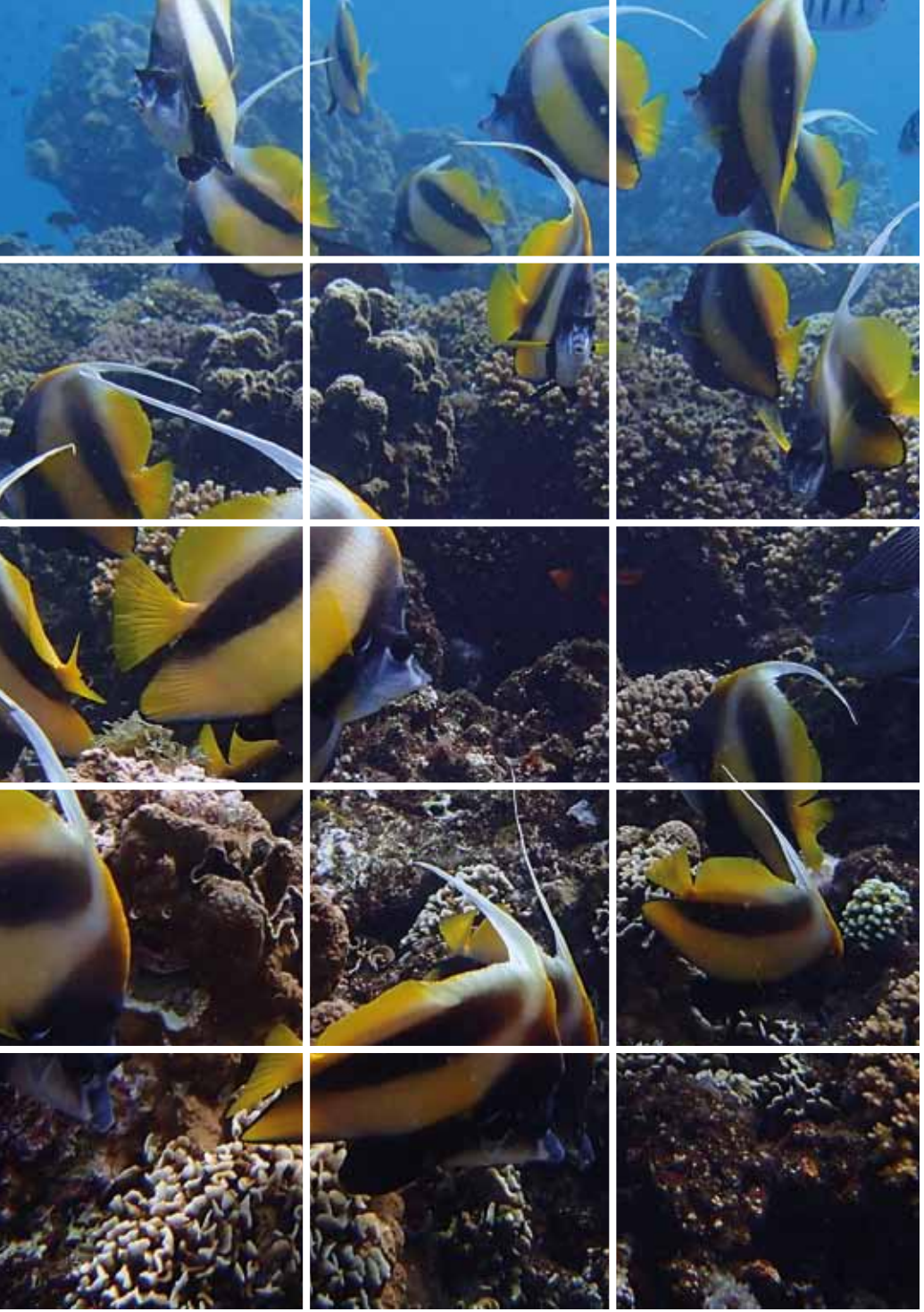
Global challenge – Addressing global biodiversity loss and global biodiversity change while attaining national sustainable development

Biodiversity and ecosystems provide the basis for life on Earth, including human life. Yet the world faces unprecedented and irreversible losses of biodiversity.[1] Species extinction rates are approaching 1,000 times the evolutionary background rate,[2] and these rates may climb to over 10,000 times the background rate if present trends in species loss, unsustainable practices and climate change continue.[3] Wildlife populations have declined by as much as 60% in tropical countries and about 30% globally in the past 30 years,[4] and as many as 70 percent of the world's known species are at risk of extinction by 2100.[5] These trends have profound implications for human welfare, and the loss of biodiversity and the unraveling of ecosystems has particularly profound impacts on the most vulnerable and economically disadvantaged communities around the world. A highly disproportionate percentage of the world's poor depend directly on nature for their food, clean water, medicine, fuel, shelter and livelihoods,[6] and those living in poverty stand to suffer disproportionally from the impacts and shocks of climate change, such as drought, flooding, heat waves and catastrophic storms.[7]

The Earth has already begun to experience major climatic shifts, including an increase in the intensity and frequency of major storms, an increase in drought, heat waves and flooding events well beyond historical meteorological norms, a rise in sea levels around the world, and an increase in the temperature and acidity of the world's oceans.[8] These changes impact not only the health of natural and managed ecosystems, but also the ability of humans to plan for and manage these ecosystems – climate change has increased the uncertainty and unpredictability in how we manage the agricultural systems that maintain national and global food supplies, the hydrological systems that provide national water security, and the marine, coastal, wetland and forest systems that buffer communities from natural disasters.

At the same time, there is increasing scientific recognition that humans are exerting pressures on the earth's functional systems on a scale that can lead to abrupt global environmental changes.[9] These pressures take many forms, but most notably include habitat loss, pollution (including the emission of greenhouse gases), and the unsustainable use and consumption of natural resources. Even though these pressures occur at a national level, they compound at a global level, and we are fast exceeding global planetary boundaries. One estimate is that we are consuming 150 percent of the total resources that Earth can sustain over time.[10] Simply put, if we do not change the current trajectory of development, we will face profoundly negative and irreversible consequences for human and planetary wellbeing.

In the midst of these challenges, governments continue to be responsible for the health and wellbeing of their citizens. More than one out of every four people on earth – nearly 2.5 billion people – lives on less than $2 per day.[11] Governments around



the world, but particularly those from Least Developed Countries, face difficult trade-offs and decisions every day as they attempt to secure access to the basic elements of human development for their citizens – food, clean water, shelter, sanitation, education, health care, and livelihoods.

As the era of the Millennium Development Goals comes to a close, countries are now revisiting national sustainable development goals and plans, as part of the post-2015 Sustainable Development Goals process. Emerging priorities of this process include ensuring equitable and inclusive economic growth to reduce poverty and improve environmental sustainability; intertwining the economic, social, and environmental strands of sustainable development and managing trade-offs; and recognizing the importance of the sustainable use of biodiversity and ecosystems in national development planning.[12] The task of governments in development planning has never been more difficult – to chart a course that meets the pressing humanitarian needs of its citizens, while at the same time conserving, sustainably using, equitably sharing benefits from, and in some cases restoring, the biodiversity and ecosystems within their countries that underpin human wellbeing.

A new development paradigm – attaining sustainable development through investments in biodiversity and ecosystems

The inter-related challenges of biodiversity loss and global climate change, and the need for rethinking national sustainable development, has led to a growing awareness of the need to fundamentally change the current trajectory of development, and to create a new development paradigm. One major tenet of this new paradigm is the need to understand, calculate and incorporate the social and economic values of biodiversity into decision-making frameworks. Over the past decade, there has been a surge in articles, books, methodologies and approaches on how to identify and calculate the benefits of nature to human wellbeing,[13] and how to integrate these benefits into national accounting systems.[14] As the economic and social value of nature becomes more apparent, as the enormous societal and financial costs of biodiversity loss take their toll on local and national economies[15] and human wellbeing, and as the costs of policy inaction begin to rapidly outpace the costs of taking action,[16] decision makers are no longer able to ignore the impacts of unsustainable development practices. Increasingly they are identifying opportunities for strategic green growth that advance sustainable development through the conservation and sustainable use of biodiversity and ecosystems.

The second major tenet of a new sustainable development paradigm is the need to rapidly halt or reverse biodiversity losses, in order to safeguard human wellbeing. Recognizing the immeasurable value of biodiversity and ecosystems in sustaining human life, and the trends in biodiversity losses globally,[17] 193 governments agreed in 2010 to an ambitious Strategic Plan for Biodiversity.[18] This plan, which provides an overarching framework on biodiversity, not only for the biodiversity-related conventions, but for the entire United Nations system and all other partners engaged in biodiversity management and policy development, urges Parties to "take effective and urgent action to halt the loss of biodiversity in order to ensure that by 2020 ecosystems are resilient and continue to provide essential services, thereby securing the planet's variety of life, and contributing to human well-being, and poverty eradication." The Strategic Plan includes 20 targets, covering a broad range of biodiversity-related issues falling into five goals: a) addressing the underlying causes of biodiversity loss by mainstreaming biodiversity across governments and society; b) reducing the direct pressures on biodiversity and promoting sustainable use; c) improving the status of biodiversity by safeguarding ecosystems, species and genetic diversity; d) enhancing the benefits to all from biodiversity and ecosystem services; and e) enhancing implementation.

To achieve the first two tenets, there is a need to scale up investment in biodiversity and ecosystems, and to fundamentally evaluate the cost-effectiveness of existing policies and practices. Many countries are beginning to realize that investing in biodiversity and ecosystems is one of the most efficient and effective ways of attaining sustainable development goals. Investments in biodiversity can yield a return on societal goals of 1:50 or even higher.[19] Two national-level documents can help guide this process. The first is the national sustainable development plan itself. The call for countries to develop national sustainable development plans was first made in 1992 at the Rio Earth Summit. It was reiterated at the World Summit on Sustainable Development in 2002, and again at Rio+20 in 2012. Only a handful of national

sustainable development plans show how investments in biodiversity can achieve national development goals, but the post-2015 sustainable development goal process is the perfect time to do so. The second document is the National Biodiversity Strategies and Action Plan (NBSAP). Aichi Biodiversity Target 17 calls for each country to revise their NBSAPs to align with the Aichi Biodiversity Targets. NBSAPs are the primary national instrument for implementing the Convention on Biological Diversity, and are required by all signatories as part of the Convention itself.[20] To date, 178 countries have completed their first NBSAP, and nearly all countries are in the process of updating their NBSAP to be in accordance with the Aichi Biodiversity Targets by 2015. One of the most important shortcomings of the first round of NBSAPs was that they did not clearly identify the costs required to implement the strategies and actions, and they nearly all lacked a robust resource mobilization plan.[21] In addition, Target 20 calls for countries to assess and mobilize the financial resources needed to implement the NBSAP.

The aim of BIOFIN, and the purpose of the BIOFIN Workbook, is to help countries chart their own new development pathway by assessing and mobilizing the financial resources required to fully implement the strategies within their NBSAP, with an eye toward the direct contributions these strategies can make toward attaining national sustainable development goals.

The Biodiversity Finance Initiative (BIOFIN)

About BIOFIN

Because of the pressing need for tools and approaches to achieve Target 20 of the CBD Strategic Plan, UNDP launched the Biodiversity Finance Initiative – BIOFIN – as a new global partnership seeking to address the biodiversity finance challenge in a comprehensive manner (see also www.biodiversityfinance.net). The aim of BIOFIN is to enable governments to build a sound business case for increased investment in the conservation, sustainable use and equitable sharing of benefits of ecosystems and biodiversity, with a particular focus on identifying and filling finance needs at the national level. The BIOFIN Workbook is a tool to help countries quantify the biodiversity finance gap at a national level, to improve cost-effectiveness through mainstreaming of biodiversity into national development and sectoral planning, and to develop comprehensive national resource mobilization strategies.

Working with a global technical unit managed by UNDP, 19 countries are currently involved in developing and piloting the BIOFIN Workbook. This Workbook will be refined as a result of regional and global learning, and will be made available widely to the national financial and environmental planners and other interested parties. As of October, 2014, participating BIOFIN partner countries include: Botswana, Chile, Colombia, Costa Rica, Ecuador, Fiji, Guatemala, India, Indonesia, Kazakhstan, Malaysia, Mexico, Peru, Philippines, Seychelles, South Africa, Thailand, Uganda and Zambia. Namibia is also implementing the Workbook through GIZ funding. As additional resources are available, UNDP may be able to support a broader group of countries.

The BIOFIN global team is developing several products and tools to assist countries in the application of the Workbook. The first is the BIOFIN Workbook itself – this document – aimed at promoting the consistent application of resource mobilization steps and fostering the adoption of key principles across participating BIOFIN partner countries. The second is a comprehensive excel spreadsheet, available on the BIOFIN website, to help planners capture data at each step of the BIOFIN Workbook – this is a companion tool to the BIOFIN Workbook. The third, currently under development, is a comprehensive BIOFIN User's Manual, aimed at providing illustrative examples and lessons learned from across participating BIOFIN partner countries, for the benefit of future countries wishing to implement the BIOFIN approach. This manual will be available in mid-2015. The aim of the BIOFIN Workbook and related products is to provide concrete guidance to countries on how to assess existing biodiversity-related expenditures, gauge costs for implementing their NBSAP, and understand how to mobilize the financial resources required to fully implement their revised NBSAPs. By doing so, countries can improve biodiversity and sectoral policies, and better align their national expenditures with their biodiversity and development goals.

The BIOFIN Workbook

The BIOFIN Workbook includes three main parts:

- **Part I – Review of biodiversity finance context:** The three inter-related workbooks (1A, 1B and 1C) in Part I explore the broader context that will shape the resource mobilization plan, including a) a review of the policy and practice drivers of biodiversity and ecosystem change; b) an analysis of key actors and institutions, and their relationship to biodiversity drivers and biodiversity finance; and c) a review of the amount and effectiveness of public and private biodiversity expenditures.

- **Part II – Analysis of NBSAP costs:** Workbook 2 explores the costs of implementing a country's NBSAP, and includes a) an analysis of the costs for each set of strategies and actions; and b) a summary analysis and prioritization of all existing and future costs through 2020.

- **Part III – Development of a finance plan:** Workbook 3 provides guidance on how to develop a resource mobilization plan, and includes a) an analysis of potential finance mechanisms, actors and opportunities; and b) guidance on how to synthesize all of the results into a comprehensive resource mobilization plan.

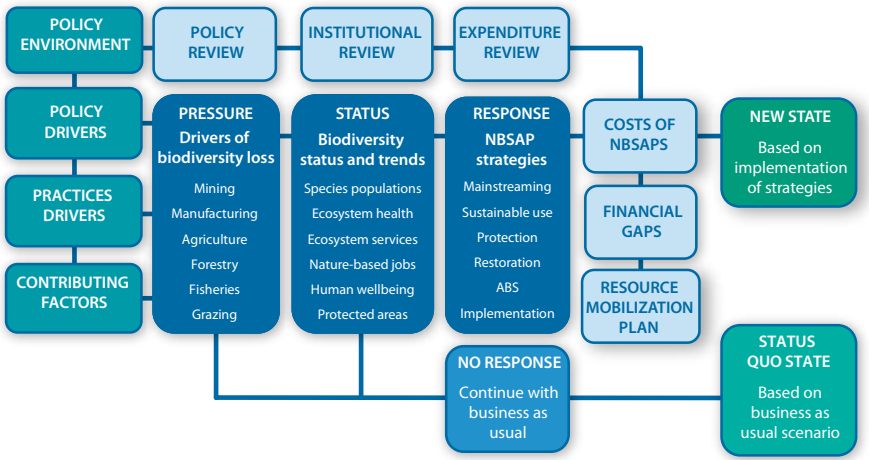
The BIOFIN Workbook conceptual model

The BIOFIN Workbook's methodological framework draws upon a substantial body of research and analysis related to public expenditure reviews and institutional analyses from across a variety of fields, including health, climate, education and environment, among others.[22]. The prevailing norms for expenditure review processes include a) an analysis of existing expenditures and of the broader context behind these expenditures, including relevant institutions, policies, key actors and effectiveness of funding; b) an analysis of the costs and financial gaps of achieving key goals; and c) a plan to fill this financial gap, while also improving the effectiveness of expenditures, and aligning funding with core goals and objectives.

Because the BIOFIN Workbook is also intimately linked with the development and revision of NBSAPs, the BIOFIN Workbook's conceptual framework builds upon a well-established set of principles of conservation planning and assessment, based on a pressure-state-response model, where pressure includes human activities that have negative impacts on biodiversity and ecosystems; state includes environmental conditions, status and trends; and response includes societal actions taken in order to respond to environmental pressures and improve the environmental status.[23] The BIOFIN Workbook's conceptual framework assumes that the BIOFIN process is thoroughly integrated with the NBSAP revision process and resource mobilization process, and assumes in particular that the status and trends of biodiversity, as well as the many drivers of biodiversity change, have primarily been identified as part of the NBSAP revision process.

The BIOFIN Workbook takes the pressure-state-response model one step further by including the development of two scenarios – the first is a 'business-as-usual' scenario, in which the same pressures that exist on biodiversity persist into the future without intervention, and the second is a projected new 'biodiversity investment' scenario, in which pressures are adequately addressed through investments in the NBSAP, leading to improved status and trends in biodiversity and ecosystems, and associated human wellbeing. Developing these two scenarios allows planners to compare the costs and benefits between two alternative trajectories, and to make the social and economic case for increased biodiversity investments more effectively. In addition, the BIOFIN Workbook incorporates an analysis of the underlying root causes that result in pressures, an approach known as a 'root causes analysis'.[24] In this process, planners continue to probe the driving causes and contributing factors that lead to a pressure occurring. Because it incorporates multiple conceptual frameworks, the BIOFIN Workbook entails more than a process of simply reviewing biodiversity-related expenditures; it entails a process that helps planners ensure that biodiversity-related expenditures are in alignment with biodiversity and development goals and objectives, and that these goals and objectives collectively address the leading drivers of biodiversity loss and degradation within a country. The BIOFIN Workbook combines these multiple conceptual frameworks – national expenditure reviews, pressure-state-response models, multiple scenario comparison, and root causes analysis– into a single conceptual framework. The long-term goal is the integration of this conceptual framework into government planning and budgeting.

BIOFIN Conceptual Model



Linkages between the NBSAP revision process and the resource mobilization process

The process of completing the BIOFIN Workbook is closely tied to the development and revision of an NBSAP. The overall aim of the BIOFIN Workbook is to provide planners with a systematic but flexible approach to identifying and mobilizing the financial resources required to fill the financial gaps between existing baseline funding and the estimated costs of implementing an NBSAP.

However, the BIOFIN Workbook is not a substitute for the rigorous discussions, tradeoffs and decisions among key stakeholder groups that frequently accompany the development of biodiversity goals, strategies and plans, as well as the allocation of financial resources. Instead, it provides a mechanism for capturing the results of these discussions, and provides a systematic way to transform previously negotiated biodiversity strategies into a robust, prioritized and realistic resource mobilization plan. At the same time, the BIOFIN Workbook provides a structured mechanism that can foster a national dialogue about the alignment of policies and practices with national biodiversity and development objectives, and about the effectiveness and appropriateness of a wide range of existing and potential expenditures, both public and private, and both harmful and beneficial to biodiversity. It is likely, therefore, that the NBSAP process, and the BIOFIN Workbook process, will be iterative, each contributing to and influencing the other throughout the development of both.

The BIOFIN Workbook assumes that planners have already completed, or are at near final stages of completing, the NBSAP development process (see www.nbsapforum.net for a summary of NBSAP revision steps). Perhaps the most fundamental of these early steps is a review of status and trends of biodiversity, ecosystems and ecosystem services within the country. National biodiversity status and trends form the core of the NBSAP itself, and guide all subsequent strategies and actions, and therefore ultimately determine costs. A complete methodology for assessing biodiversity status and trends is beyond the scope of the BIOFIN Workbook, and is the purview of Biodiversity National Reports.[25]

It is important to note that no matter where planners are in the NBSAP revision process, they should seek ways to begin incorporating and integrating the resource mobilization process into the NBSAP revision process as soon as possible. Some early steps that planners can consider in order to foster better integration include: a) ensuring that Ministry of Finance and other finance experts are members of the NBSAP revision team; b) identifying and engaging other potential key finance and sectoral actors, especially those sectors that might pay for biodiversity conservation and sustainable use, as early in the NBSAP revision process as possible; c) identifying and assessing the feasibility of finance mechanisms; d) preparing institutions for the idea of an expenditure review; and e) developing systems for aggregating financial data in preparation for the biodiversity expenditure review. In addition, countries should not wait until after the resource mobilization plan is completed to begin NBSAP implementation. Many strategies can be implemented now with existing resources, and countries should identify urgent priorities that must be undertaken quickly to prevent further and irreplaceable losses in biodiversity and ecosystems.

STEPS IN THE NBSAP REVISION PROCESS

- **Get organized** - organize logistics and take stock of past NBSAPs
- **Engage and communicate with stakeholders** - identify relevant stakeholders and develop a communication and outreach plan
- **Gather key information** - including status and trends of biodiversity; linkages between society and biodiversity; legal, institutional and policy environment; biodiversity finance; status of public awareness; and knowledge gaps
- **Develop strategies and actions** - establish a national vision; set national targets; identify specific strategies and actions
- **Develop implementation plans** - identify specific actors, timelines and costs for each action; develop resource mobilization plan; ensure strategies are incorporated into national frameworks; finalize indicators and implement clearinghouse mechanism
- **Implement the NBSAP** - Engage stakeholders; implement key strategies and actions; and mobilize financial resources
- **Monitor and report** - Develop national reports; communicate the results of the NBSAP implementation; and review and adapt priorities based on implementation results[26]

The Aichi Biodiversity Targets

In order to have a more streamlined approach to calculating the costs of NBSAP strategies, the BIOFIN Workbook groups the 20 Aichi Biodiversity Targets into the following categories: a) biodiversity mainstreaming and sustainable use; b) protection; c) restoration; d) access and benefits; and e) enabling strategies. The table below shows the relationship between the Aichi Biodiversity Targets of the CBD's Strategic Plan and the cluster of strategies and actions as defined in the BIOFIN Workbook.[27]

BIODIVERSITY MAINSTREAMING AND SUSTAINABLE USE STRATEGIES	**Strategic Goal A: Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society** **Target 1:** Awareness of the values of biodiversity **Target 2:** Integration of biodiversity values into development and poverty reduction strategies, and into national accounting and reporting systems **Target 3:** Removal or reform of harmful incentives and subsidies and application of positive incentives **Target 4:** Implementation of plans for sustainable production and consumption **Strategic Goal B: Reduce the direct pressures on biodiversity and promote sustainable use** **Target 5:** At least halve the rate of loss of all natural habitats, including forests and reduce degradation and fragmentation **Target 6:** Sustainably harvest and manage fish and invertebrate stocks and aquatic plants **Target 7:** Sustainably manage agriculture, aquaculture and forestry and ensure conservation of biodiversity. **Target 8:** Reduce pollution, including from excess nutrients **Target 9:** Prevent, and control or eradicate, prioritized invasive alien species **Target 10:** Minimize the multiple anthropogenic pressures on coral reefs, and other vulnerable ecosystems
PROTECTION STRATEGIES	**Strategic Goal C: To improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity** **Target 11:** Protect at least 17 percent of terrestrial and inland water, and 10 percent of coastal and marine areas, and create well-connected systems of protected areas and other effective area-based measures **Target 12:** Prevent the extinction of known threatened species and improve their conservation status **Target 13:** Maintain the genetic diversity of cultivated plants and domesticated animals and of wild relatives, and develop and implement strategies for minimizing genetic erosion and safeguarding their genetic diversity
RESTORATION STRATEGIES	**Strategic Goal D: Enhance the benefits to all from biodiversity and ecosystem services** **Target 14:** Restore and safeguard ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being **Target 15:** Enhance ecosystem resilience and the contribution of biodiversity to carbon stocks through conservation and restoration, including restoration of at least 15 per cent of degraded ecosystems
ABS STRATEGIES	**Target 16:** By 2015, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization is in force and operational, consistent with national legislation.
IMPLEMENTATION STRATEGIES	**Strategic Goal E: Enhance implementation through participatory planning, knowledge management and capacity building** **Target 17:** Parties develop, adopt and begin implementation of updated NBSAPs **Target 18:** Integrate traditional knowledge of indigenous and local communities with the full and effective participation of indigenous and local communities **Target 19:** Improve and share knowledge relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss **Target 20:** Mobilize financial resources for effectively implementing the Strategic Plan for Biodiversity 2011–2020

Key issues in implementing the BIOFIN Workbook

Recommended structures and governance

The Convention on Biological Diversity recommends that countries establish multi-sectoral advisory groups when developing their NBSAPs. In most cases, this will be the same advisory group, or steering committee, that completes the BIOFIN Workbook. In most countries, the NBSAP revision process is led by the Ministry of Environment. However, in most BIOFIN pilot countries, the BIOFIN process is led by the Ministry of Finance, or is a joint project between the Ministry of Finance and Ministry of Environment. This ensures that there is adequate dialogue and interplay between biodiversity strategies on the one hand, and the realities of national budgeting and accounting on the other. Each country must decide which governance structure will best achieve the desired outcomes of the BIOFIN process and integration of biodiversity planning into national plans and budgets.

Key principles

There are some basic over-arching principles that planners should keep in mind when using the BIOFIN Workbook, including:

- **Cost-effectiveness:** The aim is to achieve the most important biodiversity goals and objectives in the most efficient manner possible, including simultaneous delivery of both biodiversity goals and national sustainable development goals.
- **User-orientation:** The final results should be focused on helping the key users – the planners who will be responsible for implementation – actually understand, interpret and implement the results.
- **Inclusiveness:** NBSAPs and the resource mobilization plan should be developed in an inclusive fashion, involving many interest groups and stakeholders.
- **Pro-poor:** In weighing the pros and cons of different scenarios, finance mechanisms, actors and priorities, planners should carefully consider impacts on the poorest and most vulnerable members of their society, and find solutions that help to alleviate poverty.
- **Openness and transparency:** While not all information may be appropriate for full public disclosure, the majority of the results, including the biodiversity expenditure review, key priorities, recommended finance mechanisms and potential consequences of and safeguards for these mechanisms, should be made publicly available.

Pre-requisites for implementation

In order for the BIOFIN Workbook to be used effectively, there are several pre-requisites, including:

- **Political will:** This is required to drive the BIOFIN assessment process forward – the process will not be successful without clear leadership and support from the highest governmental levels.
- **Collaboration:** Planners must be willing to collaborate across agencies, ministries and other organizational boundaries.
- **Openness:** Planners must be willing to take an open look at long-held expenditure priorities, and be willing to expose and change ineffective expenditures and financial management processes. This also implies a willingness to make budgetary and financial expenditure data fully accessible to national BIOFIN planners.
- **Engage powerful interest groups:** Planners must be willing to have difficult and possibly contentious discussions with powerful interest groups, who may have a strong interests in not exploring issues such as harmful incentives and ineffective expenditures. The BIOFIN Workbook provides tools and guidance for having these discussions, but the hard work of holding national and sub-national dialogues is the only process whereby change can occur.
- **Capacity:** Planners must have a basic level of capacity to undertake each step in the BIOFIN Workbook, including the capacity to develop a robust NBSAP, to undertake key assessments and analyses, and to manage complex data.
- **Commitment to use the results:** The BIOFIN Workbook is only as robust as the changes that occur from the results. The BIOFIN Workbook is a means to an end – to transform biodiversity finance – not an end itself.

Flexibility and varying levels of resolution and confidence

The BIOFIN Workbook is structured such that each question in each of the workbooks can be answered with different levels of depth and resolution, depending on available resources; existing national capacity; complexity of the country's institutions, finance and budgeting procedures; available data; and the relevancy of the issue to the specific country case, among other issues. As national planners scope out how to implement the BIOFIN Workbook they should aim for the highest level of resolution for each question but can consider lower resolution for some questions depending on their national context. The level of resolution may relate both to the level of effort and resources required to answer each question (e.g., through an informal, peer review discussion process with a steering committee vs. a formal and comprehensive feasibility study) as well as to the level of detail and rigor with which the question is answered (e.g., a sentence or two regarding overall feasibility, versus the results of a full feasibility assessment). Also, as planners complete the BIOFIN Workbook, they should keep in mind that not all cells need to be completed in order to complete the workbook (many cells may indeed be blank), and that they may need to add new cells to suit their national needs. In addition, the accompanying excel spreadsheet will provide drop-down menus and spaces needed to capture information that are difficult to provide in a printed document. Rather than requiring a set of prescriptive lists in the workbook itself, the BIOFIN Workbook offers a flexible approach that allows planners to identify the most relevant fields themselves (e.g., sectors, institutions, strategies, etc.). At the same time, the various boxes provide additional guidance, should they be required.

Accuracy, ranges and estimates in the expenditure review and the costing exercise

The aim of the BIOFIN Workbook is to allow planners to identify current spending on biodiversity, calculate the full and true costs of implementing their NBSAPs and to identify and mobilize adequate resources. However, any exercise that aims to calculate expenditures and costs of an endeavor of this magnitude will necessarily entail many estimations. In order to help planners think systematically about these estimates, some parts of the workbook suggest that planners identify both low and high estimation ranges. This range allows planners to capture some of the uncertainties in estimating costs, to make tradeoffs between strategies and actions, and to understand the implications of different finance scenarios. Planners may choose to pick only one level of estimation, or may apply two levels to all calculations, depending on their circumstances and needs. Ultimately, the goal is not necessarily to determine the precise cost of implementing an NBSAP, but rather to identify a realistic range of costs required to cover key priorities.

At the same time, one potential danger in both the expenditure review and the costing exercise is the issue of double-counting – of calculating an expenditure or cost more than once in the assessment. In all cases, planners should strive to avoid double counting, both for biodiversity expenditures in Workbook 1C, and for cost calculations in Workbook 2. Because some biodiversity strategies can be assigned to more than one category (e.g., restoration of protected areas; mainstreaming agriculture in order to maintain key ecosystem services, etc.), planners should clearly identify areas of potential overlaps, and therefore of potential double counting. To do so will require a series of conscious and well-documented decisions on whether expenditures and costs 'count' in one strategy versus another.

Data sources and assumptions

In completing the BIOFIN Workbook, planners will invariably make assumptions, and will have limitations in the sources and reliability of their data. In order to make this information as transparent as possible, and in order to understand the level of effort and rigor behind each answer, planners should include information on 'assumptions and data sources' that accompanies all sections of each workbook. These assumptions and data sources should be clearly documented in all reports.

Linkages to other national planning and budgeting processes

The BIOFIN Workbook extends beyond the Convention on Biological Diversity, and the strategies included in an NBSAP may include strategies that are derived from other conventions, including the Convention on Migratory Species, the Convention on International Trade of Endangered Species; the RAMSAR Convention on Wetlands; the United Nations Educational, Scientific and Cultural Organization World Heritage Convention; the United Nations Convention to Combat Desertification; and the United Nations Framework Convention on Climate Change.

Similarly, the BIOFIN Workbook is closely related to a number of processes associated with assessing the economic and other societal values of biodiversity and ecosystems. In particular, four methodologies and initiatives have a direct bearing on the BIOFIN Workbook, including a) The United Nation's Environment Programme's "The Economics of Ecosystems and Biodiversity" program (www.teebweb.org); b) the World Bank's "Wealth Accounting and Valuation of Ecosystems" program(www.waves.org); c) The United Nations Development Programme's "Targeted Scenario Analysis" methodology[28]; and the United Nations' System on Environmental-Economic Accounting.[29]

In addition, the NBSAP revision process coincides with global efforts to redefine goals for sustainable development. The Sustainable Development Goals, which are the successor to the Millennium Development Goals that expire in 2015, will provide the basis for countries to revise their national sustainable development plans. There is a great deal of convergence between the emerging Sustainable Development Goals and the goals of the Aichi Biodiversity Targets, including goals related to the sustainable management of natural resources; the maintenance of food security; the provision of adequate water and sanitation services; the reduction of risks and impacts from climate change; the security of employment, livelihoods and inclusive economic development; and the promotion of health and wellbeing.[30] Clearly there are inextricable linkages between healthy biodiversity and ecosystems on one hand, and human wellbeing on the other, particularly for the world's poorest and most vulnerable societies. If implemented with an eye toward the synergies between national biodiversity trends and national development issues, NBSAPs can become a roadmap for both biodiversity conservation and sustainable development. Identifying and building on synergies between biodiversity goals and national sustainable development goals will help planners identify key entry points for making the case for increased investments in biodiversity, as well as help build long-term political commitment and support.

EXAMPLES OF HOW NBSAPS CAN CONTRIBUTE TO NATIONAL DEVELOPMENT GOALS

- Well-managed, restored and protected forests can provide long-term water security, especially during times of drought, and can serve as emergency stores of energy during times of energy crisis.
- Protected and restored wetland ecosystems can buffer coastal and lowland communities against the impacts of floods, and can provide critical water filtration services, thereby greatly reducing or eliminating the need for built water treatment infrastructure.
- A well-functioning national protected area system can provide national tax revenue and support local jobs and livelihoods.
- The protection of agricultural genetic diversity, including of crop wild relatives, can help to ensure long-term national food security, particularly for species that are well adapted to climate extremes, such as flood, drought and excessive heat.
- Strategies to identify sustainable management practices of natural resources in agriculture, forestry and aquaculture will ensure the sustainable flow of goods and services for generations to come; and can decrease losses in natural capital.
- Efforts at identifying, preventing and eradicating invasive alien species will save millions of dollars, increase productivity of natural ecosystems, and decrease the risk from natural disasters, such as catastrophic fires.
- Ecosystem protection and restoration efforts can help to buffer poor and vulnerable communities from the impacts of climate change, such as buffering coastal communities from more frequent and more severe coastal storms and preventing landslides and natural disasters from catastrophic deluges.
- Well-managed ecosystems can provide a storehouse of medicinal resources that can be critical for maintaining health in rural areas.
- The protection and restoration of coral reefs, and the prevention of key marine threats, can ensure the long-term health of fisheries, providing both critical nutrition and livelihoods to millions.

Using the results of the BIOFIN process to transform the development trajectory

The goal of the BIOFIN Workbook is to assist country planners in transforming their national biodiversity finance planning, and thereby enabling them to fully implement their NBSAP and achieve the Aichi Biodiversity Targets. However, NBSAPs are more than a set of biodiversity plans; if developed and implemented fully, they can be a pathway to national and global sustainable development, and can provide a mechanism that can help transform the often unsustainable trajectory of development.

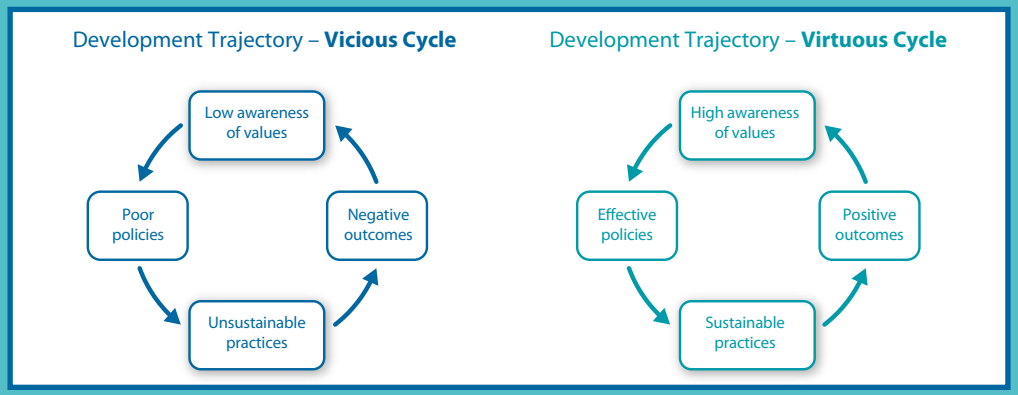
The NBSAP is the key juncture at which societal awareness and planning can be transformed into national biodiversity and sectoral practices and policies which in turn initiate, maintain or reverse either a vicious or virtuous cycle. An effective NBSAP can help transform a vicious cycle by raising the level of societal awareness, improving policies and practices, and improving outcomes for people and for biodiversity. Biodiversity finance is the engine behind the NBSAP – a well-financed NBSAP stands a far greater chance of success than one that does not have a robust, realistic resource mobilization plan. The aim of BIOFIN is to give NBSAPs the greatest chance of success possible to ensure a virtuous cycle of development.

Whether through phasing out or eliminating environmentally harmful incentives; creating new positive incentives; establishing market-based mechanisms; tapping new sources of private finance; reducing the costs of strategies; reallocating government expenditures away from ineffective expenditures to more cost-effective ones; or simply prioritizing, accessing and utilizing official development assistance more effectively, the goal of the BIOFIN Workbook is the same – to enable partner countries to transform the trajectory of biodiversity, finance and development and to achieve a sustainable path to the future.

VICIOUS AND VIRTUOUS CYCLES IN BIODOIVERSITY AND DEVELOPMENT

In a vicious cycle, the development trajectory begins with a low awareness of the value of biodiversity and ecosystems, leading to policies that undermine the social and economic value of biodiversity and ecosystems. These policies, which typically favor short-term, unsustainable exploitation over long-term conservation and sustainable management, in turn lead to unsustainable practices, such as clear-cutting forests, over-fishing, and unplanned coastal development. As a result, these practices result in negative outcomes for both human and natural communities, as well as have long-term negative impacts on local and national economies, which leading to even further devaluation of nature.

A virtuous cycle, however, begins with a high awareness of the value of biodiversity and ecosystems. This awareness leads directly to effective policies that reflect the value of nature. These policies result in sustainable practices, such as effective networks of well-managed protected areas that maintain key ecosystem services, and sustainable management practices that ensure long-term benefits. These practices in turn lead to positive outcomes for both biodiversity and for human wellbeing, which further reinforce awareness of the values of biodiversity and ecosystems. The goal of BIOFIN is to promote this virtuous cycle.



KEY DEFINITIONS USED IN WORKBOOK 1A

Biodiversity status and trends: Changes over time in the ecological integrity of key elements of biodiversity and ecosystems, defined by parameters such as population, diversity, patch size, composition, distribution and trophic complexity.

Negative and positive biodiversity and ecosystem trends: Negative trends are those changes in biodiversity and ecosystems that negatively affect the overall health and functioning of a species, population or ecosystem, or limit ecosystem services (e.g., forest fragmentation, declines in the quality and quantity of available water, or the decline of a population of threatened species). Positive trends are those changes in biodiversity and ecosystems that positively contribute to the overall health and functioning of a species, population or ecosystem, or enhance ecosystem services (e.g., increases in the populations of threatened species, and decreases in invasive alien species).

Negative and positive sectoral practices: Negative sectoral practices include any regularly practiced actions that are likely to lead to negative biodiversity and ecosystem trends (e.g., intensive clear-cutting of forests, manufacturing processes that pollute rivers, fishing practices with large by-catch). Positive sectoral practices include those actions that result in positive or at least neutral biodiversity and ecosystem trends, such as non-polluting manufacturing processes.

Policies, market forces and policy environment: Policies may include any policy, whether within or beyond a specific sector, that either directly or indirectly contributes to a sectoral practice. Market factors include any aspect of markets, economic and trade that have an influence on how biodiversity and ecosystems are managed (e.g., trade tariffs, subsidies, market prices, market access, market share, market supply and market demand for biodiversity products). The broader policy environment includes any factor that influences how biodiversity and economic development policies are created and enforced, and how biodiversity is ultimately managed. Examples of elements of the broader policy environment include leadership, political will, governance, policy cohesion and inter-governmental coordination, judicial system, and free press, among others.

Introduction to Workbook 1A: Policy and practice drivers of biodiversity and ecosystem change

The purpose of Workbook 1A is to identify the specific practices, policies and policy factors that drive both positive and negative trends in biodiversity and ecosystems.

Planners begin Workbook 1A by reviewing and identifying the most important status and trends in biodiversity and ecosystems within their country. This information is typically identified through the process of developing the 4th or 5th National Reports (see www.cbd.int/reports) that focus on national status and trends of biodiversity. Based on this information, planners then identify the specific sectors, and the specific sectoral practices, that are driving each trend ("the drivers"). For each set of sectoral practices, planners then identify the set of policies, policy factors and market forces that either inhibit or foster sustainable practices.

The analysis of drivers of change from Workbook 1A is used in Workbook 1B to help planners identify key sectoral and finance actors. Although the BIOFIN Methodology focuses primarily on key financial actors, Workbook 1A ensures that planners begin by casting a wide net when analyzing potential solutions for cost-savings, including addressing negative drivers of change at their source.

Workbook 1A also helps planners identify some of the broader policy issues that may need to be addressed in order to enable effective implementation of the NBSAP and of the resource mobilization plan. Addressing these policy issues may also have cost implications for Workbook 2.

Upon completing Workbook 1A, planners will be able to identify: a) key status and trends in biodiversity; b) the most important sectors and sectoral practices that drive these trends; c) the most important policies, policy factors and market forces that contribute to these practices; and e) a concise set of prioritized recommendations for improving or expanding sectoral practices and policies.

Key questions: negative and positive drivers of biodiversity change

Section 1: Negative sectoral practice and policy drivers

- Describe key negative trends in biodiversity and ecosystems
- Succinctly describe the driver of change for each negative trend in a few words
- Select the category and sub-category best describes this driver
- For each driver, identify the 1–3 key sectoral practices that lead to the negative biodiversity trend
- For each practice, identify the 1–3 key contributing sectoral policies, policy factor or market forces
- Identify economic consequences, if known
- Document all key assumptions and data sources

Section 2: Positive sectoral practices and policy drivers

- Describe key positive trends in biodiversity and ecosystems
- Succinctly describe the driver of change for each positive trend in a few words
- Select the category and sub-category best describes this driver
- For each driver, identify the 1–3 key sectoral practices that lead to the positive biodiversity trend
- For each practice, identify the 1–3 key contributing sectoral policies, policy factors or market forces
- Identify economic benefits, if known
- Document all key assumptions and data sources

Usage Note for Workbook 1A: Selecting categories and sub-categories for drivers of change

The categories and sub-categories used to categorize drivers include:

- **Mainstreaming:** Manufacturing, energy, mining, transportation, infrastructure, waste, tourism, and other development sectors
- **Natural resource use:** Forestry, agriculture, grazing, water, fisheries, invasive species, and other natural resource use sectors
- **Protection:** Government, co-managed, community protected areas, private protected areas, trans-boundary protected areas, other conserved areas, corridors, buffers, ex-situ methods, trade and enforcement efforts, and other types of land, water, species and habitat protection
- **Restoration:** Government restoration efforts, private restoration efforts, community restoration, industrial restoration, production lands restoration, corridor restoration, buffer restoration, and all other restoration efforts
- **Access and benefits sharing:** drivers related to prior informed consent, mutually agreed terms, benefits sharing, traditional knowledge, conservation status, and all other access and benefits drivers
- **Enhancing implementation:** Communication, research, monitoring, legal, other implementation drivers
- **Other:** All other categories of drivers

More information about categories for practice and policy drivers of change is available in Annex 1.

AN EXAMPLE OF TRENDS, DRIVERS, PRACTICES AND POLICY FACTORS

Negative biodiversity trend: In Uganda, Nile perch stocks have decreased from 1.9 million tons in 1999 to only .35 million tons in 2009.

Sectoral drivers: The key sectors affecting this trend are commercial and subsistence fisheries.

Sectoral practices: Specific sectoral practices include the use of illegal fishing gear, such as monofilament and small gill nets, overfishing of immature fish leading to trophic disruptions, and fishing within fish breeding and nursery grounds.

Policies and policy factors: The open access fisheries management regime, where fishers gain easy access rights after paying a nominal fee, has led to high competition and overfishing, with ever-increasing effort for a decreasing catch size.[31]

UN Photo: Milton Grant

EXAMPLES OF POLICY ENVIRONMENT FACTORS

In the Philippines,[32] a key driver of biodiversity change is the clearing of mangrove forests due to poverty and population pressure. Some negative policy environment factors behind this driver include:

- Weak or absent zoning laws and land-use planning combined with weak enforcement
- Government policies that favor short-term economic growth, production and consumption over longer-term sustainability.
- An absence of sustainability indicators across a variety of sectors, leading to unsustainable sectoral policies and practices.
- An absence of a robust statistical system to improve natural resource accounting.

However, there are also some positive policy environment factors, including:

- Strong international commitments
- Increasing public awareness of the value of biodiversity

UN Photo: Martine Perret

Key questions: broader policy environment factors

Section 3: Negative policy environment factors

- Identify the most important negative policy environment factors that inhibit effective conservation, sustainable use and/or equitable benefits sharing of biodiversity
- For each negative policy environment factor, provide a brief description
- For each negative policy environment factor, select the category that best describes this factor
- For each negative policy environment factor, describe its key impacts on biodiversity
- Provide any supporting data sources or evidence
- Identify any key recommendations for improving the broader policy environment

Section 4: Positive policy environment factors

- Identify the most important positive policy environment factors that promote effective conservation, sustainable use and/or equitable benefits sharing of biodiversity
- For each positive policy environment factor, provide a brief description
- For each positive policy environment factor, select the category that best describes this factor
- For each positive policy environment factor, describe its key impacts on biodiversity
- Provide any supporting data sources or evidence
- Identify any key recommendations for further strengthening the broader policy environment

Usage Note for Workbook 1A: Selecting categories and sub-categories for policy environment factors

Sections 3 and 4 of Workbook 1A include a drop-down menu for selecting a category of policy environment factors, described below, to facilitate broader analyses. However, planners can choose to override these choices simply by typing in their own policy environment factors.

- Political will and leadership: The degree to which leaders make and follow through on commitments
- Lobbying by economic interest group: The degree to which decision makers are influenced by economic interest groups
- Media and free press: The degree to which media and the free press help provide societal safeguards and raise awareness
- Public attitudes: The prevailing public attitudes toward biodiversity and ecosystem services
- Public awareness of biodiversity values: The degree to key stakeholder groups understand nature's values
- Governance and rule of law: The degree to which governments and businesses adhere to existing laws
- Inter-agency alignment with national goals: The degree of policy alignment within and across government agencies
- Inter-sectoral coordination: The degree of policy alignment between government and private sectors
- Participation in decision-making processes: The degree of inclusiveness, fairness and equity in decision-making processes
- Non-governmental organizations: The number and effectiveness of biodiversity-related non-governmental organizations
- Other policy environment factors: All other policy environment factors that influence biodiversity conservation and use.

Completing Workbook 1A

In completing Workbook 1A, planners may consider different levels of depth and resolution, each of which may require different levels of staff time, financial resources, data availability and completion of previous assessments. The table below offers some suggestions for coarse, medium and fine resolution when answering each question.

	LEVEL 1: COARSE RESOLUTION	LEVEL 2: MEDIUM RESOLUTION	LEVEL 3: FINE RESOLUTION
SECTIONS 1 and 2: Practices and policies that drive negative and positive trends in biodiversity and ecosystems	• Identify a small but critical subset of key trends (e.g., 5–7) based on existing data from the 4th or 5th National Report • Identify key sectors, sectoral practices, and impacts on biodiversity and contributing factors through peer review discussions within steering committee	• Identify a subset of key trends (e.g., 12–15), based on existing data from the 4th or 5th National Report • Identify key sectors, sectoral practices, and impacts on biodiversity and contributing factors through peer review discussions within steering committee, supplemented by existing sectoral impact assessment data and existing root causal analysis data.	• Identify a comprehensive set of key trends (e.g., 20–30) from the 4th or 5th National Report and other relevant sources • Identify key sectors, sectoral practices, and impacts on biodiversity through a sectoral impact assessment, and identify contributing factors through a thorough root causes analysis. Reach consensus through peer review discussions within steering committee
SECTIONS 3 and 4: Negative and positive policy environment factors	• Identify key policy environment factors through peer review discussions within steering committee	• Identify key policy environment factors through peer review discussions within steering committee, based on some previous reviews of the policy environment	• Identify key policy environment factors through a detailed policy environment review. Reach consensus through peer review discussions within steering committee

FREQUENTLY ASKED QUESTIONS

Why start with status and trends in biodiversity and ecosystems?

In identifying key sectoral and finance actors (Workbook 1B) and in analyzing the costs of implementing biodiversity strategies and actions (Workbook 2), it is often easy to overlook the potential costs savings of addressing drivers of change at their root source.

Why include positive drivers as well as negative drivers?

Including positive drivers of change in the overall analysis (e.g., increased protection of endangered species, restoration of critical watershed, improved forest health from forest certification) can help planners identify new finance actors, identify potential means for efficiently reducing the cost of implementing strategies, as well as identify potential mechanisms for filling financial gaps.

Why include economic implications of drivers of change?

Including economic implications of drivers of change can help planners more systematically calculate the true costs and benefits of the existing status quo. For example, fish accounts for nearly 20% of Uganda's commodity export value. The value of export Nile perch fell from 140 million to 80 million USD in five years, primarily because of ineffective management practices and policies.[33]

EXAMPLES OF DRIVERS OF CHANGE

In Colombia,[34] planners identified key drivers of change within each region of the country. Positive drivers of change included a suite of public, private and community protected areas, as well as creation of soil conservation districts. Negative drivers of change across all regions included:

- Human-caused forest fires
- Illegal logging, causing forest fragmentation and incursions of invasive species
- Illegal mining
- Expansion of the agricultural frontier
- Illegal encroachment and conversion within protected areas
- Infrastructure development
- Indiscriminant use of agrochemicals and excessive mechanization, leading to losses in soil quality
- Negative impacts from African palm plantations

Source: Colombia's 5th National Report

UN Photo: Jerry Frank

Reporting results for Workbook 1A

- **Key biodiversity status and trends:** Planners are strongly encouraged to include a section in the BIOFIN report that summarizes key biodiversity status and trends, based on the revised NBSAP, or on the 4th and/or 5th National Report. The estimated length of this section is approximately 3–5 pages.

- **Key sectoral practices, policies and policy factors that lead to negative biodiversity trends:** This section should include a description of the specific sectoral practices that result in negative biodiversity status and trends, ideally accompanied by a description of the specific trends in biodiversity and ecosystems that are caused by these practices. Planners should ensure that they consider all potential categories of drivers and sectors, including mainstreaming, natural resource use, protection, restoration, access and benefits sharing and other sectors as appropriate. The estimated length of this section is approximately 5–7 pages.

- **Key sectoral practices, policies and policy factors that lead to positive biodiversity trends:** This section should include a description of the specific sectoral practices that result in positive biodiversity status and trends, ideally accompanied by a description of the specific trends in biodiversity and ecosystems that are caused by these practices. Planners should ensure that they consider all potential categories of drivers and sectors, including mainstreaming, natural resource use, protection, restoration, access and benefits sharing and other sectors as appropriate. The estimated length of this section is approximately 5–7 pages

- **Broader negative policy environment analysis:** This section should include a description of the negative factors of the broader policy environment and their linkages to sectoral practice and policy drivers, and a summary of key recommendations for mitigating these factors. The estimated length of this section is approximately 2–3 pages.

- **Broader positive policy environment analysis:** This section should include a description of the positive strengths of the broader policy environment and their linkages to sectoral practice and policy drivers, and a summary of key recommendations for capitalizing on existing strengths and opportunities. The estimated length of this section is approximately 2–3 pages.

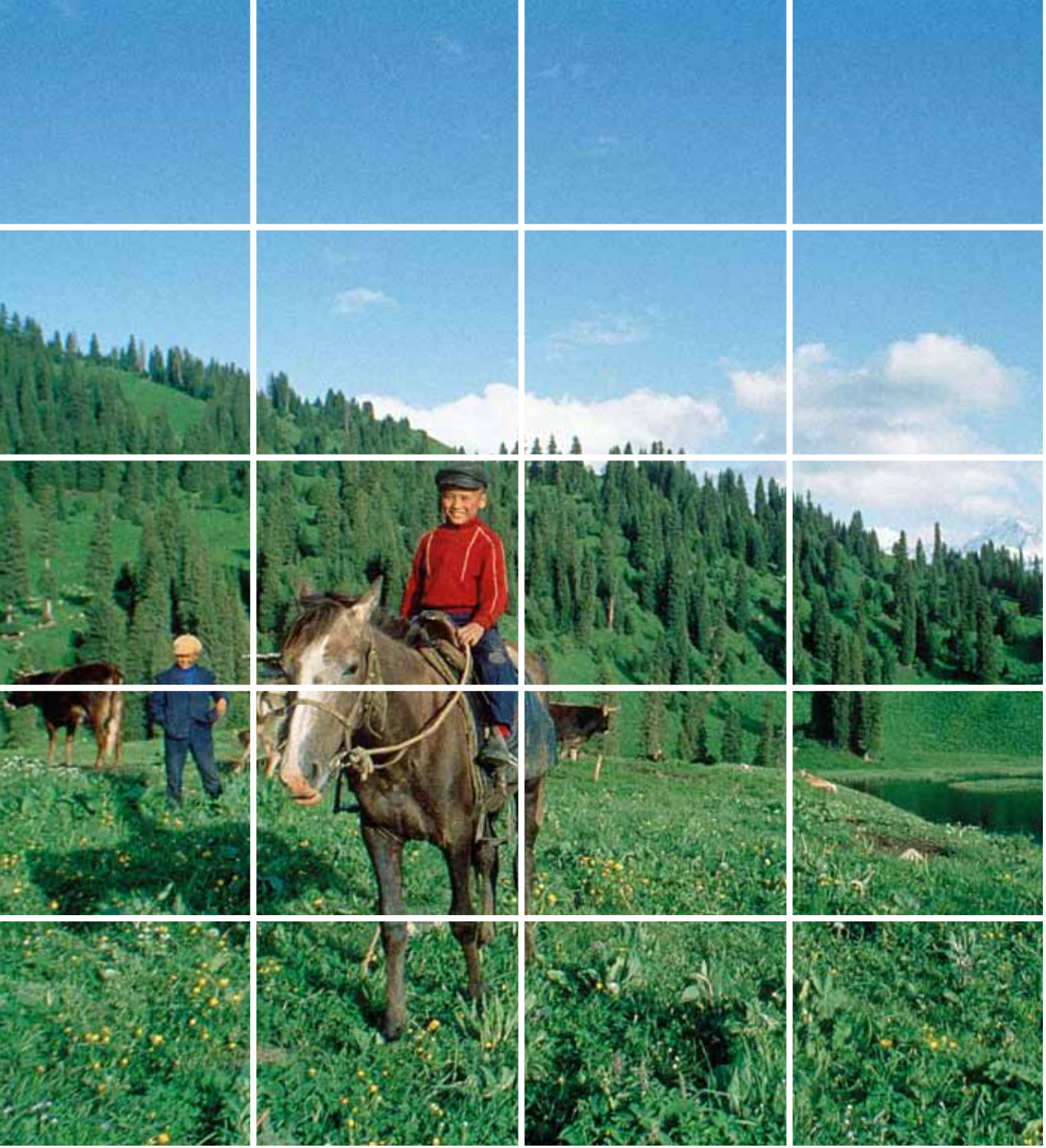
- **Summary of key recommendations:** This section should summarize all of the key drivers of change with a summary description, summary of economic implications, and a summary of key recommendations. The estimated length of this section is approximately 3–5 pages.

Digging deeper: Conducting a national sectoral impact assessment

STEPS	KEY QUESTIONS TO ASK REGARDING BOTH POSITIVE AND NEGATIVE TRENDS IN BIODIVERSITY AND ECOSYSTEMS
1. Identify, screen and prioritize potential key sectors for the assessment	• Which sectors are the most economically important? • Which sectors are most often associated with illegal activities? • Which sectors are most critical to achieving national development goals? • Which sectors are most dependent upon biodiversity? • Which sectors are experiencing the highest growth rates? • Which sectors are most frequently associated with negative and positive impacts on biodiversity and ecosystems (e.g., through site-level assessments)
2. Identify the specific drivers of biodiversity and ecosystem change for each selected sector	• Which sectors are driving changes in land use and land cover? • Which sectors are driving changes in habitat fragmentation and isolation? • Which sectors are driving changes through extraction, harvest or removal of species? • Which sectors create external inputs, including emissions, effluents and chemicals? • Which sectors create disturbance and alterations, including in ecological processes? • Which sectors introduce invasive alien species or genetically modified organisms? • Which sectors are driving restoration, protection and/or sustainable use?
3. Identify the scope, magnitude and distribution of each of the drivers of change for each key sector	• Which drivers are most widespread across the landscape or seascape? • How are these drivers distributed – what are the specific patterns of occurrence? • Where are the most severe impacts occurring in the landscape or seascape? • Where are the least severe impacts occurring in the landscape or seascape? • Where do sectoral impacts overlap spatially with key biodiversity areas?
4. Identify impacts on biodiversity and ecosystems from each of the drivers	• Which drivers result in changes to the ecological health and viability of key species? • Which drivers result in changes in ecological processes? • Which drivers result in changes in the stocks and flows of ecosystem services? • Which drivers result in changes in the resiliency and vulnerability to climate change?
5. Rank and prioritize sectoral drivers based on their impact on biodiversity and ecosystems	• Which sectors have the most widespread impacts on biodiversity and ecosystems? • Which sectors have the most severe impacts on biodiversity and ecosystems? • Which sectors are most important overall to address in order to reverse negative biodiversity trends and to reinforce positive trends?

The table on the left shows the steps involved in a national sectoral impact assessment on biodiversity, and offers some key questions to ask at each step. The objective of a sectoral impact assessment is to identify those sectors that are most important in driving both positive and negative trends in biodiversity and ecosystems. Although most environmental assessments focus on biodiversity loss and the drivers of loss, in the context of costing strategies for NBSAPs, it is also useful to understand the drivers of positive trends in biodiversity and ecosystems.

Based on the results of this assessment, planners can identify which sectors are most important for developing strategies, actions and costs, which sectors may be potential finance actors, and which sectors may have the largest costs for transitioning from a 'status quo' scenario to a sustainable basis.[35]



ROOT CAUSES ANALYSIS

Two similar approaches – a root causes analysis and a situation analysis – can help planners identify the underlying causes of drivers of biodiversity and ecosystem change, and identify key factors and policy environment. In essence, a root cause analysis requires that a planner continue to ask 'why' until the basic underlying factors are revealed.

The main components of both a root causes analysis and a situational analysis include:

- **Biodiversity element:** These are the species, natural communities, ecosystems and ecosystem services that are affected by key sectors.
- **Threats, pressures and drivers:** These are the range of direct and indirect forces that drive negative biodiversity and ecosystem trends, including, for example, habitat conversion, pollution, over-consumption
- **Underlying factors:** These are the contributing factors, including demographics, poverty, inequity, public policies, markets, politics, and institutional capacities at micro and macro scales.
- **A conceptual model:** A conceptual model shows the relationship between biodiversity elements, direct threats, pressures and drivers, and underlying factors that contribute to these drivers.[36]

Introduction to Workbook 1B: Institutional review

The purpose of Workbook 1B is to identify the key existing and potential future finance actors under both the existing status quo, as well as under a future 'biodiversity investment state.'

Workbook 1B starts with the negative and positive drivers they identified in Workbook 1A. For each negative and positive driver, planners identify the most important sectoral actors, and categorize their relationship under both the existing status quo, as well as under a future biodiversity investment state. They also identify how costs and benefits are distributed, again under both a current and future scenario. By understanding the impacts and dependencies between key sectoral actors and the drivers of change, planners can better understand who might pay for future biodiversity investments.

Based on the sectoral analysis of impacts and dependencies, and the distribution of costs and benefits under two different scenarios, planners then select a subset of the most important finance actors – those who will be included in the remaining Workbook analyses. It is this smaller set of finance actors that will be used in the expenditure review in Workbook 1C, as well as potential finance actors in Workbook 2. For each finance actor, planners identify a suite of roles, including setting budget priorities and annual budgets, accessing and disbursing funds, and financial reporting and spending. Finally, planners assess the existing and future capacity needs for each finance actor, focusing on capacities required to implement NBSAPs, and the financial implications of capacity gaps.

Upon completing Workbook 1B, planners will be able to identify: a) a set of key sectoral actors related to each major driver of change in biodiversity and ecosystem status and trends; b) their impacts and dependencies, and the distribution of costs and benefits, under both a status quo and biodiversity investment state; c) a consolidated set of finance actors to be included in the remainder of the Workbook; d) an analysis of the existing finance roles of these key actors; and e) the new and existing capacity needs for each actor to implement the results of the BIOFIN assessment and any financial implications of these gaps.

KEY DEFINITIONS USED IN WORKBOOK 1B

Sectoral actors: Sectoral actors include any agency, institution, community, company or group that has an impact or dependency on the drivers of biodiversity change.

Finance actors: Finance actors include any agency, institution, community, company or group that has a financial or economic impact or dependency on the drivers of biodiversity change. Finance actors are primarily actors who do or can pay for or invest in biodiversity strategies.

Existing and future status quo state: The existing status quo state is defined as the current state, with no changes. The future status quo state is the projected future state, assuming that there are no major changes to existing trajectories (e.g., human population growth rates, biodiversity funding, species population trends, rates of resource consumption).

Biodiversity investment state: The biodiversity investment state is the projected future state in which investments in biodiversity have been fully made, and the resulting positive impacts have occurred, or are underway (e.g., investments are made in restoration, protection, improved management, sectoral mainstreaming), with resulting positive status and trends in biodiversity and ecosystems.

Biodiversity impacts, dependencies, costs and benefits: Biodiversity impacts are the overall impacts that a specific institution or actor has on biodiversity, whether directly (e.g., through exerting pressures) or indirectly (e.g., through negative policies). Biodiversity dependencies are the degree to which an institution is responsible for a driver occurring, either at present or in the future. Costs include the overall economic costs that society must pay, including both financial costs (e.g., in monetary losses) and non-financial costs (e.g., lost opportunity, decreased resilience). Benefits are any social and economic benefits that accrue from biodiversity, including both direct and indirect direct users, consumers and beneficiaries.

EXAMPLE OF IMPACTS AND DEPENDENCIES

In the Philippines, water use and management is a key issue. However, water districts do not generally account for the costs of water conservation. As a result, water is undervalued.

The beneficiaries of the status quo are existing water users, including: irrigation farmers, industrial water users, domestic and household water users, and hydropower.

Under the current status quo, the Department of Environment and Natural Resources maintains the costs of protecting and managing headwater areas. By analyzing potential scenarios, planners are exploring the feasibility of shifting these costs to local water districts, and possibly even to direct users under a payment for ecosystem service scheme. Planners are also exploring the feasibility of incorporating biodiversity issues into headwaters management, to increase efficiencies.

Source: Early BIOFIN analyses

UN Photo: Edwin G. Huffman

Key questions: Impacts and dependencies, and distribution of costs and benefits, of key sectoral actors

Section 1: Impacts, dependencies, costs and benefits of key sectoral actors related to negative drivers

- For each negative driver, identify the most important key sectoral actors
- For each sectoral actor, select the relationship that the key actor has to both the current status quo and to the future biodiversity investment state
- Provide any explanations or further implications of these impacts and dependencies
- For each sectoral actor, select the distribution of costs and benefits under both the current status quo and the future biodiversity investment state.
- Provide any explanations or further implications of these costs and benefits

Section 2: Impacts, dependencies, costs and benefits of key sectoral actors related to positive drivers

- For each positive driver, identify the most important key sectoral actors
- For each sectoral actor, select the relationship (impacts and dependencies) that the key actor has to both the current status quo and to the future biodiversity investment state
- Provide any explanations or further implications of these impacts and dependencies
- For each sectoral actor, select the distribution of costs and benefits under both the current status quo and the future biodiversity investment state.
- Provide any explanations or further implications of these costs and benefits

Usage Note for Workbook 1B: Selecting categories for responsibilities, costs and benefits

The descriptors used for categorizing the relationship of the sectoral actor to the driver of change under the existing status quo includes: "responsible for the driver" and "not responsible for the driver." The descriptors used for categorizing the relationship of the sectoral actor to the driver of change under the future biodiversity investment state include: "will be responsible for the new state," and "will not be responsible for the new state." In this analysis, 'responsible' is used to mean that the driver occurs because of direct and/or indirect actions taken by each actor.

The descriptors used for categorizing the costs and benefits of each sectoral actor under the existing status quo include: "benefits from," "pays the cost of," "both," or "neither." The descriptors used for categorizing the costs and benefits of each actor under the future biodiversity investment state include: "will benefit," "will pay," "both" or "neither." In this analysis, 'benefit' is used here to mean wider economic benefits, both direct and indirect, and is generally tied to ecosystem services (e.g., a beverage plant benefits from free water use), and 'pay' is used to mean wider economic costs that an actor does or would incur (e.g., a coastal community pays for the commercial clearing of mangrove forests through increased storm vulnerability).

Key questions: Roles and capacities of key finance actors

Section 3: Roles, responsibilities and capacities of key finance actors

- Based on the analyses in Sections 1 and 2, identify the key finance actors, including the actor, the sector and the specific department, and the category and sub-category that best describes them
- For each key finance actor, identify their role in setting budget priorities
- For each key finance actor, identify their role in annual budgeting processes
- For each key finance actor, identify their role in accessing funds
- For each key finance actor, identify their role in disbursing funds
- For each key finance actor, identify their role in financial reporting
- For each key finance actor, identify their role in spending
- For each key finance actor, identify existing finance capacity needs under the existing status quo
- For each key finance actor, identify new finance needs under the new biodiversity investment state
- Provide any further notes or descriptions to explain your answers and highlight key assumptions

Usage Note for Workbook 1B: Roles, responsibilities and capacities of key finance actors

Section 3 includes the following categories for roles and responsibilities:

- Setting budget priorities: Select from 'primary role,' 'minor role,' 'no role,' or 'other'
- Accessing funds: Select from 'direct access,' 'negotiated access,' 'no access,' or 'other'
- Annual budgeting: Select from 'develops budget', 'submits budgets,' 'approves budget,' 'no relation,' or 'other'
- Disbursing funds: Select from 'directly disburses,' 'indirectly disburses,' 'no relation,' or 'other'
- Spending: Select from 'directly spends,' 'indirectly spends,' 'does not spend,' or 'other'
- Existing status quo capacities: Describe in short narrative format any key capacities currently required for strengthening all aspects of financial practices
- Future capacities: Describe in short narrative format any new finance-related capacities under the future biodiversity investment state that would be required

KEY FINANCE ACTORS IDENTIFIED IN NAMIBIA

A recent review of key finance actors in Namibia[37] identified the following finance actors:

- Ministry of Environment and Tourism
- Ministry of Agriculture, Water and Forestry
- Ministry of Fisheries and Marine Resources
- Ministry of Lands and Resettlement
- Ministry of Youth, National Service, Sport and Culture
- Ministry of Mines and Energy
- Ministry of Works, Transport and Communications
- Global Environment Facility
- United States Government
- German Government
- World Wildlife Fund
- European Union
- Food and Agriculture Organization
- Southern African Science Service Centre for Climate Change and Adaptive Land Use
- Other Donor Funds
- NedBank
- Private Landholders

Source: Barnes et al., 2014

FREQUENTLY ASKED QUESTIONS

Why start with a wide set of sectoral actors?

By starting with a wide set of sectoral actors, planners can be sure that they are considering potential finance actors who may be otherwise be overlooked, especially when considering potential future finance actors under the new biodiversity investment state.

Why assess impacts, dependencies, costs and benefits?

By understanding the relationship between who is responsible for drivers of change, who benefits from ecosystem services, and who pays the cost of current practices, planners can better identify strategies that can incorporate the value of biodiversity and ecosystems, and the negative consequences of unsustainable use, into financial and market structures and policies.

Why analyze financial roles and capacity needs for key finance actors?

By understanding the roles of each finance actor, planners can better understand strengths and weaknesses of the system as a whole. Addressing both existing and future finance capacity needs is a critical step toward more efficient utilization of financial resources.

Completing Workbook 1B

In completing Workbook 1B, planners may consider different levels of resolution, each of which may depend upon different levels of staff time, financial resources, data availability and level of completion of previous assessments. The table below offers some suggestions for course, medium and fine resolution when answering each question.

	LEVEL 1: COARSE RESOLUTION	LEVEL 2: MEDIUM RESOLUTION	LEVEL 3: FINE RESOLUTION
SECTIONS 1 and 2: Impacts and dependencies of key sectoral actors, and distribution of costs and benefits, for both negative and positive drivers	Identify a limited set of key sectoral actors Assess dependencies and impacts, and costs and benefits based on steering committee discussions	Identify a relatively complete list of key sectoral actors Estimate dependencies and impacts, and costs and benefits, based on steering committee discussions and best available information, such as existing institutional reviews	Conduct or update an institutional review that identifies a comprehensive list of key institutions in all major sectors Conduct a thorough analysis of dependencies and impacts, and costs and benefits, for the most important sectoral actors
SECTION 3: Institutional roles, responsibilities and capacity needs of key financial actors	Identify finance-related roles and responsibilities and key issues through steering committee discussions Identify finance capacity and capacity needs of responsible actors and institutions through steering committee discussions	Identify finance-related roles and responsibilities through steering committee discussions, supplemented by best available data on finance assessments Identify capacity needs of selected key finance actors through steering committee discussions and informal consultations, supplemented by existing capacity assessment findings	Conduct a thorough assessment of key finance issues related to institutional roles and responsibilities Conduct a thorough capacity needs assessment for financial capacities across a wide range of key finance actors

Reporting results for Workbook 1B

- **Relation between drivers of change and related key actors and institutions:** This section should include a summary description of the actors and institutions who are related to and/or responsible for each of the drivers of change identified in Workbook 1A. This section should also include a description of the actors and institutions who contribute to and are responsible for the status quo and future strategies. The estimated length of this section is approximately 2–3 pages.

- **Existing and potential distribution of benefits:** This section should include a description of the actors and institutions who currently benefit from the drivers of change that determine the existing status quo. This analysis should be followed by a description of relevant, prioritized NBSAP strategies, and a description of the actors and institutions likely to benefit from each of these strategies. The estimated length of this section is approximately 3–5 pages.

- **Existing and potential distribution of costs:** This section should include a description of the actors and institutions who currently pay the costs, direct and indirect, of the current status quo or the drivers of change, as well as a projection of the distribution of costs under the future scenario of implemented NBSAP strategies. The estimated length of this section is approximately 3–5 pages.

- **Institutional roles and arrangements:** This section should include a description of the institutional roles and responsibilities for determining national priorities, setting annual budgets, and disbursing and spending financial resources. This section should also include a graphic and description of institutional arrangements between and among the institutions responsible for biodiversity-related finance and expenditure. This section should also include a chart showing institutional arrangements and relationships. The estimated length of this section is approximately 3–7 pages.

- **Capacities and capacity needs:** This section should include a summary of key finance-related capacities needed for each of the key actors, as well as financial implications for strengthening these capacities. The estimated length of this section is 2–3 pages.

- **Key issues and recommendations:** This section should include a summary of the major issues affecting financial resource management of key actors and institutions, both in the existing status quo, as well as under future scenarios with proposed NBSAP strategies and actions. Each of these issues should be accompanied by a brief set of recommendations, such as priorities for improving institutional arrangements, and priority financial capacities required for new strategies. The estimated length of this section is approximately 2–3 pages.

INSTITUTIONAL ARRANGEMENTS IN THE PHILIPPINES

In the Philippines, there are four stages that apply to institutional arrangements for biodiversity finance:

Budget preparation:

- The Development Budget Coordinating Committee determines overall economic targets, expenditures levels, revenue projections and the financing plan
- The Department of Budgeting and Management (DBM) issues a "Budget Call," to which government agencies respond by completing detailed budgets estimates and priorities
- Following budget hearings, the DBM proposes a budget, which is reviewed and approved by the President and the Cabinet, and submitted to Congress

Budget authorization:

- The Appropriations Committee of the House of Representatives reviews the budget, and conducts hearings, along with the Senate Finance Committee
- The Bicameral Conference Committee finalizes the budget in the General Appropriations Bill

Budget execution:

- The Simplified Fund Release System releases funds, while the DBM prepares an agency budget matrix

Accountability:

- At the agency level, budget accountability takes the form of management's review of actual performance in relation to work targets
- The Commission on Audit ensures that all expenses have been disbursed in accordance with accounting regulations and the purpose(s) for which the funds have been authorized[38]

ELEMENTS IN A TYPICAL INSTITUTIONAL REVIEW

The elements below are typically found in an institutional review that accompanies an expenditure review in other sectors.

Role in biodiversity planning and finance:

- In what ways does each institution influence biodiversity finance decisions?
- How clear are roles and responsibilities for biodiversity management within and between different government agencies and ministries?
- What key issues associated with the existing institutional arrangements are facilitating and inhibiting effective biodiversity finance?

Responsibilities, costs and benefits:

- What are the impacts that each institution has on biodiversity?
- How well does the institution understand these impacts?
- What are the barriers to institutional change?

Alignment with national biodiversity-related objectives:

- How might collaboration and coordination on biodiversity issues be strengthened?
- What impacts do organizational structures have on biodiversity policies and strategies?
- How consistent are the institution's policies with national goals and policies?
- Are there any inconsistencies or conflicts between an institution's legal mandate, its practices and policies, and its impacts on biodiversity?[39]

Digging deeper: Assessing finance capacity needs

CAPACITIES	EXAMPLES OF FINANCE-RELATED INSTITUTIONAL COMPETENCIES
Strategic planning capacities	The ability to prioritize across a range of NBSAP strategies, identifying those that are the most efficient and cost effective in achieving national biodiversity and development goals The ability to gauge the potential effectiveness of strategies and actions in achieving multiple goals, including both biodiversity and national development goals The ability to develop agendas, budgets and plans across multiple agencies, divisions and departments, as well as across public and private actors The ability to gauge long-term tradeoffs between multiple scenarios, and to understand inter-sectoral policy tradeoffs The ability to develop multiple scenarios for ecosystems and biodiversity, including status quo scenarios and future biodiversity investment scenarios, and to be able to articulate the outcomes of these scenarios in terms of national development goals The ability to link national development goals to the integrity of natural ecosystems, and to the flow of ecosystem services and natural capital stocks The ability of ministries to re-align their plans and policies with over-arching national goals and objectives
Financial management and reporting capacities	The ability to develop strategies that will effectively address drivers of biodiversity loss The ability to effectively manage the flow of financial resources across agencies, and ensure effective disbursement and execution of funds The ability to calculate the impacts of perverse incentives, and to be able to show counterfactual arguments for phasing out and eliminating these perverse incentives The ability to provide transparent and accountable frameworks and systems for how funds are budgeted and allocated, disbursed and executed
Communication and persuasion capacities	The ability to develop a wide range of innovative partnerships across a range of actors, including public-private finance partnerships The ability to counteract powerful interest groups that wish to maintain the status quo for natural resource depletion by making equally powerful economic arguments The ability to clearly communicate the benefits of shifting policies and practices toward a sustainable trajectory The ability to influence the highest levels of government to invest in biodiversity and ecosystems as a means for achieving national development goals The ability to mobilize private investment finance for public goods, such as natural capital infrastructure and biodiversity conservation

Fully implementing the BIOFIN Workbook, and taking actions that result from the BIOFIN analyses, will require competencies in a broad set of finance-related skills. The following indicative checklist can help both NBSAP and BIOFIN planners prioritize key areas for strengthening finance-related capacities.

KEY DEFINITIONS USED IN WORKBOOK 1C

Overall expenditure: The overall total expenditure, whether for biodiversity or other categories, that a finance actor spends in a given year.

Biodiversity-related expenditure: Any expenditure, whether by a public or private finance actor, that supports the conservation, sustainable use and/or equitable benefits sharing of biodiversity in a given year.

Effectiveness of expenditure: The effectiveness of a biodiversity expenditure is the degree to which the expenditure achieves the specific intended results in a cost-effective and efficient manner (e.g., ineffective tree planting efforts that fail from year to year).

Biodiversity-harmful expenditures: Biodiversity-harmful expenditures include those direct and indirect expenditures that are in opposition to the national biodiversity objectives, and/or to the conservation, sustainable use and equitable sharing of the benefits of biodiversity (e.g., expenditures that promote planting of invasive alien species, and subsidies that promote overuse of chemical pesticides and fertilizers). To the extent possible, planners should include existing finance actors who have significant biodiversity-harmful expenditures when completing Workbook 1B.

Actual attributed biodiversity expenditure: The degree to which an overall expenditure can be counted as a biodiversity expenditure; the degree to which an expenditure promotes the conservation, sustainable use and/or equitable benefits sharing of biodiversity.

Status quo scenario: The likely scenario to occur in the future if there are no substantial changes to the existing status quo (e.g., significant changes in policies, changes in the likely rate of increase or decrease in spending or revenue).

Introduction to Workbook 1C: Biodiversity expenditures

The purpose of Workbook 1C is to gauge the extent of public and private biodiversity expenditures in the past, and to estimate the likely amount to be expended in the future under a variety of scenarios, including a status quo scenario for the future.

Planners begin Workbook 1C by reviewing overall and biodiversity-related expenditures for each of the key finance actors identified in Workbook 1B. This information is typically collected during an expenditure review process. Planners can choose to collect and analyze data either on an expenditure basis (i.e., collect data on each biodiversity-relevant expenditure within each relevant program for each financial actor) or on a program basis (i.e., collect data on each biodiversity-relevant program for each financial actor). The data from a detailed expenditure review can be collated and summarized into an overall snapshot. The excel spreadsheet provides a worksheet for both a detailed and summary expenditure review.

Workbook 1C allows planners to not only understand the scope of biodiversity expenditures, and to create a past and projected future baseline of funding, but also to gauge the effectiveness of key expenditures, and to understand the impact of environmentally harmful expenditures and overall cost effectiveness and efficiency. By completing Workbook 1C, planners create a baseline against which they can determine the financial gap, based on the costs of implementing NBSAPS, which is determined in Workbooks 2A and 2B. This gap in turn determines the scope of resource mobilization efforts required in Workbooks 3A and 3B.

Information about the effectiveness of expenditures, and the degree of harm from all expenditures (including non-biodiversity related expenditures) can provide planners with information for more efficiently and effectively managing limited financial resources, and for identifying opportunities for cost savings.

Upon completing Workbook 1C, planners will be able to identify: a) key finance actors; b) areas and amounts of effective and ineffective expenditures by sector and by financial actor; c) areas and amounts, by sector and by financial actor, of biodiversity-harmful expenditures; d) trends in the total actual budget, expenditure and biodiversity-related expenditure, by sector and by financial actor, over a period of five to six years; e) the projected amount and the trends in future expenditure, by sector and by financial actor over a period of several years; f) a set of key recommendations for improving efficiency and effectiveness of expenditure, by sector and by financial actor, and for improving the realignment of budget priorities.

Key questions: National biodiversity expenditures

Section 1: Overall national budgetary and expenditure information

- What has been the annual total government budget since 2006?
- What has been the annual total government expenditure since 2006?
- What has been the annual gross domestic product since 2006?

Supplementary Workbook 1C: Detailed analysis of each biodiversity-related expenditure

- For each key finance actor identified in Workbook 1B, identify the total budget and actual expenditure
- For each key finance actor, identify all biodiversity-relevant expenditures
- For each expenditure, identify the total amount of expenditure each year in the time series
- For each expenditure, identify the source of funds
- For each expenditure, provide a brief description, and any additional information, if necessary
- For each expenditure, select from the appropriate NBSAP strategy and sub-strategy category
- For each expenditure, identify the relevant national budget code, and specific agency code (if used)
- For each expenditure, select the percent attributable to biodiversity
- For each expenditure, select the effectiveness of expenditure
- For each expenditure, select the degree of harm to biodiversity, if any, caused by the expenditure
- Provide any additional notes, assumptions, evidence or other comments if required

Usage Note for Workbook 1C: Detailed analysis of biodiversity expenditures by each financial actor

- **Selecting NBSAP Strategy Category and Sub-Category:** Select from the categories and sub-categories described in Annex 1

- **Selecting percentage attributable to biodiversity:** Users can select from a drop-down menu that includes 100%, 75%, 50%, 25%, or 10%, or they can add their own percentage, which is then used to calculate the actual attributable biodiversity expenditure. The default in the workbook is set to 100%,

- **Selecting effectiveness of expenditure:** Users can select from highly, mostly, moderately, marginally or not effective, as well as unknown. The actual biodiversity expenditure is calculated by multiplying the actual attributable expenditure by 100%, 75%, 50%, 25% or 0%, to determine the total actual effective biodiversity expenditure. The default value is set for 100%.

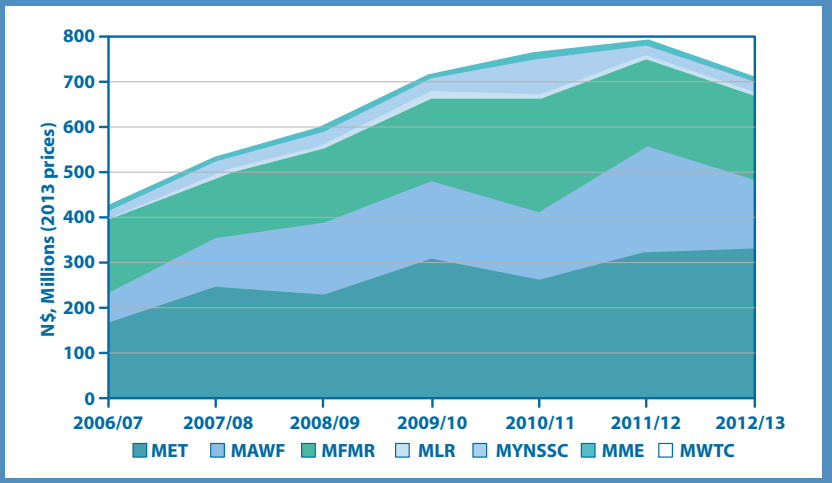
- **Selecting degree of harm to biodiversity:** Users can select from 'extremely,' 'very', 'moderately', 'somewhat', and 'not at all harmful', as well as 'unknown'. The total harmful biodiversity expenditure is automatically calculated by multiplying the total expenditure by 100%, 75%, 50%, 10% or 0% respectively, or users can add in their own percentage. The default value is set at 0.

RESULTS FROM A RECENT EXPENDITURE REVIEW IN NAMIBIA

Namibia recently conducted a review of biodiversity expenditures from 2006 to 2013.[40]

The report concluded the following:

- Namibia spends more than 1 billion Namibian dollars (91.4 million USD) annually on biodiversity.
- Three ministries – Ministry of Environment and Tourism, Ministry of Agriculture, Water and Forestry, and Ministry of Fisheries and Marine Resources – account for more than 90% of biodiversity expenditures in Namibia.
- Biodiversity expenditures account for an average of 2% of Namibia's total expenditures, and under 1% of Namibia's total Gross Domestic Product.
- The expenditure estimates are likely to be underestimates of real biodiversity expenditures in Namibia, due to limitations with available data and the report timeframe.
- Less than 5% of biodiversity expenditures are on sectoral mainstreaming.



Key questions: National biodiversity expenditures

Section 2: Summary analysis of baseline biodiversity expenditures

- For each key finance actor identified in Workbook 1B, calculate the total budget
- For each key finance actor, calculate total actual expenditures
- For each key finance actor, calculate the total biodiversity budget
- For each key finance actor, select the projected trend in annual budget for each category
- For each entry, users should enter key assumptions and other explanatory notes
- The overall effectiveness of biodiversity expenditures, total harmful expenditures, and total biodiversity-related expenditures will be automatically calculated and sorted by category, based on data entered in the supplementary Workbook 1C on detailed expenditure review worksheet

Section 3: Estimated future funding baseline under a 'status quo' scenario

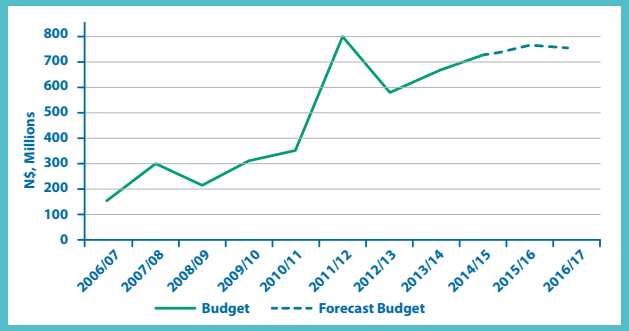
- Based on the data entered in Section 2, the Worksheet will automatically calculate the future funding baseline scenario by year and by category. Planners can and should add assess and revise these projections, based on additional information.

Usage Note for Workbook 1C: Summary analysis and future funding baseline

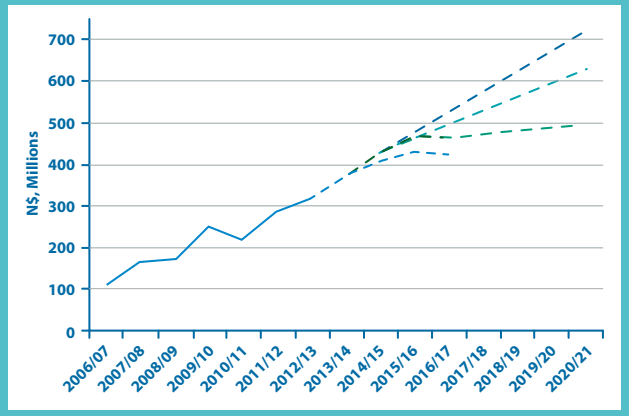
- **Selecting trends in future budgets:** In determining trends for estimated future annual change in budget, users can select from 'same', 'increase,' decrease', and 'new'. If the expenditure is likely to increase or decrease, select or enter the estimated percentage change. If the expenditure is new, enter annual amount of projected change.
- **Selecting rates of change in future budget:** If the response is increase or decrease, users can select an amount from the drop down menu under "Percentage annual change' from 2%, 5%, 10%, 50%, 100% (or 200% for increase), or they can enter a different amount. This percentage will factor into the calculation of the estimated future funding baseline. Planners can and should enter additional data that will inform future trends, such as likely contributions from NGOs, bi-lateral and multi-lateral aid agencies, as well as national trends in program and sectoral funding.
- **Selecting categories and sub-categories:** Planners can select from the taxonomy presented in Appendix 1.

PROJECTED BIODIVERSITY EXPENDITURES FOR NAMIBIA

In Namibia's recent expenditure review,[41] the planning team used basic figures from existing Ministry of Environment and Tourism budgets through 2015, and projected what the future budget would likely look like through the next three-year period of 2015–2017, based on past trends. This was a starting point for developing a long-range series of projections.



The figure below shows previous biodiversity expenditures for the Ministry of Environment and Tourism from 2006 to present, as well as projected expenditures through 2021, integrating four different likely scenarios, using the figure above as a starting point.



FREQUENTLY ASKED QUESTIONS

Why assess the effectiveness of expenditures?

One of the basic principles of effective financial management is that funds should be expended in the most cost-efficient means available for achieving a specific intended goal. Ineffective and inefficient spending can be a drain on local and national budgets, and take away from other critical resource needs. By identifying areas for improved expenditures, planners are also identifying areas for future cost savings, which can help to fill future finance gaps.

Why assess biodiversity-harmful expenditures?

Biodiversity-harmful expenditures may achieve other societal goals, such as promoting affordable food by subsidizing the cost of chemical fertilizers and pesticides, or promoting jobs and revenue by providing tax incentives for hotel infrastructure. However, these societal goals may be able to be achieved in a manner that is not only neutral or even positive for biodiversity, but that can also reduce the overall cost to society. Including biodiversity-harmful expenditures in the BIOFIN Workbook encourages planners to have an open dialogue about expenditures and subsidies that have long been taken for granted.

Completing Workbook 1C

In completing Workbook 1C, planners may consider different levels of resolution, each of which may depend upon different levels of staff time, financial resources, data availability and level of completion of previous assessments. The table below offers some suggestions for coarse, medium and fine resolution when answering each question.

	LEVEL 1: COARSE RESOLUTION	LEVEL 2: MEDIUM RESOLUTION	LEVEL 3: FINE RESOLUTION
SECTION 1: Overall national budgetary and expenditure snapshot	Calculate the total government budget, expenditure, foreign loans and grants, and gross domestic product based on existing figures, or based on best estimates	Calculate the total government budget, expenditure, foreign loans and grants, and gross domestic product based on existing government figures (same as for coarse resolution)	Calculate the total government budget, expenditure, foreign loans and grants, and gross domestic product based on existing government figures (same as for coarse resolution)
SECTION 2: Baseline biodiversity-related expenditure and expenditure effectiveness review	Identify a small subset of the most significant biodiversity-related biodiversity finance actors, through peer review discussions Expenditures may be estimated through sampling Identify categorical effectiveness of biodiversity-related expenditures, and identify general areas of harmful biodiversity expenditures from a select subset of finance actors Use programmatic data in lieu of a detailed expenditure review	Identify a subset of the most significant biodiversity-related finance actors, and identify most of the fields in Section 2. Some expenditures may be estimated through sampling Identify categorical effectiveness of biodiversity-related expenditures, and general areas of environmentally harmful expenditures, with some qualitative estimates of total amounts for key institutions	Conduct a thorough review of the most significant biodiversity finance actors, completing most or all fields in Sections 2 and 3 For significant finance actors, assess effectiveness through an effectiveness review, including a calculation of the amount of ineffective expenditures, and for the remaining actors, identify categorical effectiveness of biodiversity-related expenditures Identify environmentally harmful biodiversity expenditures, and estimate the amount of potential savings if these expenditures were to be eliminated
SECTION 3: Estimated future funding baseline under a "status quo" scenario and 'biodiversity investment state" scenario	Identify the projected future baseline scenario based solely on past expenditures	Identify the projected future baseline scenario based on past expenditures and some analysis of likely future trends or conditions	Identify the projected future baseline scenario based on past expenditures, and a full analysis of likely future trends, conditions, contingencies

Reporting results for Workbook 1C

- **Overall national budgetary and expenditure snapshot:** This section should include a description of the overall national government budgets and expenditure from at least 2006 to 2010, and through 2013 if possible. The estimated length of this section is approximately 2–3 pages. However, this section should also be accompanied by an appendix that provides more detail about the process for gathering data, the individual agencies that were included in the review, and any additional information, as well as detailed data sheets. The estimated length of this appendix will vary according to the national context.

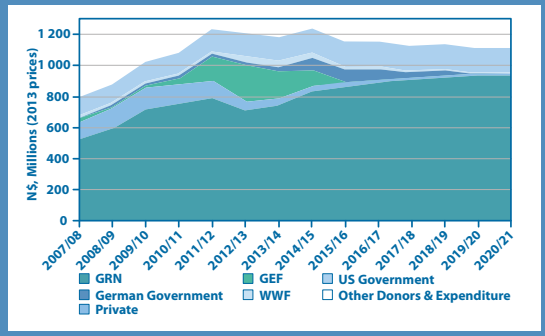
- **Baseline expenditures and expenditure effectiveness review:** This section should include a summary description of the key actors and institutions included in the review, and the total expenditures for biodiversity-related activities from 2006 to 2010 for each actor. In addition, this section should identify key issues related to the effectiveness of biodiversity expenditures for each actor or institution, as well as identify key environmentally harmful expenditures, including an analysis of the economic, social and ecological impacts of environmentally harmful expenditures. The estimated length of this section is approximately 3–4 pages. An additional appendix should include summaries of the data sheets and results of the expenditure reviews for major institutions, with an estimated length dependent on the number and complexity of finance actors. This section should include graphs, pie charts and/or other types of easily accessible visual summaries of biodiversity expenditures. Note that the actual expenditure review may be very long (100 pages or longer) depending on the extent of detail recorded.

- **Expenditure review by major strategy group:** This section should include a summary sheet of the total expenditures organized under global and national categories of strategies. Countries may choose to use a different classification than the one presented in this methodology. The estimated length of this section is approximately 1–2 pages.

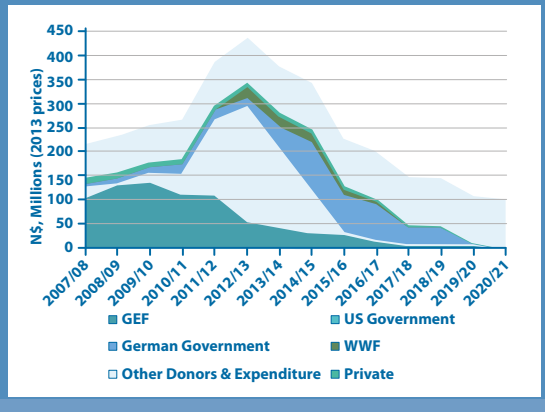
- **Estimated future funding baseline under a 'business-as-usual' scenario:** This section should include a summary of projected expenditures under a 'business-as-usual' scenario, along with a description of key assumptions used in the projection of this scenario. The estimated length of this section is approximately 1–2 pages.

PAST AND PREDICTED FUTURE EXPENDITURES IN NAMIBIA

The figure below shows both past and future projected expenditures through 2021 for all finance actors combined, including various finance actors within the Namibian government,[42] as well as external donors, private investors and NGO contributions.



The overall picture of future projected expenditures is very different when expenditures by the Namibian Government are excluded. The graphic below shows total real non-governmental biodiversity expenditures from 2007 through 2021.

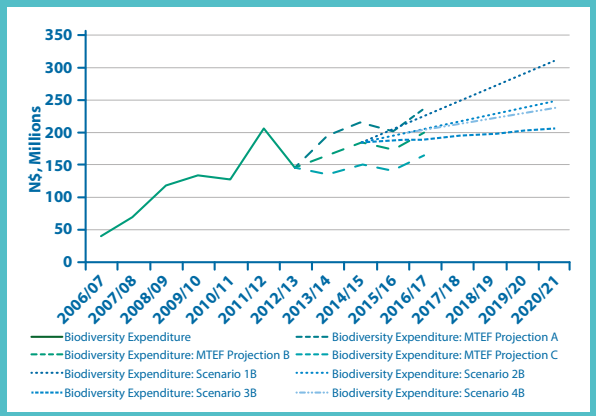


EXAMPLE OF USING DIFFERENT FINANCE SCENARIOS

When calculating future expenditures, planners from Namibia[43] used a series of different finance scenarios to determine the future finance baseline for the Ministry of Agriculture, Water and Forestry.

In Projections A, B and C, the planning team forecasted future expenditures in the next planning cycle, based on previous trends in actual expenditures, in the match between previously forecasted and actual budgets, and trends in proportional biodiversity expenditures compared with overall expenditures.

Using these figures as a moderately conservative starting point, the planning team then looked at four scenarios, including a linear trend using hind-casted data from 2006 to 2013, a linear trend using data from 2009 to 2013, a linear trend that excluded the outlier year of 2011/2012, and a linear trend using forecasted data from 2014–2017, applied through 2021.



Digging deeper: Conducting an expenditure review

The table below shows the steps involved in a typical expenditure review.

STEPS	KEY QUESTIONS TO ASK REGARDING BOTH POSITIVE AND NEGATIVE TRENDS IN BIODIVERSITY AND ECOSYSTEMS
STEP 1: Screen public and private entities relevant for the biodiversity expenditure review	To track biodiversity expenditures across a wide range of public and private sectors, planners must first identify the full range of finance actors (Workbook 1B). Planners should also look beyond those entities that deal directly with biodiversity, including for example entities that focus on agriculture, forestry, fisheries, coastal zones, REDD, land use, food security and other sectors. When screening potentially relevant entities, planners should also keep in mind that not all biodiversity-related expenditures are necessarily earmarked as such. Some expenditures with biodiversity implications may have been allocated for other purposes. For example, solar cook stoves may have been introduced in an area with the objective to improve people's health and to prevent respiratory diseases from wood-fired stoves, but a side effect may also be less pressure on biodiversity due to reduced harvest of fuel wood from local forests.
STEP 2: Extract disaggregated data from entities	Once they have identified the full range of finance actors, planners will need to extract relevant information from the various entities, and will need to keep track of different activities, sources and timing of expenditures, among other data points. Sources mainly include budgets (state budget, district/local budget, business budget, household budget, donor budget) annual reports (prepared by most governmental and non-governmental institutions) and agency spreadsheets and records. Expenditures can also occur in the form of taxes, environmental compensation payments and governmental fees. When reviewing public budgets, planners should identify the specific expenditure codes in order to better track the various streams of expenditures. National statistics agencies may have significant data available Access to data will often not be straightforward, and planners will need to build trust with the data provider. Some entities may be concerned about disclosing internal information to potential competitors, or may fear taxation increases based on information provided. It is crucial to ensure broad ownership of the process by engaging with relevant entities and stakeholders throughout the process, and communicating clearly the objectives of the BIOFIN approach.
STEP 3: Process expenditure information into a coherent framework	The extracted information will need to be processed into a coherent and comparable system in terms of currency, sources, expenditure categories, timing of expenditures and data format. Planners should take into account not only positive but also environmentally harmful biodiversity expenditures when constructing this system.
STEP 4: Create past baseline and projected future scenarios	Once planners have gathered and synthesized the various expenditures across multiple finance actors, they can begin to create an overall baseline for past expenditures on biodiversity-related activities. Based on these past figures, planners can then use these to project a future expenditure baseline, based on a business-as-usual scenario.

Introduction to Workbook 2: Cost of implementing national biodiversity strategies and actions

The purpose of Workbook 2 is to calculate the overall costs for implementing the suite of strategies and actions based on a country's NBSAP, and to assess the associated financial gap.

Planners begin with a supplementary workbook on detailed costs for each set of strategies and actions. They start by identifying the suite of strategies and actions that will be included in the analysis, transforming these into concrete 'costable action units' – actions that can be assigned specific costs. As part of this exercise, planners are encouraged to review the results of Workbook 1A (Practice and Policy Drivers of Change) to ensure that the suite of strategies and actions fully address negative drivers, and capitalize and expand on positive drivers. This process will likely be a negotiated discussion between key actors involved in the NBSAP revision process. Even if the NBSAP is completed, it is possible that additional strategies may be added in the BIOFIN analysis, to help reduce costs and increase efficiencies, and these may be added to the overall NBSAP as an addendum. An additional element of Workbook 2 is prioritizing; planners are encouraged to assign priorities to each of the costable units include. This will help during the process of developing tradeoffs and scenarios during the process of developing a resource mobilization plan in Workbook 3.

Once all of the detailed data are entered into the supplementary workbook, these figures are then automatically summarized in Workbook 2 "Summary Analysis of Costs and Financial Gaps." If planners prefer not to use the supplementary workbook, they can still enter the data into Workbook 2 using their own method of calculating costs. Workbook 2 consolidates information on the 'status quo' financial scenario, and provides detailed information on all one-time and recurring annual costs for all costing units. By looking at the differences between these figures on an annual basis, planners can calculate the total financial gap for implementing the NBSAP within their country, and gain a deeper understanding of how to sequence certain actions. This step should be taken simultaneously with the development of a timeline for NBSAP strategies and actions, since it is likely that costs will need to be distributed strategically across a multi-year timeline.

The data collected in Workbook 2 help planners understand the magnitude and timing of financial gaps and/or surpluses. The overall total gap, as well as projected annual finance gaps, can enable planners to outline the scope of the resource mobilization plan in Workbook 3, which is designed to fill these gaps. Planners can also use the results of this workbook to help sequence and prioritize key strategies.

Upon completing Workbook 2, planners will be able to identify a) a prioritized set of 'costable action units' that comprise the strategies and actions within the NBSAP; b) the total cost implications for implementing each of these units, and therefore for all of the strategies and actions within the NBSAP; c) the year in which each of these costs are likely to occur; and d) the financial gap between probable biodiversity expenditures and estimated costs in the future, analyzed by strategy, by category and by year, with low and high estimates for each.

KEY DEFINITIONS USED IN WORKBOOK 2

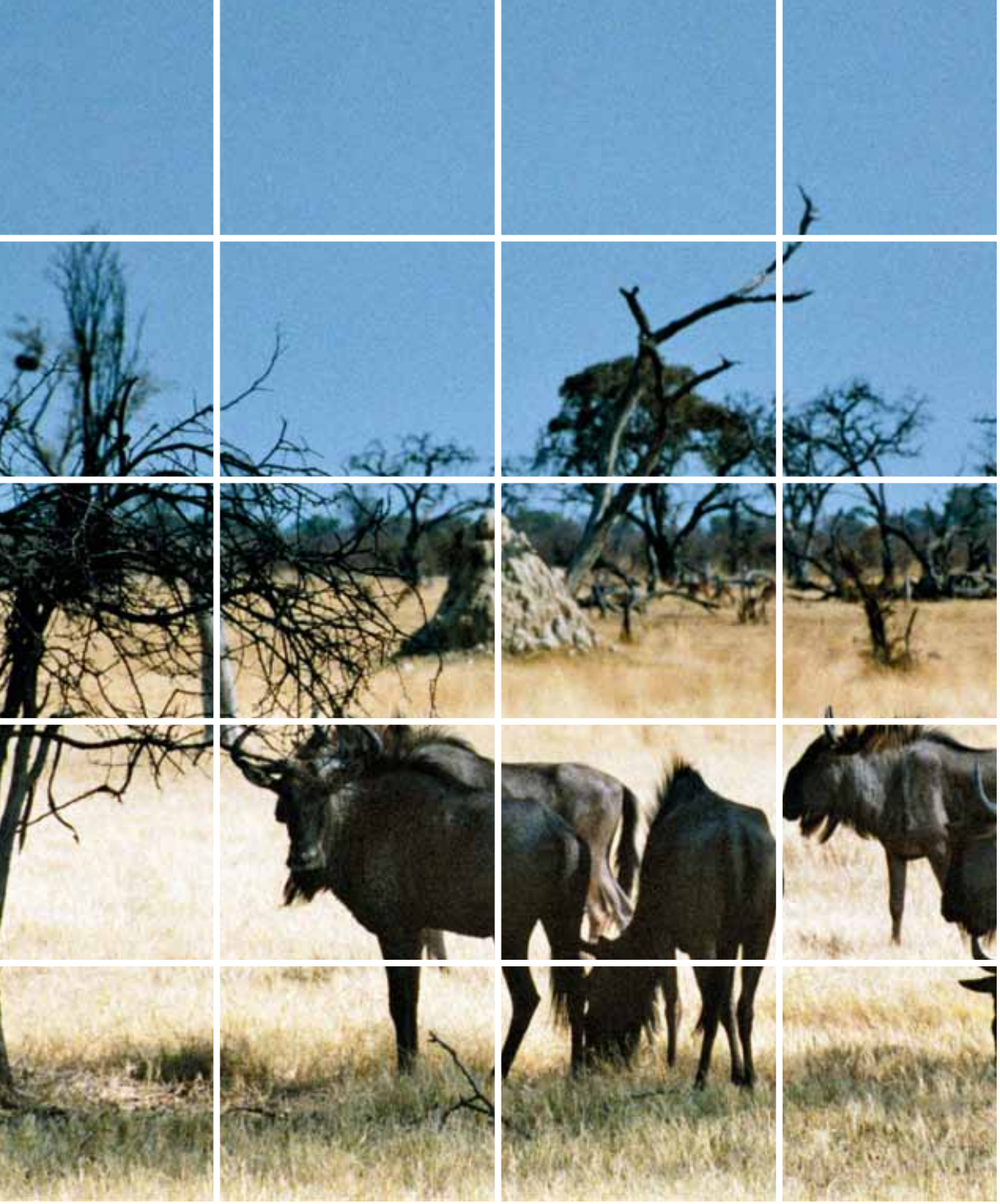
Costable action unit: A costable action unit is a discreet bundle of activities that can be assigned a set of specific costs. See Annex 2 for examples of ways to turn various strategies and actions into specific costable action units.

Cost elements: A cost element is a discreet element that has a specific cost associated with it, such as salary, transportation, materials, fees and equipment, among others.

Cost unit: A unit is the descriptive measurement by which a cost element is measured, such as full-time equivalent staff position, days of consultant's time, number of participant flights to attend a workshop.

National NBSAP reference code: The code associated with a specific strategy, sub-strategy, action or sub-action within an NBSAP, to allow cross reference with the costable action unit.

Finance gap and surplus: The difference between the total projected expenditures, and the total projected costs, for implementing the NBSAP. This can be calculated by strategy, action or costable action unit, by category or sub-category, and/or by year. In some cases, there may be a finance surplus, when projected expenditures are expected to exceed projected costs.



EXAMPLES OF STRATEGIES AND ACTIONS FROM BOTSWANA

Botswana is in the process of revising its NBSAP, but has already identified a comprehensive suite of strategies. The following is a tiny selected sampling of actions that could be easily assigned specific costs:[44]

Strategy: Planning processes at all levels, and national accounting and reporting systems contain explicit actions to promote biodiversity conservation.

Actions:

- Starting in 2015, to ensure that all major national developments, such as road networks and powerline systems, are subjected to mandatory Strategic Environmental Assessments
- To conduct, by 2016, biodiversity mainstreaming workshops for all district and regional agricultural offices

Strategy: By 2025, the rate of natural land conversion is at least halved, and degradation and fragmentation are significantly reduced.

Actions:

- To identify and protect, by 2017, migratory routes between Gchihaba and Tsodilo wildlife management areas, and the Okavango Delta and Lake Ngami
- To implement, by 2018, sustainable land management practices on all tribal grazing land

Key questions: Detailed costs of strategies and actions

Section 1: Identifying detailed costs for all strategies and actions

- For each set of strategies and actions to be included in the costing analysis, identify a suite of costable action units
- For each costable action unit, select the category and sub-category that best describes the action.
- For each costable action unit, identify each specific cost element that will be required to complete the action (users can add additional cost elements as needed within the BIOFIN Workbook)
- For each cost element, describe the unit that will be costed
- For each cost element, describe the total number of units
- For each cost element, describe the estimated low and high costs per unit
- Based on these figures, the worksheet will automatically calculate the total low cost and high cost of each cost element
- Mark the year/s in which the cost occurs (including one-time, episodic and recurring costs) from 2015 to 2022

Usage Note for Workbook 2:

The purpose of Workbook 2 is to translate the costable action units into a small sub-set of cost elements that can be estimated to identify the overall costs of the action.

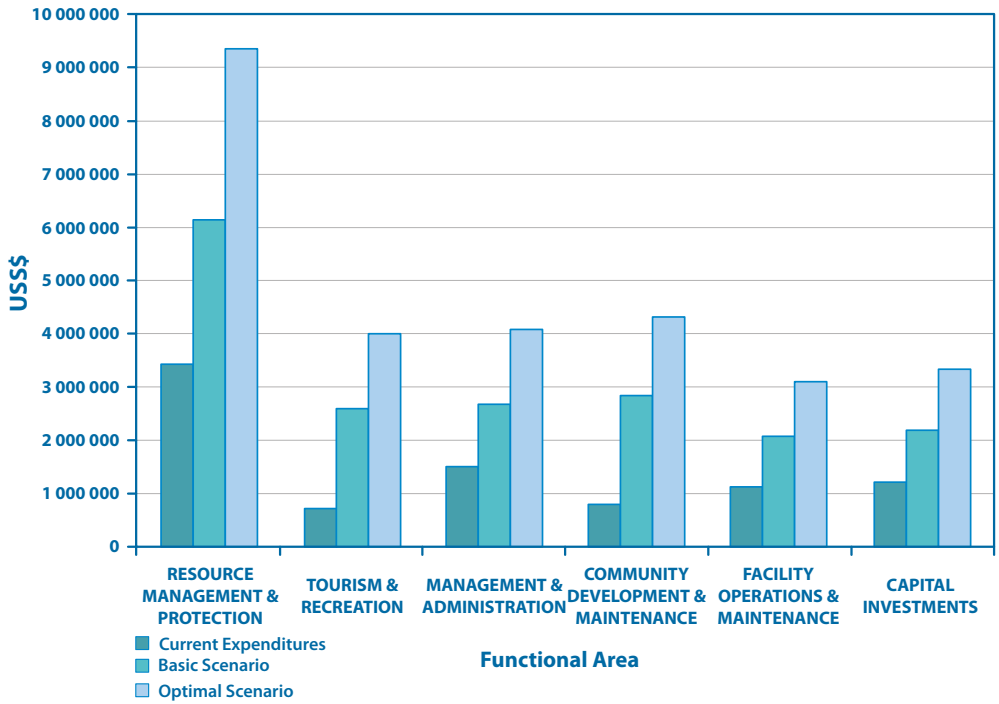
- **Select or describe the cost element:** Users can select from a drop-down menu that includes: salaries; consultants; professional fees and services; travel and transportation; materials and supplies; equipment; infrastructure; investments; operational and administrative costs; and other.
- **Describing the unit for the cost element:** Users should describe the unit for each cost element. For example, the unit for salaries may be a percentage of a full-time equivalent staff position, or the unit for travel may be flights to and from a given location.
- **Describing the high and low cost per unit:** Users should estimate the high and low cost for each unit. For example, in planning a training, planners may estimate the low average of a flight to be $500 and a high average to be $750.
- **Describing the number of units:** Users should estimate the total number of units required to attain a minimum effectiveness for completing the action.
- **Identifying the year/s in which the cost occurs:** Users can select any and all years between 2015 and 2022. Some costs will be occur only once, some will be recurring each year, and some may occur periodically.

See also Annex 2 for a taxonomy of actions, and how they link to relevant categories and sub-categories

EXAMPLE OF FINANCIAL GAPS FROM BELIZE

Planners from Belize[45] recently calculated the existing baseline of expenditures on protected areas, and then identified a 'basic funding scenario' required to safeguard against species losses and ecosystem degradation, as well as an 'optimal funding scenario' required to fully deliver on and capitalize on the full suite of potential benefits from the national protected area system.

The total finance gap for achieving a basic scenario was US$10,293, 956, and the gap for achieving an optimal scenario was US$20,025,956. These gaps were distributed across six major strategic areas: resource management and protection, tourism and recreation, management and administration, community development and outreach, facility operations and maintenance, and capital investments. By calculating the finance gap for each programmatic areas, planners were better positioned to identify and prioritize potential financial mechanisms and strategies to fill this gap.



Key questions: Summary costs of strategies and actions

Section 2: Overall costs and financial gaps for all costable action units

- Based on the figures from Section 1 of Workbook 2, the BIOFIN excel tool automatically summarizes the high and low costs of each costable action unit to provide a summary snapshot, which can be analyzed by costable action unit, by national strategies and/or actions, by category and/or sub-category, and by year
- Based on the figures from Workbook 1C on projected future biodiversity expenditures, the BIOFIN excel tool automatically calculates rough finance gaps based on the categories and sub-categories used to describe both expenditures and future costs of implementing biodiversity strategies and actions.
- Planners will also need to analyze and prioritize strategies and financial gaps, both within and across broad strategies (the BIOFIN excel workbook includes spaces for selecting priorities).

Completing Workbook 2

In completing Workbook 2, planners may consider different levels of resolution, each of which may depend upon different levels of staff time, financial resources, data availability and level of completion of previous assessments. The table below offers some suggestions for calculating estimated one-time and recurring costs, and determining coarse, medium and fine resolution when completing Workbook 2.

	LEVEL 1: COARSE RESOLUTION	LEVEL 2: MEDIUM RESOLUTION	LEVEL 3: FINE RESOLUTION
SECTION 1: Calculating estimated one-time costs, ranges and recurring costs	Identify the estimated one-time costs for each strategy based on steering committee discussions, with input from finance specialists Estimate high and low ranges with a simple variance (e.g., + or – 15%) Estimate recurring costs for each strategy based on steering committee discussions, with input from finance specialists	Identify the estimated one-time costs for each strategy based on an in-depth calculation for the costs of each action; based on steering committee discussions and with input from finance specialists and best available information Estimate high and low ranges based on simple variances, and adjusted according to best available information Estimate recurring costs for each strategy based on an in-depth calculation for the recurring costs of each action, based on steering committee discussions, and with input from finance specialists	Conduct a thorough costing analysis for the one-time costs of all strategies and actions, based on realistic budgetary information, previous expenditures and detailed cost assessments Estimate high and low ranges based on accurate scenarios required to implement the costable action unit Conduct a thorough costing analysis for the recurring costs of all strategies and actions, based on realistic budgetary information on operations and management, on previous expenditures, and on detailed cost assessments, factoring in key assumptions about future costs
SECTION 2: Estimating the finance gap	Calculate the overall financial difference (gap or surplus) for each set of strategies	Calculate the overall financial difference (gap or surplus) for each set of strategies, actions and costable action units	Calculate the overall financial difference (gap or surplus) for each set of strategies, actions, and costable action units (same as for level 2

FREQUENTLY ASKED QUESTIONS

Why base costs on 'costing units' instead of strategies and actions?

Each country has a unique way of developing strategies and actions in its NBSAP. Some countries have a few strategies, with a relatively small number of actions, others have multiple strategies, each with sub-strategies, actions, sub-actions. Creating a common 'unit' for the purpose of assigning costs helps planners focus on a relatively consistent set of actions that have specific cost implications. In some case these will be strategies, in some cases actions, and in some cases sub-actions.

Why go into such detail in the costing exercise?

There are many ways to estimate the costs associated with a specific action or costing unit. Planners could simply estimate costs based on the cost of previous actions, on costs from similar actions in other parts of the region, or simply give their best estimate. However, a detailed cost accounting process allows planners to question assumptions and to identify potential areas for cost savings. Increasingly, national expenditures are evaluated on the same basis as private investments, focusing on return on investment. A detailed cost accounting can help planners show due diligence, and can help them make the economic case for increased funding.

ACTIVITY-BASED COST ACCOUNTING

The costing approach used in the BIOFIN Methodology is called "Activity-Based Cost Accounting." This type of cost accounting, which was developed in the manufacturing sector in the 1970s and 1980s, is a methodology that allows planners to identify key activities required to achieve a certain objective, assign the direct and indirect costs of undertaking each activity, and develop budgets, in order to allow managers and policy makers to make informed decisions about the most cost-effective course of action.

This approach to budgeting and accounting may contrast with the budgeting process used by many governments. While actual budgeting approaches vary between governments, many use a simple "line-item budgeting" approach, where a budget is determined largely as the result of a political negotiations, or is a percentage of previous annual budgets, with minimal linkages to the explicit goals or objectives to be accomplished.

Governments participating in BIOFIN can choose to use their own system to calculate costs and benefits, and simply report on the overall cost of implementing the NBSAP when they complete the BIOFIN national report. If governments do not have modeling systems to determine the tradeoffs between costs and benefits, they can use the costs identified through Workbook 2 to compare different investment scenarios, and to effectively make the case for investments in biodiversity to key decision makers within their countries.[46]

Reporting results for Workbook 2

- **Summary of all strategies included in the NBSAP:** This section should summarize all of the key strategies included within the NBSAP. The details of specific costs of each action may be in simple tabular format, and may be included as an appendix to the overall BIOFIN report. The estimated length of this section will vary depending on the complexity of the NBSAP, but will likely run upwards of 15–20 pages. Data sources are assumed to be the results of the national group working on the NBSAP revision, and if not, the sources and assumptions should be included.

- **Summary of costs for all strategies within each of the major categories:** This section should include a table that shows the estimated one-time, recurring and total costs for all major strategies. The format of this could include Workbook 2 itself, or some iteration (e.g., adding additional rows as required; supplemented by graphs, charts and/or tables). This section should also include a description of the methods, data used, and assumptions made in calculating costs. The estimated length of this section is approximately 1–2 pages of text, accompanied by any relevant charts and tables. Although the supplementary worksheets on the costing for each individual action would be too much detail to provide in the BIOFIN report, planners may consider providing a summary of these, along with a link for further information. Data and assumptions for all costing should be described fully.

- **Summary of timeline of costs:** Planners may also consider showing a timeline for when strategies will be implemented, and therefore a timeline for financial resource requirements. Planners may also consider sequencing strategies and costs – sequencing is the process of determining which strategy must occur first and is most time-sensitive, and can be a helpful way of prioritizing among many priority strategies. The estimated length of this section is approximately 1–2 pages.

- **Total snapshot of the projected annual differences between projected costs, and projected 'business-as-usual' finance scenario:** This section should include a summary of the annual changes in the difference between projected one-time and recurring costs, and the projected 'business-as-usual' finance scenario. The estimated length of this section is approximately 2–3 pages. Planners may find that Workbook 2 provides a convenient template for the data, but should also show graphs and/or charts as appropriate to help explain key issues. Because data sources and assumptions will have already been clearly articulated in previous sections, this section does not require an explanation of these.

Digging deeper: Identifying the costs of implementing a strategy

The Philippines is in the process of calculating the costs associated with implementing their NBSAP, as part of their engagement in BIOFIN. One of the key biodiversity strategies relates to inland wetlands, including actions related to halting and reversing habitat loss, reducing over exploitation, mitigating and reducing pollution, and ensuring resilience to climate change. Below are some of the costs associated with halting and reversing habitat loss:

COSTABLE ACTION UNIT	COST ELEMENTS	LOW ESTIMATE	HIGH ESTIMATE
Rehabilitate priority inland wetlands, including peatlands	Personnel (team leader, 2 assistants, 4 consultants, including conflict resolution mediation specialist, legal/policy specialist, limnologist and research assistant)	11,725,044 PHP	15,099,434 PHP
	Travel (transportation and per diem)	15,552,000 PHP	40,694,400 PHP
	Meetings (site meetings, inter-agency meetings)	578,400 PHP	665,160 PHP
	Other costs (assessment of marshes, riverbank rehabilitation, soil quality monitoring, restoration of marshes, waste management)	2,491,320,000 PHP	2,865,018,000 PHP
	Capital investments (waste management facility)	15,480,000,000 PHP	17,802,000,000 PHP
Establish baseline data and conduct assessment and monitoring of freshwater wetlands using the ridge to reef framework	Regional staff, consultants (GIS specialist, monitoring and evaluation specialist, limnologist)	86,086,272 PHP	87,706,272 PHP
	Travel (transportation, per diem)	5,832,000 PHP	17,957,700 PHP
	Other costs (biophysical and socio-economic assessment of priority freshwater wetlands)	172,800,000 PHP	198,720,000 PHP
Document and replicate best practices in wetland conservation	Consultant (knowledge management specialist)	1,080,000 PHP	1,440,000 PHP
	Travel (transportation, per diem)	648,000 PHP	1,995,300 PHP
	Other (CHM enhancement)	216,000 PHP	1,498,500 PHP
Implement a wetlands communication, education and public awareness action plan	Personnel (miscellaneous)	406,308 PHP	406,308 PHP
	IEC Program	36,000,000 PHP	41,400,000 PHP
	Capital investments (Wetland Information Center)	72,000,000 PHP	82,800,000 PHP
	Other costs (national wetlands conference, Philippines Wetlands Conservaiton Award, Maintenance of Wetland Information Center	12,550,000 PHP	14,432,500 PHP

Below is a summary sample of costable action units for each action, and an estimate of all costs related to each action related to inland wetlands:

ACTIONS	COSTABLE ACTION UNITS	LOW ESTIMATE	HIGH ESTIMATE
Habitat loss	Rehabilitate priority inland wetlands including peatlands; establish baseline data; document best practices; implement a communications plan	55,585,338,240 PHP	63,940,454,341 PHP
Over exploitation	Promote ecotourism; implement sustainable aquaculture; prepare management plans; prepare capacity plan; improve water user's rules and regulations; enforce buffer zones	4,147,261,827 PHP	5,440,447,364 PHP
Pollution	Implement bioremediation and/or phytoremediation technologies	453,436,803 PHP	729,027,570 PHP
Climate change resilience	Adopt appropriate measures to address climate change impacts in inland wetlands; conduct vulnerability assessment of inland wetlands and wetland species to climate change; conduct monitoring of migration patterns of birds vis-à-vis their established migration usage; disseminate information and support Clean Development Mechanism (CDM), REDD and other carbon financing mechanisms for mitigation and adaptation	1,531,968,125 PHP	1,672,526,892 PHP

Exchange rate as of September 25, 2014: 1 PHP = 0.0225887 USD

Introduction to Workbook 3: Identifying potential finance actors, mechanisms, revenue and feasibility

The purpose of Workbook 3 is to identify potential finance actors, mechanisms, revenue and feasibility that can help fill the finance gaps identified in Workbook 2.

Planners begin Workbook 3 by reviewing all of the costable action units identified in Workbook 2, and then identify potential political opportunities, potential finance opportunities, potential finance actors, potential finance mechanisms, potential annual revenue and/or potential cost savings, as well as priority next steps.

The second section of the excel spreadsheet reorganizes information into an action plan template, organized by both prioritized actions, and by prioritized finance mechanisms. This section requires planners to identify whether or not the mechanism is feasible, and identify a timeline for deployment. It also requires planners to think through key implications for implementing the finance mechanism, including identifying the responsible actors, social, economic and political implications, start-up and ongoing costs, staffing and capacity implications, and potential safeguards required.

The data collected in Workbook 3 helps planners identify and prioritize key political and financial opportunities for increasing finance for each of the strategies and actions in the NBSAP.

Upon completing Workbook 3, planners will be able to identify a) a prioritized list and analysis of finance mechanisms; b) a summary analysis of the potential revenue to be generated (or costs to be avoided) by new finance mechanisms; c) a summary of key implications for implementing new finance mechanisms; d) the basic elements of a resource mobilization plan, including timelines, key actors, next steps.

KEY DEFINITIONS USED IN WORKBOOK 3

Political opportunities: In the context of this workbook, political opportunities are defined as opportunities for accessing and leveraging finance mechanisms that would be supported by the broader political context, such as political engagement on concerns over flooding. Opportunities also may include recent elections where politicians wish to demonstrate leadership, as well as regional statements of political will, such as the Micronesian Challenge.

Financial or economic opportunities: In the context of this workbook, financial and economic opportunities are defined as opportunities for accessing and leveraging new finance mechanisms that depends on the broader financial or economic context, such as hydro-electric facilities seeking to manage watershed risks, fiscal reform politics, or tax structures and incentives.

Finance mechanism: A finance mechanism can be any mechanisms, strategy, approach, tool or instrument that either generates revenue, or else reduces or avoids costs.

Potential finance actor: A potential finance actor is any individual, group of individuals, or institution that could potentially pay for the costs for biodiversity strategies, or those that receive financial benefits from such strategies.

Potential feasibility: In the context of this workbook, feasibility refers to the degree to which a finance mechanism is able to be implemented within a country and achieve the intended goals, given the existing constraints and opportunities.

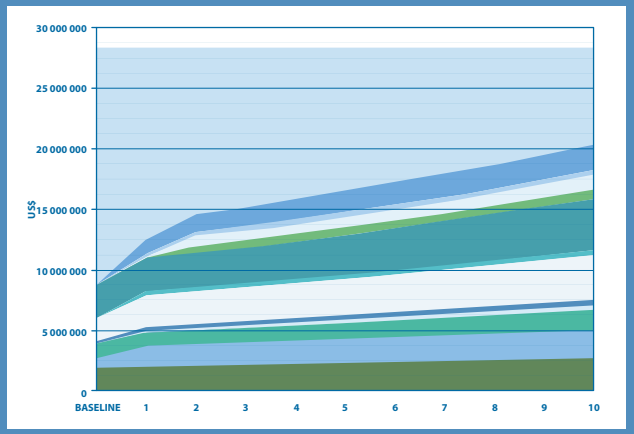
Potential revenue generation: Potential revenue generation refers to the amount of annual revenue that is likely to be generated under optimal conditions.

Potential costs reduced or avoided: The degree to which costs associated with implementing biodiversity strategies can be reduced (e.g., by utilizing volunteers to help implement strategies) or avoided altogether (e.g., by phasing out biodiversity-harmful subsidies).

IDENTIFYING STRATEGIES TO FILL RESOURCE GAPS IN BELIZE

Belize recently concluded a project[47] that assessed the existing expenditure and projected status quo funding scenario for protected areas. The total annual protected area system revenue for 2010 was $10.7 million. The source of these funds included central government allocation ($1.9 million), extra budgetary funding ($2.4 million), local fees and concessions ($3.8 million), and grants and other sources ($2.6 million).

But the total financing need for the protected area system within a decade was likely to double to over $20 million, with the cumulative total finance gap over 10 years reaching $65 to 70 million. By calculating the amount and sources of revenue, and by estimating the annual finance gap, the country was able to identify specific strategies for increasing revenue and filling the finance gap. Each band below represents a specific finance strategy, and the chart shows how these strategies are expected to grow over time.



Key questions: Biodiversity finance opportunities, actors, mechanisms and revenue potential

Section 1: Biodiversity finance opportunities, actors, mechanisms and revenue potential

- For each costable action unit identified in Workbook 2, identify the likely finance gap or surplus
- For each costable action unit, identify key political opportunities in implementation
- For each costable action unit, identify key finance or economic opportunities in implementation
- For each costable action unit, identify potential finance actors who will be required for implementation
- For each costable action unit, identify up to 3 potential finance mechanisms
- Note any key assumptions used in each component of the analysis

Section 2: Biodiversity finance opportunities, actors, mechanisms and revenue potential

- For each finance mechanism, identify the potential annual revenue and/or the potential cost savings
- For each prioritized finance mechanism, identify a timeline for deployment
- For each prioritized finance mechanisms, identify responsible actors
- Consolidate a set of prioritized, key recommendations for developing and implementing the resource mobilization plan

Usage Note for Workbook 3:

The purpose of Workbook 3 is to consolidate information on finance mechanisms, and create the framework for an overall resource mobilization plan.

Identify the likely finance gap: Users should identify the likely finance gap for each costable action unit, based on best available information. For example, if this is a new action that will not be covered under government allocation budgets, it will likely require new funding.

Identify key political and financial opportunities: Users should consult broadly with the steering committee for the NBSAP revision and for BIOFIN team members, among other key stakeholders, to ascertain potential opportunities for creating new finance mechanisms.

Identify potential finance actors: Users should identify key actors who would be responsible for implementation, as well as the broader set of actors who may be affected

Identify up to 3 finance mechanisms: Users should identify up to 3 finance mechanisms (including government allocation, new mechanisms, and strategies for reducing or avoiding costs) that could potentially apply to each costable action.

Identify the potential annual revenue or cost savings: Users should identify how much revenue or cost savings each finance mechanisms is likely to achieve

MECHANISMS FOR GENERATING OR SUSTAINING REVENUE, AND REDUCING AND/OR AVOIDING COSTS

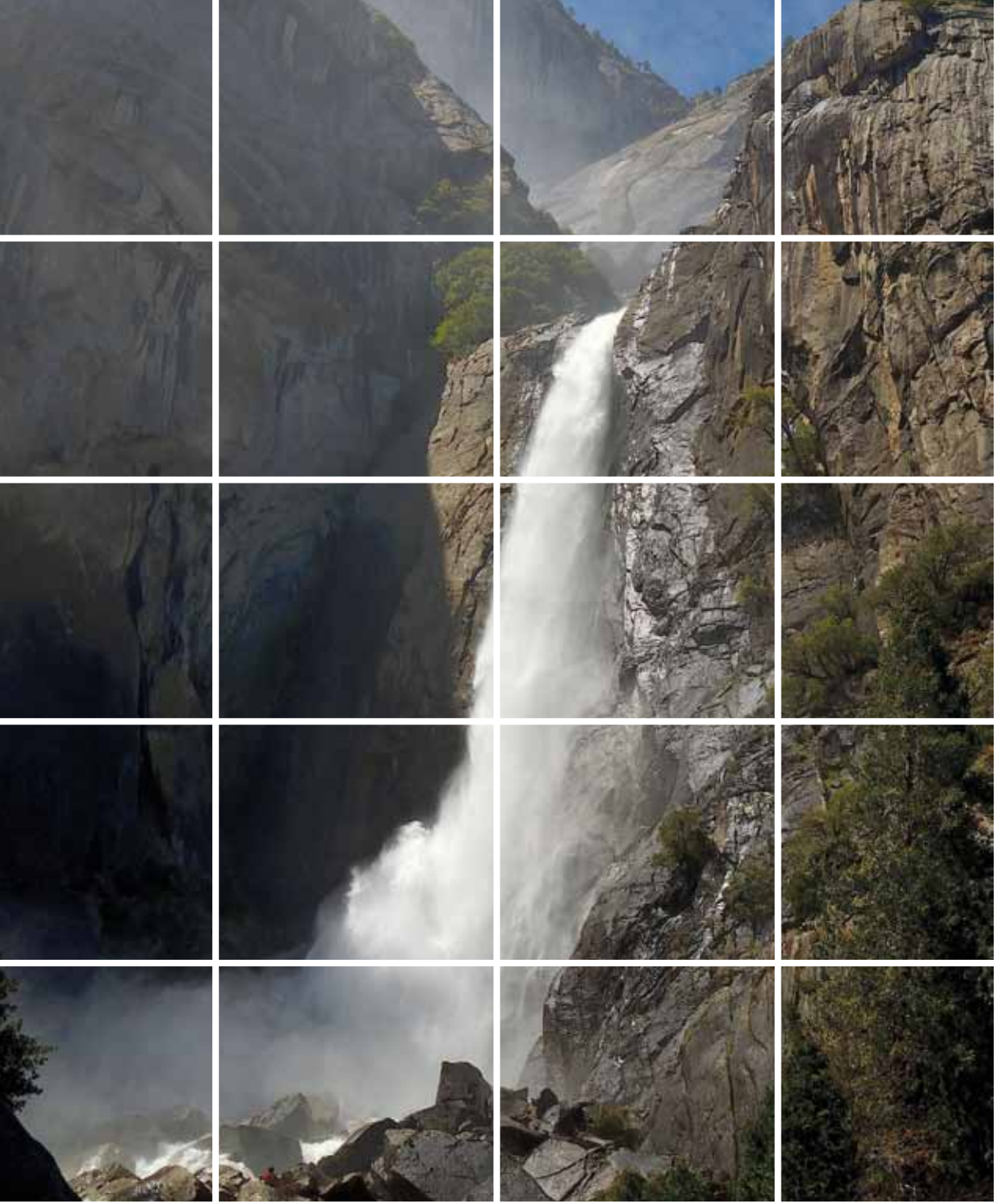
There are three basic strategies for filling the biodiversity finance gap: market mechanisms, non-market mechanisms,[48] and cost reduction mechanisms.[49]

Market-based finance mechanisms:

- **Direct market mechanisms** establish a clear link between those who benefit from biodiversity, and those who ensure the long-term maintenance of ecosystem services. Examples include: a) direct ecosystem service fees, such as payments for watershed services; b) direct biodiversity fees, or user fees, such as for tourism; c) cap-and-trade market, or the national trade of finite allowances, such as loss of habitat or pollution; d) biodiversity offset market – a mechanism where the driver of loss pays compensation, such as a mining company paying for land protection; and e) bio-prospecting – the sale of commercially valuable genetic material.
- **Indirect market mechanism** link the value of biodiversity to more traditional markets. One example is market certification (e.g., of forestry, fisheries and agriculture), where revenue is generated through additional payments that are passed through the supply chain to the producer.
- **Non-biodiversity market mechanisms** are mechanisms that are independent of biodiversity. Examples include: a) natural capital levy – a fee on actions that drive biodiversity loss, such as logging or development; b) financial transaction tax, such as a tax on wholesale currency transactions; c) and carbon tax – a tax on the extraction and sale of fossil fuels.

Non-market finance mechanisms include traditional sources, including: a) domestic budget allocation; b) official development assistance from bi-lateral and multi-lateral agencies; c) debt-for-nature swaps; d) private philanthropy; and e) subsidy reform, such as agricultural and fossil fuel subsidy reform.

Cost reduction finance mechanisms include strategies to increase efficiencies, such as a) increasing financial and administrative efficiency (e.g., reducing overhead, creating revenue-sharing mechanisms); b) reducing staffing costs, (e.g., through automation, self-guided tours, contracting, use of volunteers); and c) increasing financial efficiency (e.g., through volume purchases, more efficient equipment, improved maintenance).



IDENTIFYING POTENTIAL SAFEGARDS FOR FINANCE MECHANISMS

One important issue to keep in mind when implementing the BIOFIN Workbook is the issue of safeguards. Safeguards are important because of the inherent risk that monetizing biodiversity and ecosystems could potentially lead to negative, rather than positive trends. Planners are strongly urged to consider safeguards as they develop their biodiversity finance plans. Recent work[50] explores environmental and social safeguards for scaling up biodiversity finance. Some general guiding principles for developing safeguards include:

- When designing and implementing biodiversity finance mechanisms, planners should consider the role of biodiversity and ecosystems in providing societal insurance, enabling climate resilience and sustaining local livelihoods.
- When designing and implementing biodiversity finance mechanisms and designing measures to allocate rights and responsibilities, planners should ensure fair and equitable distribution of access to resources and benefits sharing, with free and prior informed consent of indigenous and local communities, to any intervention that has consequences for access, benefits and livelihoods.
- Any safeguards developed must to be grounded in local realities, supported by national processes, and be consistent with international legal and policy frameworks.
- All safeguards should ensure appropriate institutional frameworks and accountability mechanisms, including means of addressing drivers of biodiversity loss, and of removing perverse incentives.

Completing Workbook 3

In completing Workbook 3, planners may consider different levels of resolution, each of which may depend upon different levels of staff time, financial resources, data availability and level of completion of previous assessments. The table below offers some suggestions for coarse, medium and fine resolution when answering each question.

	LEVEL 1: COARSE RESOLUTION	LEVEL 2: MEDIUM RESOLUTION	LEVEL 3: FINE RESOLUTION
Potential biodiversity finance actors, mechanisms, feasibility and revenue	Identify political and financial opportunities , actors and mechanisms through steering committee discussions, with input from key financial and political advisors Estimate annual potential revenue based on best available information from finance advisors	Identify political and financial opportunities, actors and mechanisms through a discussion of the steering committee, with input from key financial and political advisors, combined with best available information related to key national strategies, such as climate resilience plans, national sustainable development plans, and disaster risk reduction plans Estimate annual potential revenue based on a literature review of existing national and international mechanisms combined with input from financial advisors and experts	Conduct a thorough analysis of political and financial opportunities, actors and mechanisms by systematically examining planning processes for synergies, and involving major stakeholder groups in the development of the plan Conduct a thorough feasibility analysis of the potential revenue based on feasibility studies, combined with a literature review and/ or expert opinion
Total expected revenues and timeline for key strategies	Estimate annual potential revenue based on best available information from finance experts and advisors	Estimate annual potential revenue based on a literature review of existing national and international mechanisms combined with input from financial advisors and experts	Estimate annual potential revenue through a thorough feasibility analysis of the potential revenue based on thorough feasibility studies, combined with a literature review and/or expert opinion
Resource mobilization plan	Develop a resource mobilization plan consistent with the level of resolution and detail with which the BIOFIN Workbook was applied	Develop a resource mobilization plan consistent with the level of resolution and detail with which the BIOFIN Workbook was applied	Develop a resource mobilization plan consistent with the level of resolution and detail with which the BIOFIN Workbook was applied

FREQUENTLY ASKED QUESTIONS

Why include strategies for reducing or avoiding costs?

In many cases, it may be easier, and require fewer administrative and technical capacities, to identify strategies that improve efficiencies, and that reduce or avoid certain costs. The BIOFIN Workbook includes spaces for this to encourage planners to actively seek out such opportunities.

Why include surpluses as well as gaps?

In the vast majority of cases, planners will find that there is a large gap between existing finance and the financial resources required to achieve the strategies within an NBSAP. In some cases, however, some strategies may receive more resources than they require. The BIOFIN Workbook includes space for this, in order to encourage planners to consider areas where less may be spent, in order to spend more on other priorities.

Why is there so much emphasis on implications and capacities for implementation?

Implementing new finance mechanisms will likely require additional resources and capacity efforts – in some cases these may exceed the total likely to be generated. By carefully considering all implications, planners can ensure that they are being strategic.

Reporting results for Workbook 3

- **Potential political and finance opportunities:** This section should describe the potential political and finance opportunities that exist or are likely to exist in the near future. The estimated length of this section is approximately 2–3 pages.

- **Potential finance actors:** This section should describe the potential finance actors associated with each strategy, based on the analysis conducted in Workbooks 1A and 1B, as well as on the potential finance mechanisms. The estimated length of this section is approximately 3–4 pages. However, planners may also find that a more detailed analysis of potential finance actors and mechanism for each action within strategies may help them develop a more realistic and nuanced resource mobilization plan.

- **Potential finance mechanisms:** This section should describe the potential finance mechanisms that could be used to help fill key gaps, including an analysis of the feasibility of each mechanism and the potential annual revenue and/or cost savings from each. This section should also include key data sources and assumptions. The estimated length of this section is approximately 4–7 pages.

- **Prioritized list of financial mechanisms for each strategy:** In Workbook 2A, planners identified a suite of potential finance mechanisms and actors, and assessed their overall feasibility. This section should include the final list of selected and prioritized financial mechanisms for each strategy, along with projected revenues from each, as well as possible safeguards required. The estimated length of this section is approximately 5–7 pages.

- **Timeline for deployment:** This section should show, in a holistic way, the overall timeline for strategies, the expected financial gaps, and the deployment of finance mechanisms. The estimated length of this section is approximately 2–3 pages.

- **Responsible actors for deployment:** This section should list all responsible parties and specific actors for implementing each financial mechanism.

- **List of major recommendations:** This section should list all of the major recommendations that flow from each of the workbooks, such as eliminating harmful subsidies, or creating payment for ecosystem services schemes. The estimated length of this section is approximately 4–7 pages.

- **Justifications and arguments for financial mechanisms and major recommendations:** This section should describe the social, economic and political justifications and implications for implementing each of the financial mechanisms and key recommendations (e.g., issues pertaining to equity, access to resources, unintended consequences of removing subsidies, costs of inaction and counterfactual analyses, long-term vs. short-term benefits analyses, new policies required, and the political synergies created from key strategies and recommendations). This section should also include a description of operational implications, including the likely start-up and ongoing costs of implementation, potential staffing and capacity implications, and potential safeguards required in order to avoid unintended harm to biodiversity. The estimated length of this section is approximately 3–5 pages.

- **Resource mobilization plan:** The final reporting requirement is a robust, comprehensive resource mobilization plan that is widely available to the public. There is no estimated length, as this will vary considerably from country to country.

Digging deeper: Screening financial mechanisms

In assessing the feasibility of each finance mechanism, planners can ask a series of questions to help screen potential finance mechanisms, including:

Financial considerations

- How much revenue will it generate?
- How stable and predictable is the revenue?
- What are the initial start-up costs?
- What is the return on investment both in terms of investment to revenue, as well as investment to natural capital increases?

Legal considerations

- Is the mechanism legally feasible within the current system?
- Does it require new legislation, administrative rules, procedures or other types of legal changes?
- Is it possible to simply use an executive order to implement the mechanism?
- What kinds of legal liability might the mechanism create?

Administrative considerations

- How difficult will it be to administer, enforce, collect and distribute revenue from the mechanism?
- Are there enough trained staff to implement the mechanism?
- What kind of training and support is required to implement the mechanism?
- What kinds of new technology might be required, and what are the training, investment and upgrade requirements of this technology?

Social considerations

- What will be the intended and unintended social impacts?
- Who will pay for the mechanism?
- Who will benefit from the mechanism, including directly and indirectly?
- How will the benefits be distributed across key groups?
- Will the mechanism be viewed as equitable and will there be fair access to the mechanism?

Political considerations

- Is there political will to create and implement the finance mechanism?
- Will the funds generated be redirected to the correct purpose?
- Is monitoring of the mechanisms politically and practically feasible?
- Are there any unintended political risks?

Environmental considerations

- What are the intended and unintended environmental impacts involved in implementation?
- Can safeguards easily be put in place to predict and mitigate environmental risks?

PROPOSED OUTLINE OF A RESOURCE MOBILIZATION PLAN TO IMPLEMENT NBSAPS

Background and overview

- Authors, affiliations, contact details, members of the resource mobilization committee; description of the NBSAP revision process; and the BIOFIN stakeholder engagement process

Policy and institutional analysis

- Key biodiversity status. trends, and drivers of biodiversity change; policy analysis; key actors and institutions; distribution of benefits and costs of current status quo; institutional roles and arrangements

Expenditure review

- Overall national budgetary and expenditure snapshot; review of baseline expenditures and expenditure effectiveness; expenditure review by major strategies; estimated future funding baseline under a status quo and investment scenario

Strategies, actions and costs

- Summary of all strategies included in the NBSAP; summary of costs for all strategies within each major category; summary of key priorities; summary of timeline and sequencing of strategies; total snapshot of the financial gap

Projected status quo scenario and biodiversity investment scenario

- Description of different scenarios; distribution of projected costs and benefits, of both the status quo and biodiversity investment scenarios; justifications for investments in biodiversity and ecosystems

Opportunities for mobilizing resources

- Potential political and finance opportunities; potential finance actors; potential finance mechanisms

Consolidated resource mobilization plan

- Prioritized list of financial mechanisms for each strategy; timeline for deploying each mechanism; list of major recommendations for improving finance

ANNEX 1: Taxonomies used in the BIOFIN Workbook

Taxonomy for drivers of negative and positive drivers of change in biodiversity and ecosystems (Workbook 1A)

SECTORAL MAINSTREAMING	NATURAL RESOURCE USE	PROTECTION	RESTORATION	ACCESS AND BENEFITS SHARING	ENHANCING IMPLEMENTATION	OTHER
• **Manufacturing** (resulting in air, water or soil pollution) • **Energy** (hydropower, solar, wind, oil, gas, natural gas, coal, nuclear and associated infrastructure) • **Mining** (diamonds, gems, gold, silver, bauxite, coastal sand) • **Transportation** (shipping, highways, railroads,) • **Infrastructure** (buildings, expansion of urban, suburban, exurban centers, dams) • **Waste** (terrestrial landfills, permitted releases of effluent, sewage, dumping in rivers, coasts) • **Tourism** (nature-based tourism, non-nature-based tourism, motorized recreation) • **Other development sectors**	• **Forestry** (timber, non-timber forest products, charcoal, plantations, bushmeat) • **Agriculture** (irrigated and non-irrigated crops, conversion of natural habitats to agriculture) • **Grazing** (extensive and intensive grazing of cattle and livestock) • **Water** (management of rivers, dams and dam releases, groundwater) • **Fisheries** (aquaculture, open seas, freshwater, coastal fisheries) • **Invasive species** (terrestrial, marine, freshwater) • **Other natural resource use sectors**	• **Government protected areas**, such as national parks and wilderness areas • **Co-managed protected areas** between governments and communities, or governments and private entitites • **Community protected area**s such as locally managed marine areas • **Private protected areas**, such as game reserves • **Trans-boundary protected areas**, such as the Okavango River Trans-frontier Conservation Area • **Other conserved areas**, such as designated forest reserves • **Corridors**, such as the Eastern Himalayan Corridor • **Buffers**, such as protected area buffer zones • **Ex-situ methods**, such as seed banks • **Trade and enforcement effort**s, such as anti-poaching efforts and CITES monitoring • **Other types of land, water, species and habitat protection**	• **Government restoration efforts**, including on government-owned lands and water, and on government-run protected areas • **Private restoration efforts**, such as on private game ranches • **Community restoration**, such as on community conserved areas • Industrial – restoration on areas that have been mined, polluted • Production lands – restoration on forestry, agricultural, fisheries and grazing habitats • Corridors – restoration of connectivity across landscapes or seascapes • Buffer – restoration of areas around protected areas • Other – all other restoration efforts	• Prior informed consent – drivers related to obtaining and complying with all applicable laws and regulations regarding prior informed consent and consultation; • Mutually agreed terms – drivers related to complying with benefits-sharing laws • Benefit sharing – drivers related to benefits-sharing agreements and mechanisms • Traditional knowledge – drivers related to the use of traditional knowledge of indigenous and local communities • Status of conservation – drivers associated with the current habitat status of key species under an ABS agreement (IISD, 2012) • All other access and benefits drivers	• Communication and outreach – drivers associated with communication and outreach efforts • Research – drivers associated with research efforts • Monitoring – drivers associated with monitoring efforts • Legal – drivers associated with the legal basis for conserving, sustainably using or benefits sharing of biodiversity • Finance – drivers associated with financial mechanisms • Oher drivers related to implementation	All other drivers of negative and positive biodiversity change

Taxonomy for biodiversity actors and expenditures (Workbooks 1B, 1C and 2A)

	SECTORAL MAINSTREAMING	NATURAL RESOURCE USE	PROTECTION	RESTORATION	ACCESS AND BENEFITS SHARING	ENHANCING IMPLEMENTATION	OTHER
Biodiversity actors, expenditures and costs	Manufacturing mainstreaming actors, expenditures, and costs Energy mainstreaming actors, expenditures, and costs Mining mainstreaming actors, expenditures, and costs Transportation mainstreaming actors, expenditures, and costs Infrastructure mainstreaming actors, expenditures, and costs Waste mainstreaming expenditures, costs and actors Tourism mainstreaming actors, expenditures, and costs Other sectoral mainstreaming actors, expenditures, and costs	Forestry actors, expenditures, and costs Agriculture actors, expenditures, and costs Grazing actors, expenditures, and costs Water actors, expenditures, and costs Fisheries actors, expenditures, and costs Invasive species actors, expenditures, and costs Other natural resource use actors, expenditures, and costs	Government and co-managed protected areas actors, expenditures, and costs Community protected areas expenditures, cos actors, expenditures, and costs Private protected areas actors, expenditures, and costs Trans-boundary protected area actors, expenditures, and costs Other conserved areas actors, expenditures, and costs Corridor protection actors, expenditures, and costs Buffer protection actors, expenditures, and costs Ex-situ protection actors, expenditures, and costs Trade and enforcement efforts actors, expenditures, and costs Other types of land, water, species and habitat protection actors, expenditures, and costs	Government-lands restoration actors, expenditures, and costs Private restoration actors, expenditures, and costs Community restoration actors, expenditures, and costs Industrial restoration actors, expenditures, and costs Production lands restoration actors, expenditures, and costs Corridor restoration actors, expenditures, and costs Buffer restoration actors, expenditures, and costs Other restoration actors, expenditures, and costs	Prior informed consent actors, expenditures, and costs Mutually agreed terms actors, expenditures, and costs Benefit sharing actors, expenditures, and costs Traditional knowledge actors, expenditures, and costs Status of conservation actors, expenditures, and costs	Communication and outreach actors, expenditures, and costs Research actors, expenditures, and costs Monitoring actors, expenditures, and costs Legal actors, expenditures, and costs Finance actors, expenditures and costs Policy actors, expenditures, and costs Other expenditures and costs related to implementation	All other expenditures and costs

ANNEX 2: Indicative CHECKLIST OF best practices and NBSAP actions

SUSTAINABLE FORESTRY AND FORESTER-RELATED PRACTICES[51]	Demarcate clear forest management unit boundaries; Create a legal framework that protects forest resources and access, and application of all relevant laws; Ensure the maintenance of biodiversity in managed forests, including the maintenance of landscape patterns, community guild structures, richness and diversity of species, decomposition and nutrient cycling; Use native species in enrichment planting and avoidance of genetically modified organisms; Maintain ecosystem functioning, including protection of sensitive areas, rare or endangered species. Conserve forest genetic diversity; Maintain soil productivity, and avoidance of erosion and soil degradation; Develop limits for annual allowable harvest levels that are sustainable over time; Protect water resources through riparian buffer zones; Develop a clear and rational forest management plan; Ensure landscape-level management to maintain connectivity; Avoid conversion of natural forests to plantations; Avoid damage to high conservation value forests
SUSTAINABLE AGRICULTURAL PRACTICES[52]	Avoid the creation of agricultural systems through the conversion of natural habitat, such as forests and grasslands; Ensure effective and sustainable management of water, including the selection of crops and species that are well-adapted to local weather extremes, the use of efficient water management, storage and irrigation systems that avoid salinization, and the use of mulch and cover crops, and the reduction of runoff of pesticides, fertilizers; Remove weeds, including effective timing of weed removal, early detection and prevention, especially of invasive alien species; Maintain soil fertility and productivity by following best tillage practices, rotating crops, leaving crop residues, adding organic matter and targeted amounts of fertilizers, and periodically growing legume crops and to fix nitrogen; Grow perennial crop plants with low or no-till; Avoid erosion by using wind breaks to hold soil and by protecting soil from water runoff; Attract beneficial predators, including bats, birds and insects by maintaining or creating predator habitat; Avoid genetically modified organisms; Ensure integrated pest management to control pests, including crop rotation, pest-resistant crops, use of beneficial insects, crop rotation aimed at reducing disease, and limited use of targeted pesticides; Undertake measures to promote energy efficiency and renewable energy in all stages of cultivation, harvest, storage and distribution

SUSTAINABLE FISHERIES PRACTICES	Implement fish catch levels that will maintain high productivity of target populations, and fishing practices do not alter trophic structures to the degree of impairing productivity; Ensure maintenance of structure, productivity, function and diversity of ecosystem upon which fisheries depend; By-catch is greatly reduced or eliminated, including through use of fishing gear and practices; Fishing methods minimize adverse impacts on habitat, especially in critical spawning and nursing areas; All local and national laws and international standards are followed, including the provision of incentives, licenses and agreements, monitoring of biological status of target species, setting of catch levels; The establishment of no-take zones and marine protected areas, in particular in ecologically and biologically significant areas; Avoid destructive fishing methods, such as use of poisons or explosives; Avoid pollution through careful control of wastes, fuels; Conduct adequate monitoring and research, especially of species of key interest; Use the precautionary principle when dealing with scientific uncertainty; Implement incentives to promote sustainable practices
SUSTAINABLE GRAZING AND RANGELAND PRACTICES	Conserve and maintain soil and water resources, including maintenance of high organic matter, soil productivity functioning of groundwater systems and water quality; and reduction of extent of bare ground, erosion and channelization of streams; Conserve and maintain biodiversity and key ecological processes, including maintenance of natural fire regimes, riparian systems, number and distribution of key species and communities; and reduction of fragmentation, road density, and invasive alien species; Maintain productive capacity, including maintenance of biomass, annual rangeland productivity, optimal density of livestock and wildlife functional groups; and sustainable annual removal of non-forage plant materials, such as edible and medicinal plants; Maintain and enhance multiple economic and social benefits, including maintenance of the value of forage, recreation and tourism, employment and educational value; the reduction of threats to cultural resource values; and the presence of permanent conservation easements; Ensure legal, institutional and economic frameworks for rangeland conservation and sustainable management, including frameworks that promote clear, rational laws and property rights, effective institutions and organizations, effective landowner education and assistance, rational land-use planning, and effective monitoring and research programs;
SUSTAINABLE AQUA-CULTURAL PRACTICES	Use plant-based feeds that originate from sustainable agriculture practices; Reduce or eliminate fishmeal or fish-oil-based feeds from unsustainable fisheries; Ensure that there is no net loss in fish protein yield in the life cycle of the fisheries; Avoid of the use of wild-caught juveniles; Prevent negative environmental impacts from discharges and effluents to the surrounding areas; Prevent negative effects to local wildlife (plants as well as animals), including avoiding risks to local wild populations; Avoid the use of genetically engineered fish or feed; Minimize the risk of disease outbreaks and transmission (e.g., by controlling stock densities); Avoid the depletion of local water resources (e.g., drinking water supplies); Safeguard the health of wild fish populations

SUSTAINABLE WATER MANAGEMENT PRACTICES[56]	Develop a comprehensive plan that integrates water use and management, and watershed management; Create cross-jurisdictional partnerships as required to manage water systems equitably across political boundaries; Integrate land use planning with water management plans; Promote widespread efficiency and conservation in water use across all sectors; Incorporate storm water management throughout urban environments; Minimize or eliminate non-point source pollutants; Discourage the use of water of drinking quality for non-potable uses, such as industrial or agricultural uses; Reduce unintended losses in municipal water distribution systems, such as through leakages and evaporation; Use water treatment technologies that limit environmental impacts, such as the use of bio-treatments and ozonation; Limit wastewater production by promoting practices that reduce the amount of pollutants entering the wastewater system Apply standards to ensure the removal of pollutants and pathogens from wastewater treatment by-products.
SUSTAINABLE WASTE MANAGEMENT PRACTICES[57]	Develop systems for sorting waste into compostable and non-compostable streams; Develop systems for separating and safely storing toxic waste; Prevent illegal dumping, including in coastal areas, illegal landfills and waterways; Prevent solid septic wastes from contaminating waters or soils from municipal septic systems; Prevent gases produced from decomposition (e.g., methane) from entering the atmosphere; Prevent heavy metals and contaminants from entering aquifers and ground water; Minimize waste streams through product life cycle analysis; Discourage excessive packaging, use of toxic materials, use of non-biodegradable materials and use of materials with excessive environmental footprints; Establish comprehensive waste policies and ensure enforcement to prevent the establishment of illegal dumping sites and practices
SUSTAINABLE INDUSTRIAL, MANUFACTURING AND PROCESSING[57]	Avoid the use of environmentally harmful materials by replacing with less damaging alternatives; Replace unsustainably produced products with sustainably produced products, and increase use of renewable and recycled products; Reduce all unnecessary waste, including packaging, inefficient energy use, inefficient water use; inefficient processing; Minimize, avoid and eliminate sources of air and water pollution; Establish comprehensive recycling program to recycle all materials that can be recycled, including the creation of repurposing and reprocessing waste material; Improve on-site biodiversity and habitat management; Reduce greenhouse gases through use of renewable energy; Ensure proper disposal of waste generated through processing and manufacturing; Conduct comprehensive life-cycle analyses and 'cradle-to-grave' analyses to reduce impacts across all aspects of product manufacturing, including the assessment of broader environmental, water and carbon footprints.

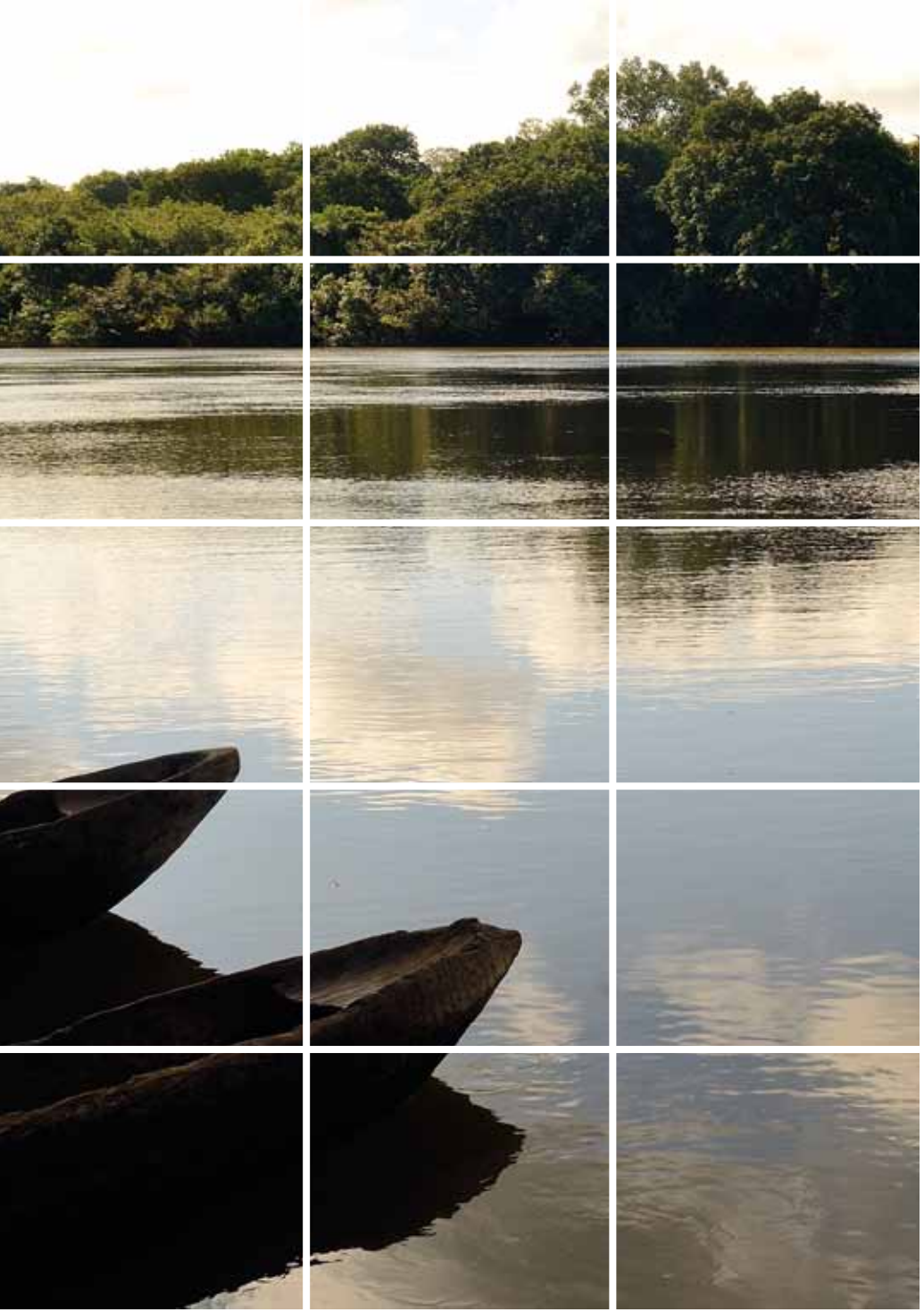
SUSTAINABLE TRANSPORTATION AND INFRASTRUCTURE PRACTICES [59]	Integrate landscape-scale conservation planning into transportation planning; Coordinate with multiple agencies when developing transportation plans; Use conservation banking and offsets to mitigate the impacts of transportation; Avoid fragmentation of large natural ecosystems, and areas important for seasonal migration; Minimize transportation infrastructure through existing protected areas except as part of the protected area plan, including shipping lanes through marine protected areas; Avoid sensitive biodiversity areas, such as wetlands; Avoid areas of key biodiversity importance, especially key areas of breeding, feeding, migration; Build wildlife crossings to restore and maintain habitat connectivity; Use native species in roadside vegetation management; Avoid alterations to hydrological regimes, including changes in groundwater, stream flows and flooding regimes; Take measures to avoid the introduction of invasive alien species; Minimize secondary impacts, such as light pollution, and manage stream runoff from roads to reduce soil erosion and water pollution; Minimize use of chemical pesticides for roadside vegetation control.
SUSTAINABLE TOURISM AND RECREATION [60]	Control interactions with wildlife to avoid adverse effects on the viability of key species; Clearly delineate areas for recreation (e.g., hiking, camping) and site recreation areas to avoid sensitive areas, such as nesting areas; Control and monitor motorized recreational activities to avoid negative impacts on key species populations, soil quality or water quality; Monitor levels of visitation, and keep them well within the ecological carrying capacity of the area; Site permanent tourism infrastructure avoids key sensitive areas; Monitor impacts from lighting, sound, travel to ensure they do not adversely affect key species; Ensure that waste water and sanitation, including of coastal hotels, does not adversely affect water quality; Ensure that management practices for sport fishing (e.g., fish stocking practices) do not endanger native species; Ensures that tourism and recreation within protected areas is in full accordance with the protected area management plan; Develop a national tourism plan that is aligned with biodiversity goals, and aligned with the national protected area plan; Take measures to minimize use of scarce resources (e.g., fuel wood, water) in sensitive areas; Prevent the introduction of invasive alien species; Ensure monitoring and adaptive management of tourism and recreation impacts.

SUSTAINABLE ENERGY AND MINING PRACTICES[50]	Minimize impacts to biodiversity during exploration, construction and operations, including contamination of soil or water, introduction of invasive alien species, road infrastructure, sedimentation, soil erosion, noise impacts, habitat fragmentation and disturbance (particularly of sensitive areas and during key periods, such as migration, nesting and mating); Conduct and adhere to comprehensive environmental impact assessments; Commission and execute restoration plans, including replacement of top soil, revegetation with native species, remediation measures, restabilization of slopes, removal of all non-native material; Manage transportation of gas and oil, including ocean freights and terrestrial pipelines, to prevent spills; Avoid significant mining, exploration, extraction of energy, minerals or other abiotic materials from key biodiversity areas, including protected areas; Detect and remove illegal mining operations, and prevent these where possible.
SUSTAINABLE LAND USE PLANNING PRACTICES[51]	Clearly establish, and give priority funding and incentives to, established urban and semi-urban growth areas; Develop sustainability goals in the areas of concentrated urban growth centers, and provide guidance on the development of urban and ex-urban areas; Incorporate a strategic environmental assessment at the earliest stages of project planning, permitting and approval; Incorporate protected areas, connectivity corridors and buffer zones as a core component of land use plans; Include natural climate change resilience and adaptation plans in land use planning (e.g., natural buffer areas against storm surges); Account for the maintenance of key ecosystem services in land use plans, including water provisioning, agricultural productivity and other services; Ensure long-term maintenance of water quality by establishing riparian buffers; Avoid development in sensitive areas, such as areas prone to soil erosion, flooding, natural disasters, storm surges; and promote instead natural infrastructure to strengthen climate resilience

Checklist of effective protection practices

KEY PROTECTION THEME	KEY ASSESSMENT OF PROTECTION PRACTICES	EFFECTIVE SYSTEM-WIDE PROTECTION PRACTICES
Ecologically representative	Ecological gap assessment: An assessment of the degree to which the protected area system adequately captures the range of biodiversity within a country [53]	The protected area system fully represents key biodiversity and ecosystems across multiple spatial and biological scales and across multiple biomes and realms The protected area system ensures the full functioning of species and key ecological processes by optimizing the layout and distribution of protected areas and connectivity corridors The protected area system is designed to maximize climate resiliency and adaptation
Diverse and effective governance and equitable benefits sharing	Governance and benefits sharing assessment: An assessment of the type and category of protected areas, and of the effectiveness of governance within a given protected area system [54]	The protected area system includes diverse types of protected areas (including government, co-managed, private and community), and diverse categories of protected areas (ranging from IUCN Category I through VI). Effective principles of protected area governance are followed (e.g., transparency, fairness, inclusiveness, accountability, performance) There is equitable distribution of benefits, including fair compensation from economic uses of traditional knowledge, and access to benefits from genetic resources, from economic enterprises and from ecosystem services
Landscape and seascape connectivity	Connectivity assessment: An assessment of the landscape and seascape linkages and corridors, and the degree of connectivity between protected areas [55]	There are adequate corridors and stepping stones to allow for the movement of key species across landscapes and seascapes, and to ensure that ecological processes occur There is a network of buffer zones that ensures effective protection within protected areas Ecological processes are managed at landscape and seascape scales.
Protected area integration and benefits	Protected area integration assessment: An assessment of the value of protected areas to key economic and development sectors, and an assessment of the degree of sectoral integration [56]	The goals of key economic and development sectors, such as forestry, agriculture, fisheries, grazing, mining, energy and tourism are aligned with the goals of the protected areas system The benefits of protected areas are well known, and used in sectoral decision making Land use planning efforts are compatible and aligned with protected area plans

Management effectiveness	Management effectiveness assessment: An assessment of the degree to which protected area management achieves the goals and objectives of the protected areas[67]	Protected areas have adequate threat prevention and mitigation Protected areas have adequate boundary demarcation and legal status Protected areas have adequate management planning Protected areas have adequate staffing and skills to conduct key actions Protected areas have adequate local communication efforts Protected areas have effective monitoring and research programs Protected areas have effective local communication programs Protected areas have clear legal status
Capacity	Capacity needs assessment: An assessment of the capacities required to address critical protected area management issues[68]	Capacities to deal with key threats are identified and prioritized Capacities to deal with key management actions, such as threat mitigation, visitor management, monitoring and species management are adequate Capacity efforts focus on both individuals and the broader institutions
Sustainable finance	Sustainable finance assessment of protected areas: An assessment of the degree to which existing finances cover the range of required activities[69]	The finance needs of the protected areas are clearly identified Finance mechanisms are in place to ensure long-term financial sustainability There is a clear business plan for major protected areas, and a strategy for mobilizing protected area resources
Protected area policy	Policy assessment: An assessment of protected area policies	Protected area policies promote a robust protected area network, ensure effective management, reduce threats and secure long-term finance
Trade	An assessment of non-detrimental status for key species and wildlife trade policies[70]	Species in CITES Appendices I, II and III are not traded except in accordance with CITES Illegal trade in species is closely monitored and effective
Genetic diversity	National genetic diversity assessment[71]	Centers of wild crop relatives are protected Gene banks, seed banks and other ex situ are established Gene management zones are created within key sectors



Checklist of restoration best practices

Restoration of natural disturbances

- Restoration efforts aims to mimic the frequency and intensity of natural disturbances, such as fires, floods, saltwater inundations
- Restoration efforts promote re-establishment of natural nutrient cycling
- Restoration efforts maintain or reinstate cultural practices that contribute to ecological integrity (e.g., grazing to restore grasslands or habitat)

Control of harmful invasive species

- Restoration efforts related to invasive species are consistent with national invasive alien species plans and policies
- Restoration efforts aim at removing invasive plant and animal species that threaten ecological integrity
- Restoration efforts identify native species as potential competitors with invasive species
- Restoration efforts focus on avoiding the introduction of invasive species

Management of over-abundant populations

- Restoration efforts aim at identifying and rectifying the cause of over-abundant populations (e.g, altered food web)
- Restoration efforts duplicate the role of natural processes

Recreation of native communities or habitats

- Restoration efforts allow areas to recover naturally where degradation is minor
- Restoration efforts stabilize soil surfaces, stream banks and shorelines through re-initiation of natural processes, and through use of natural materials
- Restoration efforts choose a mix of species and genotypes that will facilitate establishment of other native species
- Restoration efforts use native genetic material
- Restoration efforts create natural vegetation patterns at appropriate scales

Species reintroductions

- Restoration efforts focus on restoring components of food webs that will foster resilience
- Restoration efforts use native species in re-introduction programs
- Restoration efforts are consistent with individual species recovery plans
- Restoration efforts aim at sufficient genetic diversity to maintain viable populations

Improvements in abiotic environment

- Restoration efforts remove constructed features (e.g., roads, buildings)
- Restoration efforts amend soil with local, natural organic material

Hydrology

- Restoration efforts maintain or restore natural hydrologic flow regimes
- Restoration efforts restore habitat features, such as floodplains, riparian systems, woody debris, gravel bars, pools
- Restoration efforts remove structures such as dams and artificial channels, and restore natural processes, such as flooding
- Restoration efforts restore stream connectivity

Water and soil quality

- Restoration efforts use in-situ techniques (e.g., phytoremediation) where practical
- Restoration efforts restore quality of surface waters, groundwater and soil

Landscapes and seascapes

- Restoration efforts foster ecosystem connectivity and reduce fragmentation
- Restoration efforts ensure redundancy at all trophic levels to foster resilience and stability[72]

Checklist of ABS best practices

Prior Informed Consent

- Obtain and comply with all applicable laws and regulations regarding prior informed consent
- Identify the national competent authority, indigenous and local communities and determine ownership of genetic resources
- Establish effective consultation processes and information exchanges with key stakeholder groups
- Ensure that genetic resources are only used for the purposes outlined in the prior informed consent agreement
- For ex situ collections, obtain prior informed consent from the competent national authority and/or the organization governing the ex situ collection

Mutually Agreed Terms

- Comply with all applicable laws and regulations regarding benefit-sharing in the country
- Ensure mutually agreed terms are established in a written agreement
- Include any conditions, procedures, types, timing and mechanisms to be shared
- Include in the mutually agreed terms the source of material, country of origin and provider of genetic resources, along with associated traditional knowledge

Benefit sharing

- Use a comprehensive and open menu from possible monetary and non-monetary benefits when negotiating benefit-sharing agreements
- Determine benefit-sharing mechanisms jointly between user and provider organizations
- To the extent possible, provide appropriate monetary benefits to research and conservation groups
- Identify opportunities in the source country and collection location for participation in commercialization and value-added processes
- Seek the original provider of the genetic resource for re-supplying material
- Establish appropriate monitoring, tracking and reporting mechanisms in the legal arrangements

Traditional knowledge

- Establish a process during the prior informed consent phase to obtain traditional knowledge and promote participation of indigenous and local communities
- Identify all holders of traditional knowledge, local competent authorities and other groups that provide approval
- Consider benefit-sharing mechanisms for traditional knowledge stakeholders not participating in access negotiations
- Suspend collection if traditional knowledge holders decide that the research is not acceptable
- Demonstrate respect for the traditional knowledge of indigenous communities by applying a) integrity (by ensuring that research activities and collection do not violate customary law and practices; by respecting sacred values and places of traditional knowledge holders; by negotiating and providing fair compensation for genuine grievances); b) protection (by supporting documentation and registration requirements and by properly acknowledging the contribution of traditional knowledge holders in all publications and applications); and c) compensation (by establishing appropriate contractual mechanisms that take into account freely-expressed desires of traditional knowledge holders).

Conservation and sustainable use

- Assess the current conservation status of the species and populations to be sampled or collected, according to the IUCN Red List
- Assess current habitat status and any critical environmental concerns, using a combination of scientific methods and local/traditional knowledge
- Assess genetic diversity of species of interest for domestication and cultivation
- Monitor the status of the resources to ensure harvest does not exceed sustainable yield levels[73]

Checklist of Enhancing Implementation Best Practices and Actions

Communication and outreach practice and actions

- Establish communication, education, public awareness campaigns

Research practices and actions

- Conduct research on key biodiversity, social and/or economic issues
- Undertake biodiversity inventories

Monitoring research and actions

- Undertake monitoring on key biodiversity, social, and/or economic issues
- Develop decision support tools, including databases, information systems, clearinghouse mechanisms

Legal research and actions

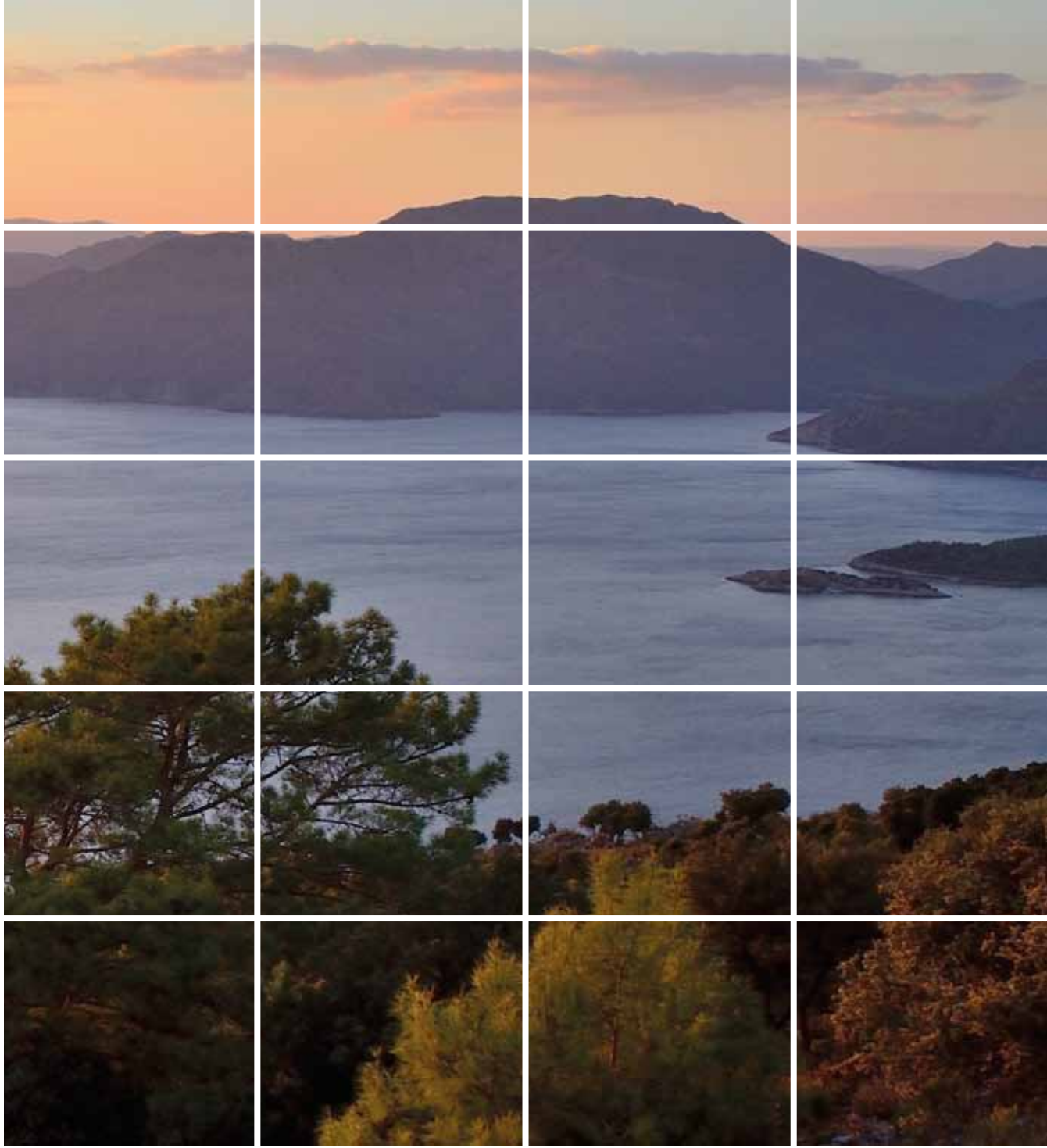
- Undertake legal feasibility analyses
- Develop legislative framework

Finance research and actions

- Assess, develop and implement finance mechanisms for biodiversity

Policy research and actions

- Conduct strategic environmental assessments
- Revise key policies (e.g., land use planning policies)
- Develop national and sub-national plans and policies



End notes

1 Millennium Ecosystem Assessment, 2005. *Ecosystems and Human Well-being: Synthesis*. Island Press, Washington, DC. Available at: http://www.millenniumassessment.org/documents/document.356.aspx.pdf.

2 CBD 2010. *Global Biodiversity Outlook – 3*. Secretariat of the Convention on Biological Diversity. Montreal: SCBD. Available at www.cbd.int.

3 May, R.M., J.H. Lawton, and N.E. Stork. 2002. Assessing Extinction Rates. In *Extinction Rates*, J.H. Lawton and R.M. May, eds. Oxford: Oxford University Press.

4 WWF. 2012. *Living Planet Report 2012: Biodiversity, Biocapacity and Better Choices*. In conjunction with Zoological Society of London, Global Footprint Network, and European Space Agency. Gland, Switzerland: WWF. Available at: http://www.footprintnetwork.org/images/uploads/LPR_2012.pdf

5 Rosser, A.M. and S.A. Mainka. 2002. Overexploitation and Species Extinctions. *Conservation Biology* 16(3):584–586.

6 UNEP. 2010. *Mainstreaming the Economics of Nature: A Synthesis of the Approach, Conclusions and Recommendations of TEEB*. Nairobi: UNEP. Available at: www.teebweb.org and CBD. 2010b. Strategic Plan for Biodiversity 2011–2020. Montreal: Secretariat for the Convention of Biological Diversity. Available at: www.cbd.int/sp

7 IPCC, 2007: *Climate Change 2007: Impacts, Adaptation and Vulnerability*. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson, Eds., Cambridge University Press, Cambridge, UK, 976pp. Available at: http://www.ipcc-wg2.gov/publications/AR4/index.html

8 Ibid.

9 Rockström et al.. 2009. A safe operating space for humanity. *Nature* 461: 472–475. http://www.nature.com/nature/journal/v461/n7263/full/461472a.html

10 Global Footprint Network, 2014. www.globalfootprintnetwork.org. Accessed September 30, 2014.

11 World Bank. 2014. www.data.worldbank.org. Accessed September 30, 2014.

12 United Nations. 2013. *Global Sustainable Development Report – Executive Summary: Building the Common Future We Want*. New York: United Nations Department of Economic and Social Affairs, Division for Sustainable Development. 2013, http://sustainabledevelopment.un.org/globalsdreport/

13 UNEP. 2010. *Mainstreaming the Economics of Nature: A Synthesis of the Approach, Conclusions and Recommendations of TEEB*. Nairobi: UNEP. Available at: www.teebweb.org;

14 WAVES. 2014. Wealth Accounting and Valuation of Ecosystem Services. www.wavespartnership.org. Accessed September 30, 2014; and NCD. 2014. Natural Capital Declaration. http://www.naturalcapitaldeclaration.org/, accessed September 30, 2014.

15 UNEP. 2010. *Mainstreaming the Economics of Nature: A Synthesis of the Approach, Conclusions and Recommendations of TEEB*. Nairobi: UNEP. Available at: www.teebweb.org

16 Braat, L. and P. ten Brink, eds. 2008. Cost of Policy Inaction. Waginen, The Netherlands: Alterra. Available at: http://www.ieep.eu/assets/395/copi_final_report_jun.pdf.

17 CBD 2010. *Global Biodiversity Outlook – 3*. Secretariat of the Convention on Biological Diversity. Montreal: SCBD. Available at www.cbd.int.

18 CBD. 2010. *Strategic Plan for Biodiversity 2011–2020*. Montreal: Secretariat for the Convention of Biological Diversity. Available at: www.cbd.int/sp.

19 UNEP. 2010. *Mainstreaming the Economics of Nature: A Synthesis of the Approach, Conclusions and Recommendations of TEEB*. Nairobi: UNEP. Available at: www.teebweb.org.

20 CBD. 1992. *Convention on Biological Diversity*. Secretariat of the Convention on Biological Diversity. Available at: www.cbd.org.

21 Prip, C. T. Gross, S. Johnston, M. Vierros. 2010. *Biodiversity Planning: An Assessment of National Biodiversity Strategies and Action Plans*. United Nations University Institute of Advanced Studies, Yokohama, Japan. 236 pp. Available at: www.cbd.int/nbsaps.

22 Bird, N. T. Beloe, M. Hedger, J. Lee, K. Nicholson, M. O'Donnell, S. Gooty, A. Heikens, P. Steele, A. Mackay and M. Miller. 2012. *The Climate Public Expenditure and Institutional Review (CPEIR): A methodology to review climate policy, institutions and expenditure*. UNDP and ODI. 35 pp. Available at: http://www.aideffectiveness.org/images/stories/cpeir%20methodology%20paper.pdf; Pradhan, S. 1996. *Evaluating Public Spending: A Framework for Public Expenditure Reviews*. Washington DC: World Bank. Available at: http://elibrary.worldbank.org/doi/pdf/10.1596/0-8213-3633-9.; WHO. 2003. *Guide to Producing National Health Accounts; with Special Application for Low-Income and Middle-Income Countries*. Geneva: World Health Organization. Available at: http://www.who.int/nha/docs/English_PG.pdf; World Bank.

2009. *Preparing Public Expenditure Reviews for Human Development*. Washington, DC: World Bank. Available at: http://siteresources.worldbank.org/EXTPERGUIDE/Resources/PER-Complete.pdf.

23 OECD. 1994. *Environmental Indicators: OECD Core Sets*. Paris: Organization of Economic Cooperation and Development. Available at: http://www.oecd.org/environment/indicators-modelling-outlooks/24993546.pdf

24 WWF. 2006. *Resources for Implementing the WWF Project and Programme Standards: Define Situation Analysis*. Gland, Switzerland: WWF. Available at: www.panda.org/standards/1_4_situation_analysis/; Stedman-Edwards, P. 1997. Socioe*conomic Root Causes of Biodiversity Loss: An Analytical Approach Paper*. Gland, Switzerland: WWF. Available at: http://awsassets.panda.org/downloads/analytic.pdf; FOS. 2009. U*sing Conceptual Models to Document a Situation Analysis: An FOS How-To Guide*. Available at: http://www.fosonline.org/wordpress/wp-content/uploads/2010/09/FOS_Conceputal_Model_Guide_April2009.pdf

25 see http://www.cbd.int/nr5/default.shtml

26 See also www.nbsapforum.net

27 CBD. 2010. *Strategic Plan for Biodiversity 2011–2020*. Montreal: Secretariat for the Convention of Biological Diversity. Available at: www.cbd.int/sp

28 Alpizar, F. and A. Bovarnick. 2013. *Targeted Scenario Analysis: A New Approach to Capturing and Presenting Ecosystem Service Values for Decision Making*. New York: United Nations Development Programme. Available at: http://conservationfinance.org/upload/library/arquivo20131205102736.pdf

29 SEEA, http://unstats.un.org/unsd/envaccounting/seea.asp

30 Ervin, J. 2013. The Three New R's for Protected Areas: Repurpose, Reposition and Reinvest. *Parks*, Vol 19.2: . Available at: https://cmsdata.iucn.org/downloads/parks_19_2_low_resolution.pdf

31 Source: Uganda's 5th National Report, 2014

32 Source: Early results from BIOFIN analysis

33 Source: Uganda's 5th National Report, 2014

34 Source: Colombia's 5th National Report

35 Adapted from Slootweg, R., A. Kolhoff, R. Verheem and R. Höft. 2006. *Voluntary Guidelines on Biodiversity – Inclusive Impact Assessment*. Montreal: Secretariat of the Convention on Biological Diversity. 81 pp. Available at: http://www.cbd.int/doc/publications/imp-bio-eia-and-sea.pdf; Do Rosário Partidário, M. 2012. *Strategic Environmental Assessment Better Practice Guide: Methodological Guidance for Strategic Thinking in SEA*. Lisbon: Portuguese Environment Agency. 75 pp. Available at: http://www.iaia.org/publicdocuments/special-publications/SEA%20Guidance%20Portugal.pdf; Ash, N. et al. 2010. *Ecosystems and Human Well-Being: A Manual for Assessment Practitioners*. Washington DC: Island Press. Available at: http://www.ecosystemassessments.net/resources/tools-and-publications.html

36 WWF. 2006. *Resources for Implementing the WWF Project and Programme Standards: Define Situation Analysis*. Gland, Switzerland: WWF. Available at: www.panda.org/standards/1_4_situation_analysis/; Stedman-Edwards, P. 1997. Socioeconomic Root Causes of Biodiversity Loss: An Analytical Approach Paper. Gland, Switzerland: WWF. Available at: http://awsassets.panda.org/downloads/analytic.pdf; FOS. 2009. Using Conceptual Models to Document a Situation Analysis: An FOS How-To Guide. Available at: http://www.fosonline.org/wordpress/wp-content/uploads/2010/09/FOS_Conceputal_Model_Guide_April2009.pdf.

37 Source: Barnes, J.I, L.Harber-Simmonds and A. Middleton. 2014. *Development of a Baseline of Biodiversity Expenditure in Namibia, Draft Report* (unpublished). Windhoek: Namibia Nature Foundation.

38 Source: Early BIOFIN Workbook results

39 Adapted from Bird, N. T. Beloe, M. Hedger, J. Lee, K. Nicholson, M. O'Donnell and P. Steele. 2011. *Climate Public Expenditure and Institutional Review: A methodological Note*. Available at: http://www.odi.org.uk/sites/odi.org.uk/files/odi-assets/publications-opinion-files/7523.pdf

40 Source: Barnes, J.I, L.Harber-Simmonds and A. Middleton. 2014. *Development of a Baseline of Biodiversity Expenditure in Namibia, Draft Report* (unpublished). Windhoek: Namibia Nature Foundation

41 Ibid.

42 Ibid.

43 Ibid.

44 Source: Early version of Botswana's NBSAP

45 Drumm, A., J. Echeverria and M. Almendarez. 2009. *Sustainable Finance Strategy and Plan for the Belize Protected Area System*. Arlington, VA: Drumm Consulting.

46 see Bovarnick et al., 2013

47 Ibid.

48 Parker, C., Cranford, M., Oakes, N., Leggett, M. ed.. 2012. *The Little Biodiversity Finance Book*. Oxford: Global Canopy Programme. Available at: http://www.globalcanopy.org/sites/default/files/LittleBiodiversityFinanceBook_3rd%20edition.pdf

49 Flores, M. 2014. *Financial Sustainability of the Network of Protected Areas of Serbia, UNDP Report*. New York: UNDP.

50 Ituarte-Lima, C., M. Schultz, T. Hahn and S. Cornell. 2013. *Safeguards for Scaling-up Biodiversity Financing and Possible Guiding Principles*. Discussion Paper submitted to CBD. Stockholm: Stockholm Resilience Centre. Available at: http://www.cbd.int/doc/notifications/2013/ntf-2013-025-financial-en.pdf; OECD. 2012. *Finance Mechanisms for Biodiversity: Examining Opportunities and Challenges*. Montreal. Available at: http://www.oecd.org/env/resources/workshoponfinancemechanismsforbiodiversityexaminingopportunitiesandchallenges.htm and OECD, 2013. *Scaling Up Finance Mechanisms for Biodiversity*. OECD Publishing. doi: 10.1787/9789264193833-en.

51 Source: FSC, 2012. *Forest Stewardship Council Principles and Criteria, Revised version*. Available at: https://ic.fsc.org/the-revised-pc.191.htm; Prabhu, R., C. Colfer and G. Shepherd. 1998. *Criteria and Indicators for Sustainable Forest Management: New Findings from CIFOR's Forest Management Unit Level Research*. Rural Development Forestry Network. Available at: http://www.odi.org.uk/sites/odi.org.uk/files/odi-assets/publications-opinion-files/1178.pdf

52 Source: Glover, J.D., C.M. Cox and J.P. Reganold. 2007. Future Farming: A Return to Roots? *Scientific American*, Aug, 2007, 82–89. Available at: http://www.landinstitute.org/pages/Glover-et-al-2007-Sci-Am.pdf; Gold, M. 2009. *What is Sustainable Agriculture*? Washington DC: USDA. Available at: http://www.nal.usda.gov/afsic/pubs/agnic/susag.shtml

53 Source: MSC, 2012. *Marine Stewardship Council Principles and Criteria*. Available at: http://www.msc.org/about-us/standards/standards/msc-environmental-standard; CBD, 2013. *Ecologically and Biologically Significant Marine Areas*. Montreal: Secretariat of the Convention on Biological Diversity. Available at: http://www.cbd.int/marine/doc/ebsa-brochure-2012-en.pdf; OECD, 2013. *The OECD Handbook for Fisheries Managers: Principles and Practice for Policy Design*. OECD Publishing. DOI:10.1787/9789264191150-en

54 Source: Mitchell, John E. (ed.). 2010. *Criteria and Indicators of Sustainable Rangeland Management*. Laramie, WY: University of Wyoming Extension Publication No. SM-56. 227 pp. Available at: http://www.sustainablerangelands.org/pdf/SM56.pdf; Beetz, A. and L. Rinehart. 2006. *Pastures: Sustainable Management*. ATTRA. Available at: https://attra.ncat.org/attra-pub/summaries/summary.php?pub=247

55 Source: OECD (2010), *Advancing the Aquaculture Agenda: Workshop Proceedings*, OECD Publishing. doi: 10.1787/9789264088726-en; USAID. 2012. *USAID Biodiversity Guide*. Washington, DC: USAID. Available at www.usaid.gov

56 Source: Sustainable Cities Institute. 2013. Available at: http://www.sustainablecitiesinstitute.org/view/page.basic/class/feature.class/Class_Econ_Dev_Sust_Princ

57 Source: Unnisa and Rav, 2 Unnisa, S. A. and S. B. Rav. 2013. *Sustainable Solid Waste Management*. Oakville, Ontario: Apple Academic Press. Available at: http://www.crcpress.com/product/isbn/9781926895246013

58 Source: OECD. 2009. *Sustainable Manufacturing Toolkit: Seven Steps to Environmental Excellence*. Available at: http://www.oecd.org/innovation/green/toolkit/48704993.pdf

59 Source: Byron, H. 2000. *Biodiversity Impact – Biodiversity and Environmental Impact Assessment: A Good Practice Guide for Road Schemes*. The RSPB, WWF-UK, English Nature and the Wildlife Trusts, Sandy, Beds. http://www.rspb.org.uk/Images/BiodiversityImpact_tcm9-257019.pdf; National Board for Wildlife, Ministry of Environment and Forests, India. 2011. *Guidelines for Linear Infrastructure Intrusions in Natural Areas: Roads and Powerlines*. Delhi: National Board for Wildlife, Ministry of Environment and Forests. Available at: http://envfor.nic.in/assets/FIRSTDraft%20guidelines%20roads%20and%20powerlines.pdf; White, P. A. & Ernst, M.. 2007. *Second Nature: Improving Transportation without Putting Nature Second*. http://www.transact.org/library/reports_pdfs/biodiversity/second_nature.pdf

60 Source: Drumm, A., S. McCool and J. Rieger. 2011. *Threshold of Sustainability for Tourism within Protected Areas*. Quick Guide Series Ed J. Ervin. Montreal: Secretariat of the Convention on Biological Diversity. Available at http://conservationfinance.org/upload/library/arquivo20120410174958.pdf; The Partnership for Global Sustainable Tourism Criteria. 2013. *Global Sustainable Tourism Criteria*. Global Sustainable Tourism Council. Available at: http://www.mgrt.gov.si/fileadmin/mgrt.gov.si/pageuploads/turizem/Global_sustainable_tourism_criteria.pdf

61 Source: Energy and Biodiversity Initiative. 2013. *Good Practice in the Prevention and Mitigation of Primary and Secondary Biodiversity Impacts*. Available at: http://www.theebi.org/pdfs/practice.pdf; International Council on Mining and Metals. 2012. *Good Practice Guidance for Mining and Biodiversity*. London: ICMM. 148 pp. Available at: www.icmm.com/document/13

62 Source: Salkin, P.E. 2009. *Sustainability and Land Use Planning: Greening State and Local Land Use Plans and Regulations to Address Climate Change Challenges and Preserve Resources for Future Generations*, 34 Wm. & Mary Envtl. L. & Pol'y Rev. 121 – 170. Available at: http://scholarship.law.wm.edu/cgi/viewcontent.cgi?article=1003&context=wmelpr; Stein, L. 2012. *A Review of International Best Practices in Planning Law*. Center for Environmental Legal Studies. Pace University School of Law. Available at: http://www.planning.nsw.gov.au/LinkClick.aspx?fileticket=e3JoVw3Ednc%3D&tabid=68&language=en-US.

63 See Dudley, N. and J. Parrish. 2006. *Closing the Gap*. Secretary of the Convention on Biological Diversity. CBD Technical Series 24. Montreal, Canada: CBD. 116 pp. Available at: www.cbd.

int/doc/publications/cbd-ts-24.pdf; Corrigan, C., J. Ervin, P. Kramer and Z. Ferdana. 2007. *A Quick Guide to Conducting Marine Ecological Gap Assessments*. Protected Area Quick Guide Series editor, J. Ervin. Arlington, VA: The Nature Conservancy. Available at: http://nbsapforum.net/#read-resource/443

64 See Borrini-Feyerabend, G. 2007. "Governance of protected areas, participation and equity." In *Biodiversity Issues for Consideration in the Planning, Establishment and Management of Protected Areas Sites and Networks*. Technical Series # 15. Montreal: Convention on Biological Diversity. Available at www.cbd.int/doc/publications/cbd-ts-15.pdf; Laird, S. S. Johnston, R. Wynberg, E. Lisinge and D. Lohan. 2003. *Biodiversity Access and Benefit-Sharing Policies for Protected Areas: An Introduction*. Tokyo: United Nations University Institute of Advanced Studies (UNU/IAS). 42 pp. Available at: www.ias.unu.edu/binaries/UNUIAS_ProtectedAreasReport.pdf; , Gonzalez, A.M. and A.S. Martin. 2006. "Equitable sharing of benefits and costs generated by protected areas." *Series Innovations for Conservation*. Parks in Peril Program. Arlington: The Nature Conservancy. 14 pp. Available at www.ibcperu.org/doc/isis/14461.pdf

65 See Dudley, N. (ed.). 2008. *Guidelines for Appling Protected Areas Management Categories*. IUCN: Gland, Switzerland. p.8–9. Available at: http://data.iucn.org/dbtw-wpd/edocs/PAPS-016.pdf

66 See Ervin, J., J. Mulongoy, K. Lawrence, E. Game, D. Sheppard, P. Bridgewater, G. Bennett, S. Gidda and P. Bos. 2009. *Making Protected Areas Relevant: A Guide to Integrating Protected Areas within Wider Landscapes, Seascapes and Sectoral Plans and Strategies*. Montreal: Secretariat of the Convention on Biological Diversity. Available at: www.cbd.int/doc/publications/cbd-ts-44-en.pdf; Stolton, S. and N. Dudley. 2009. *The Protected Areas Benefits Assessment Tool*. Gland, Switzerland: WWF. Available at: http://wwf.panda.org/?174401/PABAT

67 See Hockings, M., S. Stolton and N. Dudley. 2000. *Evaluating Effectiveness: A Framework for Assessing the Management of Protected Areas*. Gland, Switzerland: IUCN. Hockings et al., 2009; Ervin, J. 2003. *Rapid Assessment and Prioritization of Protected Area Management Effectiveness (RAPPAM)*. Gland, Switzerland: WWF International; available at: http://wwf.panda.org/what_we_do/how_we_work/conservation/forests/tools/rappam/; and Stolton, S., M. Hockings, N. Dudley, K. MacKinnon, T. Whitten and F. Leverington. 2007. *Management Effectiveness Tracking Tool*. Gland, Switzerland: WWF International.

68 See Ervin, J., J. Spensley, A. Hayman, C. Lopez, R. Blyther and J. Bryne. 2007. *Capacity Action Planning for Protected Areas: A Quick Guide for Practitioners*. Quick Guide Series ed. J. Ervin. Arlington, VA: The Nature Conservancy. 18 pp.; Ervin, J., N. Sekhran, A. Dinu, S. Gidda, M. Vergeichick and J. Mee. 2010. *Protected Areas for the 21st Century: Lessons from UNDP/GEF's Portfolio*. New York: United Nations Development Programme and Montreal: Secretariat of the Convention on Biological Diversity.

69 See Flores, M., G. Rivero, F. Leon, G. Chan. 2008. *Financial Planning for National Systems of Protected Areas: Guidelines and Early Lessons*. Arlington, VA: The Nature Conservancy. Available at: http://www.eclac.org/ilpes/noticias/paginas/8/35988/finance_book_in_english-complete-2nd.pdf.

70 See www.cites.org

71 See Smith, E. 2012. *Resource Requirements for Aichi Target 13 – Genetic Diversity*. Montreal: Secretariat of the Convention on Biological Diversity. 29 pp. Available at: www.cbd.int

72 Source: Wong, M. 2009. *Principles and Guidelines for Ecological Restoration in Canada's Protected Natural Areas*. Parks Canada. Available at: http://www.pc.gc.ca/progs/np-pn/re-er/pag-pel.aspx

73 Source: IISD. 2013. *ABS-Management Tool: Best Practice Standard and Handbook for Implementing Genetic Resource Access and Benefit-Sharing Activities*. Bern, Switzerland: IISD. Available at: http://www.iisd.org/pdf/2007/abs_mt.pdf; CBD. 2008. *Access and Benefit-Sharing in Practice: Trends in Partnerships Across Sectors*. Montreal, Technical Series No. 38, 140 pages. Available at: http://www.cbd.int/doc/publications/cbd-ts-38-en.pdf

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