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Guidance Note
UNDP Social and Environmental Standards (SES)

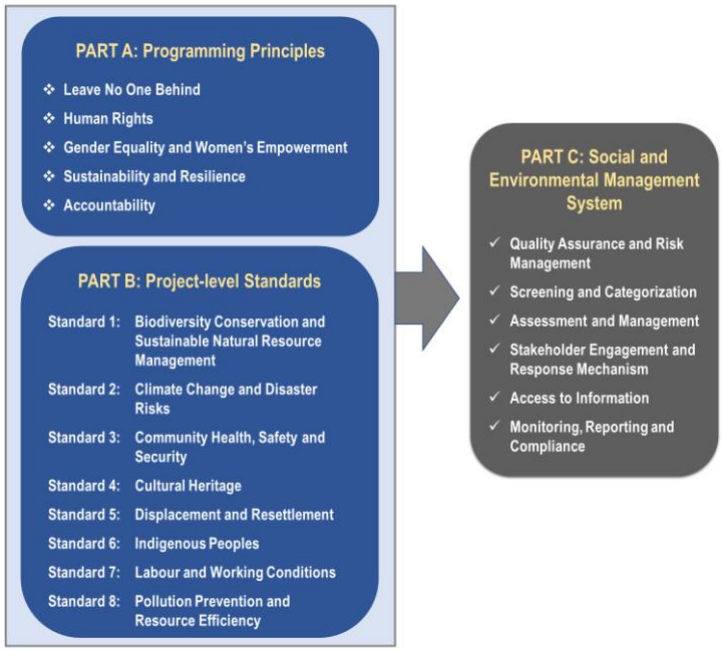
Standard 1: Biodiversity Conservation and Sustainable Natural Resource Management

rev July 2021

UNDP Guidance Notes on the Social and Environmental Standards (SES)

This Guidance Note is part of a set of operational guidance materials related to the UNDP Social and Environmental Standards (SES). UNDP's SES seek to (i) strengthen quality of programming by ensuring a principled approach; (ii) maximize social and environmental opportunities and benefits; (iii) avoid adverse impacts to people and the environment; (iv) minimize, mitigate, and manage adverse impacts where avoidance is not possible; (v) strengthen UNDP partner capacities for managing social and environmental risks; and (vi) ensure full and effective stakeholder engagement, including through mechanisms to respond to complaints from project-affected people.

Key Elements of the SES



The SES guidance notes follow a similar structure to assist users in finding specific information or guidance (however the SESP Guidance Note focuses on the steps of the screening process). The set of guidance notes will develop over time to include specific guidance on each of the SES Programming Principles, Project-level Standards, and elements of the Social and Environmental Management System (see Key Elements of the SES). The SES Toolkit is an on-line resource for the guidance notes and supporting materials.

How to Use This Guidance Note

The target users for the SES guidance notes are staff, consultants, stakeholders and partners who are involved in developing, assessing and implementing projects that invoke UNDP's SES. To facilitate use of the overall package of SES guidance, users should understand that the guidance notes:

- Are structured around the process of **screening, social and environmental assessment, and management** (including monitoring).
- Assist in determining the applicability of relevant SES requirements in the screening process for all projects.
- Provide additional guidance for projects that require assessment and development of management measures (i.e. projects with Moderate, Substantial or High Risks related to a certain Principle or Standard).
- Provide a practical resource for implementing SES requirements to address potential social and environmental impacts within the context of the project cycle. Users do not necessarily need to read them in full but rather may select information that is specific to their needs.
- Complement and elaborate on the SES, which must be read in conjunction with the guidance notes (SES language is generally not repeated in the notes).
- Will continue to be developed as lessons are derived from implementation. Feedback is always welcome and can be sent to info.ses@undp.org

Figure 1. SES Implementation – Screening, Assessment and Management in the Programming Cycle

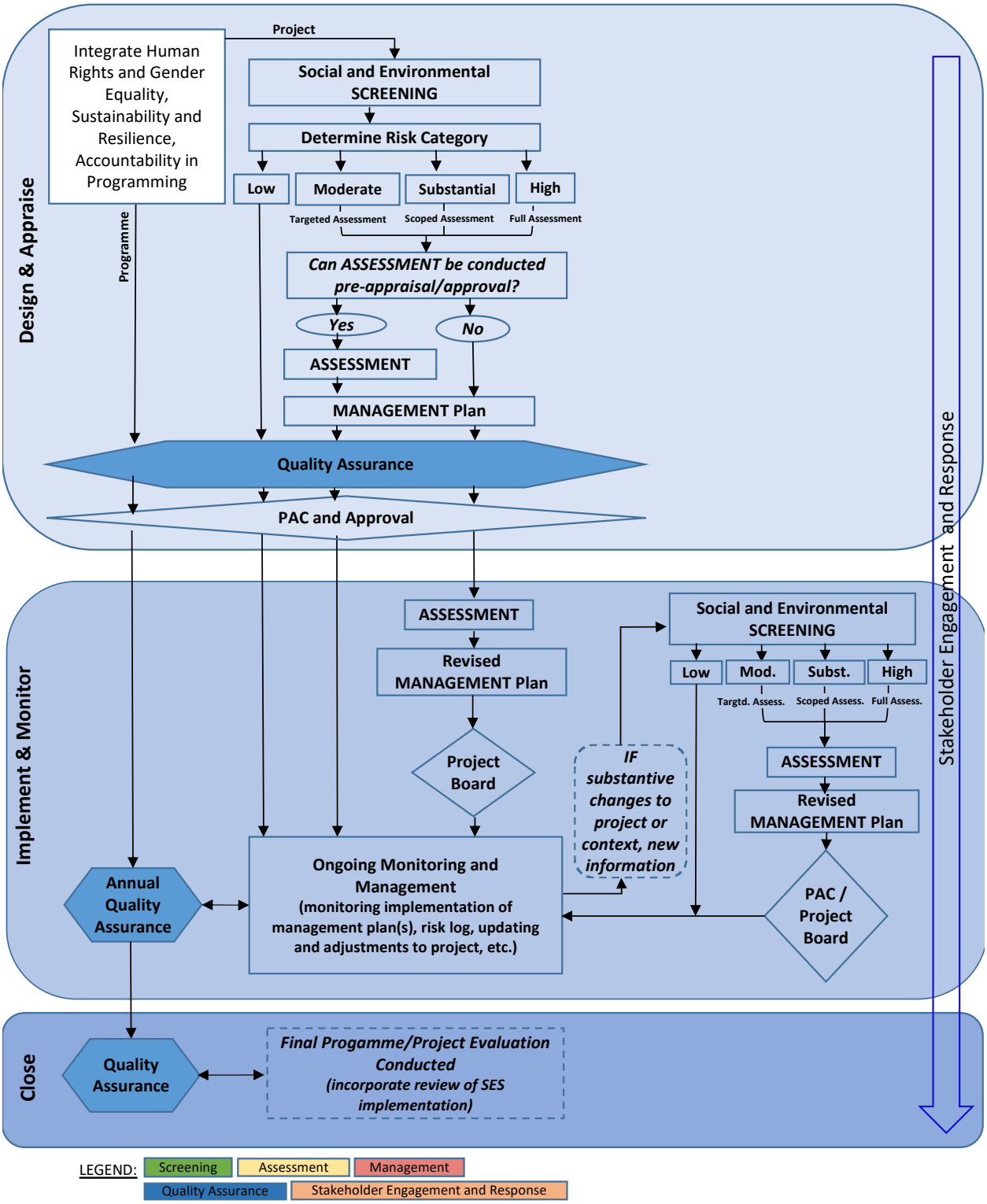


Table of Contents

What's New?

Key changes in revised 2019 SES to Standard 1: Biodiversity Conservation and Sustainable Natural Resource Management and relevant issues addressed in updated S1 Guidance Note:

- Alignment with UNDP's updated Programme and Project Management (PPM) and Enterprise Risk Management (ERM) policies, notably addition of Substantial Risk category
- Objectives broadened to recognize existing provisions regarding equitable benefit sharing from use of genetic resources and respect for traditional knowledge, sustainable and customary use, of biological resources by indigenous and local communities (Section 2.2)
- Risk identification and assessment should also include risks of incidental take and potential climate change impacts on biodiversity and ecosystems (Section 4.1.1)
- Ecosystem services: SES places further emphasis on avoiding adverse impacts on ecosystem services of relevance to affected communities. If avoidance is not possible, then mitigation and management measures aim to maintain the value and functionality of affected ecosystem services (Section 4.1.2)
- Natural Habitats: the standard for proceeding with activities that may impact natural habitats dropped the cost-benefit requirement but requires that where no viable alternatives exist that measures or plans be in place that describe the conservation outcomes, implementation actions, and monitoring and evaluation arrangements (e.g. a Biodiversity Action Plan) (Section 5.1.1)
- A short section was added on risks associated with enforcement of protected areas (Section 5.1.7)
- Mitigation hierarchy now emphasizes that in addition to seeking no net loss of biodiversity, there is also a preference to seek to achieve net gains where possible (Section 5.1.2)
- Illegal trade: new provision to ensure that supported activities do not increase the risk of illegal trade of protected species, noting CITES. In addition, section regarding zoonotic disease added (Section 5.1.9)
- Sustainable management of renewable natural resources: additional provisions and guidance regarding (a) sustainable livestock (promoting animal welfare, control for potential invasiveness or escape of production species, and minimization of antimicrobial resistance), and (b) sustainable wildlife management (Section 5.1.12)
- Provision and guidance on soil management has been added (Section 5.1.13)
- A section has been added on customary sustainable use of biological diversity and traditional knowledge (Section 5.1.15)
- Sustainable procurement: a new SES requirement states that when purchasing natural resource commodities, where possible, UNDP limits procurement to those primary suppliers that can demonstrate that they are not contributing to significant conversion or degradation of natural or critical habitats (Section 5.1.16)
- In addition to the points above, the S1 Guidance Note has been reorganized from the previous version to facilitate identification of key issue areas, particularly in Section 5 on management measures.
- [July 2021 amendment] Provision to participate in the development of an appropriate national standard in the absence of relevant natural resource management standards (Section 5.12)

1. Introduction

This Guidance Note provides operational guidelines for addressing the requirements of Standard 1 Biodiversity Conservation and Sustainable Natural Resource Management during the development and implementation of UNDP projects. Figure 1 provides a general overview of SES implementation in UNDP's project cycle. It should be noted that screening, assessment, and management may occur at different stages of the cycle.

This Guidance Note begins with an introduction to the objectives, key concepts and an overview of the requirements of Standard 1 (**Section 2**).

Section 3 discusses how to determine if the Standard is relevant for the project by applying the Social and Environmental Screening Procedure (SESP). It also discusses the assignment of a risk category to the project.

Section 4 addresses the integration of the requirements of Standard 1 into the social and environmental assessment process.

Section 5 addresses the development of measures to avoid, mitigate, and manage risks and impacts. It must be emphasized that all Moderate, Substantial and High Risk projects require identification of appropriately-scaled management measures for PAC/LPAC consideration.

Table 1 outlines key considerations for Standard 1 during the process of screening, assessment, and development of management measures to address potential adverse risks to biodiversity and ecosystems.

Table 1. Quick overview of key steps for addressing S1 requirements in screening, assessment, management

SCREEN TO IDENTIFY RISKS TO BIODIVERSITY AND ECOSYSTEMS (SECTION 3)

- Screen project design with SESP to identify potential adverse risks and impacts to biodiversity, ecosystems and/or ecosystem services
- Categorize project as Low, Moderate, Substantial or High Risk
- Develop stakeholder engagement plan and start early consultations to identify options to avoid adverse biodiversity impacts

ASSESS POTENTIAL RISKS AND IMPACTS (SECTION 4)

- Ensure assessment of direct, indirect, cumulative adverse impacts to biodiversity, ecosystems and ecosystem services, including consideration of habitat loss and degradation and differing values attached to biodiversity and ecosystem services by affected communities
  - Undertake targeted assessment(s) for most Moderate Risk projects (for straightforward Moderate Risk projects, document application of well-understood criteria, standards, practices in SESP)
  - Undertake appropriately-scoped assessment for Substantial Risk projects and full assessment for High Risk projects (difference is in scale and detail based on nature and magnitude of potential risks and impacts)
- Utilize relevant expertise and ensure biodiversity impacts are assessed at appropriate geographic scale
- Ensure level of stakeholder engagement scaled to potential risks/impacts

MITIGATE, MANAGE AND MONITOR RISKS AND IMPACTS (SECTION 5)

- Apply precautionary principle and follow mitigation hierarchy
- Develop management plan that reflects relevant requirements of SES S1. Where specific details and sites of proposed projects are not yet fully defined, develop a management framework. Scale of plan will vary depending on nature and magnitude of potential risks and impacts.
- Ensure monitoring of and reporting on all mitigation measures and biodiversity conservation actions

2. Understanding the Basics

2.1 Background and Policy Basis

Human survival and wellbeing depend on biodiversity and healthy ecosystems, and the goods and services they provide. Yet, in recent decades, the world has experienced unprecedented biodiversity loss and ecosystem degradation.

Key drivers of biodiversity loss include *inter alia* the following:[1]

- habitat conversion, fragmentation, degradation and isolation through changes to land or marine use
- unsustainable extraction or harvesting (overexploitation) of species
- unsustainable utilization and consumption of other natural resources such as water and forest resources
- climate change (affecting species distribution, populations, ecosystem function)
- infrastructure development (e.g. roads, railways, pipelines, canals, flood barriers)
- significant pollution (e.g. emissions, effluents, chemicals, noise, light, plastics)
- hydrological changes from interference with water recharging and river flow regimes
- nutrient loading through intensified agricultural activities
- introduction of invasive alien species
- economic incentives that favour expanding economic activity over conservation and restoration.

Box 1. Normative basis for Standard 1 (partial listing)

- Convention on Biological Diversity, 1992 (CBD) and protocols (Cartagena Protocol, 2000; Nagoya Protocol, 2010)
- Convention on the Conservation of Migratory Species of Wild Animals, 1979 (Bonn Convention)
- Convention on International Trade in Endangered Species of Wild Flora and Fauna, 1975 (CITES)
- Convention on Wetlands of International Importance especially as Waterfowl Habitat, 1971 (Ramsar Convention)
- Convention Concerning the Protection of World Cultural and Natural Heritage, 1972 (UNESCO World Heritage Convention)
- Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention, 1991)
- Convention to Combat Desertification (UNCCD, 1994)
- UN Framework Convention on Climate Change (UNFCCC, 1994)
- Basel Convention on the Control of Hazardous Waste (Basel Convention, 1989)
- Convention on Persistent Organic Pollutants (Stockholm Convention, 2001)
- Montreal Protocol on Substances that Deplete the Ozone Layer (1987)
- International Plant Protection Convention (1997)
- International Treaty on Plant Genetic Resources through Food and Agriculture (2004)
- International Whaling Commission

The loss of ecosystems and biodiversity is a challenge for us all, but it is a particular challenge for the world's poor, many of whom depend directly on nature for the provision of food, clean water, fuel, medicine, shelter and reduced vulnerability to climate change and natural disasters. Biodiversity loss and ecosystem change impact human health and well-being, which may include among other factors increased risk of emergence or spread of infectious diseases in animals, plants and humans.[2] Conserving biodiversity, maintaining ecosystem services, and sustainably managing natural resources are fundamental to sustainable development.

[1] For more on drivers of biodiversity loss, see IPBES (2019): Global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. E. S. Brondizio, J. Settele, S. Díaz, and H. T. Ngo (editors). IPBES secretariat, Bonn, Germany, at https://ipbes.net/global-assessment.

[2] See Convention on Biological Diversity, Health and Biodiversity, at https://www.cbd.int/health/; and UNDP, Planetary Health, Issue Brief, June 2017, at http://www.undp.org/content/undp/en/home/librarypage/hiv-aids/issue-brief---planetary-health.html.

In addition, the sustainable management, conservation and restoration of biodiversity and ecosystems are essential for maintaining the ecosystem services critical for climate change adaptation and disaster risk reduction, reducing vulnerabilities and increasing resilience (for example, coral reefs and coastal vegetation can dissipate wave action and protect shorelines from erosion, peatland, marshes and floodplains provide a buffer from floods and water scarcity, and forested mountains and slopes can stabilize sediments, protecting from landslides).[3]

UNDP is committed to integrating biodiversity and ecosystem management into development planning and production sector activities, strengthening protected areas systems, and managing and rehabilitating ecosystems for adaptation to and mitigation of climate change. UNDP seeks to strengthen effective governance and decision-making systems affecting biodiversity and ecosystems, including strengthening the rights of affected populations including women,[4] indigenous peoples and local communities to sustainable use of resources.

UNDP promotes an ecosystem approach to biodiversity conservation and seeks to "maintain and enhance the goods and services provided by biodiversity and ecosystems in order to secure livelihoods, food, water and health, enhance resilience, conserve threatened species and their habitats, and increase carbon storage and sequestration."[5] UNDP's approach points to the many co-benefits of biodiversity conservation and is strongly aligned with the objectives of the Convention on Biological Diversity (with 196 Parties) UNDP also seeks to further the objectives and requirements of a wide range of international conventions and protocols related to biodiversity conservation (see Box 1).

National Biodiversity Strategies and Action Plans (NBSAPs) are the principal instruments for implementing the Convention on Biological Diversity at the national level. The Convention requires countries to prepare a national biodiversity strategy or equivalent instrument, and to ensure that this strategy is mainstreamed into the planning and activities of all sectors whose activities can have an impact, whether positive or negative, on biodiversity. Parties to the convention provide national reports that include the status and trends of biodiversity at the national level, the implementation of national biodiversity strategies and action plans, the mainstreaming of biodiversity, progress toward reaching the Aichi targets, as well as the successes and challenges encountered. These reports are an important information source for developing country-level projects.

In 2010 the international community established a framework to halt or at least slow down the loss biodiversity. CBD's Strategic Plan for Biodiversity 2011–2020 (preparations for a post-2020 framework are underway)[6] noted that biodiversity loss can only be effectively addressed with simultaneous and coordinated action at a number of levels, each of which is essential to achieve a lasting impact and sustainable pathways to keep human societies within the limits of the planet's biological resources. The Strategic Plan included an ambitious set of 20 targets (the Aichi Biodiversity Targets). While acknowledging areas of progress, the 2020 Global Biodiversity Outlook 5 presents

[3] See CBD, Voluntary guidelines for the design and effective implementation of ecosystem-based approaches to climate change adaptation and disaster risk reduction, CBD/SBSTTA/22/INF/1, 22 June 2018, at https://www.cbd.int/doc/c/3f7a/4589/5cc1b7058bf52427fa9bae84/sbstta-22-inf-01-en.pdf.

[4] Women often face socio-cultural barriers to equitable access to resources and decision-making processes on resource use. With strong reliance on natural resource livelihoods, women are often on the front lines of risks posed by degradation of, and restricted access to, ecosystems and ecosystem services.

[5] This is the overarching strategic objective of UNDP's Biodiversity and Ecosystems Global Framework 2012-2020. The framework outlines UNDP's priorities and programs to conserve biodiversity and maintain ecosystem services. See UNDP, "The Future We Want. Biodiversity and Ecosystems – Driving Sustainable Development," (2012), available at http://www.undp.org/content/undp/en/home/librarypage/environment-energy/ecosystems_and_biodiversity/biodiversity-and-ecosystems-global-framework-2012-to-2020.html.

[6] See CBD's Strategic Plan for Biodiversity 2011-2020 including the "Aichi Targets" at http://www.cbd.int/sp/.

a sobering picture, reporting that at the global level none of the 20 targets have been fully achieved, though six targets have been partially achieved.[7]

In 2019 the Intergovernmental Science Policy Platform on Biodiversity and Ecosystem Services (IPBES)' Global Assessment report on biodiversity and ecosystem services – the largest-ever accumulation and synthesis of expert knowledge and data on biodiversity and nature's contributions to people – found that nature across most of the globe has now been significantly altered by multiple human drivers, with the great majority of indicators of ecosystems and biodiversity showing rapid, accelerating decline. It found that up to a million species could disappear in the coming decades if unsustainable human activity, climate change and habitat degradation are left unchecked. The goals for 2030 and beyond to conserve, restore and sustainably use biological resources may only be achieved through urgent and transformative changes across economic, social, political and technological factors.[8]

2.2 Objectives and Requirements

The key objectives set out in Standard 1 are the following:

- To conserve biodiversity and maintain ecosystems
- To maintain and enhance the benefits of ecosystem goods and services
- To promote sustainable management and use of renewable natural resources
- To ensure the fair and equitable sharing of the benefits from the utilization of genetic resources
- To respect, preserve, maintain and encourage knowledge, innovations and practices of indigenous peoples and local communities relevant for the conservation and sustainable use of biodiversity and their customary use of biological resources.

Standard 1 is focused on avoiding, and if avoidance is not possible, minimizing and mitigating potential adverse social and environmental impacts on biodiversity, ecosystems and ecosystem services associated with project-related activities. Requirements of Standard 1 address risks and impacts to biodiversity and ecosystem types, with increasing stringency depending on risk levels and biodiversity values of project areas. Biodiversity and ecosystem services are especially relevant to sectors that develop living natural resources as commodities, such as agriculture, forests, fisheries, and livestock, and Standard 1 includes requirements regarding sustainable management practices for such activities.

Requirements of Standard 1 are to be considered and addressed in an integrated manner (e.g. together with risks and impacts associated with other SES Standards) during the screening process, the social and environmental assessment, and in the development and implementation of any needed mitigation measures and management plans.

The complete requirements of Standard 1 should be carefully reviewed in order to inform project screening, assessment, and development of management plans/measures. Box 2 contains a high-level summary of Standard 1 requirements:

[7] See CBD, Global Biodiversity Outlook 5, at https://www.cbd.int/gbo/.

[8] See IPBES 2019 Global Assessment and Summary for Policy Makers, available at https://ipbes.net/global-assessment.

Box 2. Summary of requirements for Standard 1 Biodiversity Conservation and Sustainable Natural Resource Management (refer to full text of Standard 1)

- ***Precautionary approach:*** Apply a precautionary approach to use, development, management of habitats, their ecosystem services, and production of living natural resources
- ***Assess risks to biodiversity and ecosystem services:*** For Moderate, Substantial and High Risk projects, assess potential direct, indirect, and cumulative impacts on biodiversity and ecosystems, including consideration of habitat loss and degradation, fragmentation, invasive alien species, overexploitation, hydrological changes, nutrient loading, pollution (e.g. chemical, organic, plastics, POPs, etc.), pesticides, incidental take, potential climate change impacts and differing values attached to biodiversity and ecosystem services by affected communities. Consider impacts across landscapes/seascapes
- ***Use of experts:*** For projects with potential adverse impacts on biodiversity and ecosystems, use qualified professionals in assessment and design of mitigation/management plans
- ***Siting preference:*** Locate projects with potential adverse impacts on lands already converted
- ***Mitigation hierarchy:*** Risk reduction measures to follow mitigation hierarchy that favours avoidance of potential adverse impacts over minimization, mitigation where residual adverse impacts remain, and as a last resort, application of offset and compensation measures. Mitigation measures seek to achieve no net loss and preferably a net gain of biodiversity (net gains required for impacts on critical habitats)
- ***Habitats (see definitions):***
  - ***Modified habitats:*** Minimize unwarranted conversion/degradation/fragmentation of modified habitat
  - ***Natural habitats:*** If adverse impacts on natural habitats, proceed only if no viable alternatives and appropriate conservation and mitigation measures/plans are in place that describe the conservation outcomes, implementation actions, and monitoring and evaluation arrangements (e.g. a Biodiversity Action Plan)
  - ***Critical habitats:*** No project activities to be conducted in critical habitats unless (a) there are no measurable adverse impacts on the area's biodiversity values and supporting ecological processes, (b) no reduction in Vulnerable, Endangered, or Critically Endangered species, (c) any lesser impacts are appropriately mitigated, and (d) a Biodiversity Action Plan is in place to achieve net gains of relevant biodiversity values
- ***Use of offsets:*** Biodiversity offsets to be utilized only as a last resort and must be designed to achieve measurable conservation outcomes that result in no net loss and preferably a net gain in biodiversity. For impacts on critical habitats, offsets to be considered only in exceptional circumstances, with net gain in biodiversity required. "Like-for-like or better" principle and use of external experts required
- ***Illegal trade:*** Measures will be adopted to ensure that supported activities do not increase the risk of illegal trade of protected species
- ***Protected areas:*** For activities in protected areas, ensure critical habitats requirements are followed, and ensure that activities are consistent with area management plans (if exist) and area sponsors and stakeholders are appropriately consulted. Activities to enhance conservation and management of area should be incorporated into project, as appropriate
- **Management of ecosystem services:** Avoid adverse impacts on ecosystem services of relevance to affected communities; if avoidance is not possible, then mitigation and management measures aim to maintain their value and functionality
- ***Invasive species:*** No introduction of known invasive species. No introduction of any alien species without risk assessment. Possibility of accidental introduction of invasive alien species to be considered and managed
- ***Biosafety and genetic resources:*** If project involves transfer, handling and/or use of genetically modified organisms/living modified organisms (GMOs/LMOs), conduct risk assessment per Cartagena Protocol
- ***Forests:*** Ensure that project activities (a) conserve natural forests and biodiversity, avoiding conversion of natural forests; (b) incentivize protection and conservation of natural forests and their ecosystem services and other social and environmental benefits; (c) enhance sustainable management of forests (including certification of industrial logging); (d) that restoration projects maintain or enhance biodiversity and ecosystem functionality; (e) ensure plantations are environmentally appropriate, socially beneficial, economically viable, utilizing native species. Give preference to small-scale community-level forest management approaches

- ***Water resources:*** Promote integrated water resources management, avoid significantly altering flow regimes and undertake risk assessments, environmental flow analysis and management to extent feasible in context of river basin planning
- ***Sustainable Management of Renewable Natural Resources:*** Manage living natural resources in sustainable manner, including safeguarding biodiversity and life-supporting capacity of ecosystem services. Apply industry-specific best management practices including certification systems where possible and appropriate. Adopt appropriate measures, where relevant, to promote animal welfare, control for potential invasiveness or escape of production species, and minimization of antimicrobial resistance. Support small-scale resource owners/producers to harvest/produce sustainably. Ensure fair and equitable benefit sharing in utilization of genetic resources (consistent with the Nagoya Protocol)
- ***Soil management:*** avoid, and where avoidance is not possible, minimize adverse impacts on soils, their biodiversity, organic content, productivity, structure, water-retention capacity
- ***Primary Suppliers:*** When purchasing natural resource commodities, limit procurement to primary suppliers that can demonstrate that they are not contributing to significant conversion or degradation of natural or critical habitats and shift suppliers where they cannot. Encourage use of Environmental Product Descriptions.

2.3 Key Concepts and Definitions

Biodiversity: The Convention on Biological Diversity (CBD) defines biodiversity as "the variability among living organisms from all sources including, *inter alia*, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems."[9] Biodiversity occurs in genes, species and ecosystems, underpinning the functioning of ecosystems that sustain life and provide society with food, medicines, natural resources, ecological services and spiritual and aesthetic benefits.

Biodiversity offsets are measureable conservation outcomes resulting from actions designed to compensate for significant residual adverse biodiversity impacts arising from project development and persisting after appropriate avoidance, minimization and restoration measures have been taken.

Customary sustainable use of biological diversity: Uses of biological resources in accordance with traditional cultural practices that are compatible with conservation or sustainable use requirements. [10]

Ecosystem: An ecosystem is a dynamic complex of plant, animal, and micro-organism communities and their nonliving environment interacting as a functional unit.

Ecosystem approach is a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way. The approach is a key framework for addressing the three objectives of the CBD in a balanced way.[11]

Ecosystem services are the benefits that people derive from ecosystems. Ecosystem services may be organized into four types: (i) *provisioning services*, which are the goods people obtain from ecosystems (i.e. food, freshwater, timber, fibers, medicinal plants); (ii) *regulating services*, which are the benefits people obtain from the regulation of ecosystem processes (e.g. surface water purification, carbon storage and sequestration, climate regulation protection from natural hazards); (iii) *cultural services*, which are the nonmaterial benefits people obtain from ecosystems (e.g. sacred sites, areas of importance for recreation and aesthetic enjoyment); and (iv) *supporting*

[9] Formal definition by the Convention on Biological Diversity (CBD), Article 2, available at http://www.cbd.int/. The CBD is an international legally-binding treaty with three main goals: (i) conservation of biodiversity; (ii) sustainable use of biodiversity; and (iii) fair and equitable sharing of the benefits arising from the use of genetic resources.

[10] See CBD, Glossary of Relevant Key Terms and Concepts Within the Context of Article 8(J) and Related Provisions, 2019, at https://www.cbd.int/doc/guidelines/cbd-8j-GlossaryArticle-en.pdf.

[11] See Ecosystem Approach, Convention of Biological Diversity, available at https://www.cbd.int/ecosystem/.

services, which are the natural processes that maintain the other services (e.g. soil formation, nutrient cycling, primary production).[12] Annex 1 provides an indicative list of ecosystem services.

Endangered species[13] are those species threatened by extinction throughout all or a substantial portion of its range. See also the definition for critical habitats.

Genetic resources are defined as genetic material – any material of plant, animal, microbial or other origin containing functional units of heredity – with actual or potential value. Essentially, the term encompasses all living organisms (plants, animals and microbes) that carry genetic material potentially useful to humans. Genetic resources can be taken from the wild, domesticated or cultivated. They are sourced from natural environments (insitu) or human-made collections (ex situ) (e.g. botanical gardens, gene banks, seed banks and microbial culture collections). The definition of genetic resources seeks to capture the value (actual and potential) of the genetic material.[14] The genetic resources value chain starts with the collection of some material, the storage of collected material, basic research on genetic resources, applied research on genetic resources, and possibly ends with the commercialization of a final product. Users of genetic resources are a diverse group, including botanical gardens, industry researchers such as pharmaceutical, agriculture and cosmetic industries, collectors and research institutes. They seek access for a wide range of purposes, from basic research to the development of new products. Indigenous peoples and local communities often hold genetic resources and traditional knowledge on associated with genetic resources.

Habitat refers to terrestrial, freshwater, or marine areas or airways that support assemblages of living organisms and their interactions with the non-living environment. Habitats vary in their sensitivity to impacts and in the various values society attributes to them. For the purposes of Standard 1, habitats are divided into modified, natural, and critical habitats:

- ***Modified habitats*** are areas that may contain a large proportion of plant and/or animal species of non-native origin, and/or areas where human activity has substantially modified an area's primary ecological functions and species composition. Modified habitats may include areas managed for agriculture, forest plantations, reclaimed costal zones, areas managed for fisheries and aquaculture, reclaimed wetlands, and regenerated forests and grasslands.
- ***Natural habitats*** are land and water areas where the biological communities are formed largely by native plant and animal species, and where human activity has not essentially modified the area's primary ecological functions and species composition.
- ***Critical habitats*** are a subset of both modified and natural habitats that require special attention. Critical habitats are areas with high biodiversity value, including any of the following features: (i) habitat of significant importance to Critically Endangered, Endangered or Vulnerable species; (ii) habitat of significant importance to endemic and/or restricted-range species; (iii) habitat supporting globally significant concentrations of migratory species and/or congregatory species; (iv) highly threatened and/or unique ecosystems; and/or (v) areas associated with key evolutionary processes. Critical habitats include those areas that are (i) legally protected, (ii) officially proposed for protection, (ii) identified by authoritative sources for

[12] The initiative on a Common International Classification of Ecosystem Services (CICES) has proposed organizing ecosystem services into three broad classifications: provisioning services, regulating and maintenance, and cultural services. See CICES ver. 4.3 at https://cices.eu/.

[13] See Convention on Migratory Species (Quito, 4-9 November 2014), Guidelines for Assessing Listing Proposals to Appendices I and II of the Convention (Res. 11.33 paragraph 1). Res. 11.33 also defines a general correspondence between the term 'endangered' as defined within CMS and the IUCN Red List Criteria (Version 3.1).

[14] The Concept of "Genetic Resources" in the Convention on Biological Diversity and How It Relates to a Functional International Regime on Access and Benefit-Sharing: Note by the Executive Secretary (UNEP/CBD/WG-ABS/9/INF/1, 19 March 2010). https://www.cbd.int/doc/meetings/abs/abswg-09/information/abswg-09-inf-01-en.pdf.

their high conservation value (such as areas that meet criteria of the World Conservation Union classification, the Ramsar List of Wetlands of International Importance, and the United Nations Scientific and Cultural Organization's world heritage sites), or (iv) recognized as protected by traditional local communities. These features are further defined below:

- *Critically Endangered (CR), Endangered (EN) or Vulnerable (VU) species* are species classified as under threat of global extinction. The IUCN Red List of Threatened Species (the Red List) is generally considered to be the most comprehensive international reference on the conservation status of plant and animal species.[15] In addition, host countries usually have their own listings of threatened plant and animal species. Where endemic, restricted range species have not been classified yet by IUCN or the host country, appropriate species specialists should evaluate the species, utilizing the IUCN Red List decision criteria. Those species that meet the Red List Vulnerable, Endangered, or Critically Endangered criteria would meet the critical habitats determination.
- *Endemic and/or restricted-range species* are those whose range is restricted to a limited geographical area. Endemic species are unique to a particular geographic location, such as a specific island, habitat type, nation or other defined zone. Restricted-range species have relatively limited areas of distribution.
- *Migratory and/or congregatory species.* The assessment would need to determine if the project may affect globally significant concentrations of migratory species and/or congregatory species. Migratory species are those of which a significant portion of its members cyclically and predictably move from one geographic area to another (including within the same ecosystem). Members of congregatory species gather in large groups on a cyclical or otherwise regular and/or predictable basis, including species that form colonies and/or breeding colonies and/or pass through bottleneck sites in significant numbers (e.g. during migration).
- *Highly threatened and/or unique ecosystems* are those (i) that are at risk of significantly decreasing in area or quality; (ii) with a small spatial extent; and/or (iii) containing unique assemblages of species. Areas determined to be irreplaceable or of high priority/significance based on systematic conservation planning techniques carried out at the landscape and/or regional scale by governmental bodies, recognized academic institutions and/or other relevant qualified organizations (including internationally-recognized NGOs) or that are recognized as such in existing regional or national plans, such as the NBSAP, would qualify as critical habitat. The ecosystem prioritization factors include long-term trends, rarity, ecological condition, threat, dependence. All of these values contribute to the relative biodiversity and conservation value of the particular ecosystem.
- *Key evolutionary processes.* The structural attributes of a region, such as its topography, geology, soil, water, temperature and vegetation and combinations of these variables can influence the evolutionary processes that give rise to regional configurations of species and ecological properties. In some cases, unique spatial features have been associated with genetically unique populations or subpopulations of plant and animal species. Maintaining these key evolutionary processes inherent in a landscape or seascape as well as the resulting species (or subpopulations of species) has become a major focus of biodiversity conservation, particularly the conservation of genetic diversity.
- *Protected areas (e.g. national parks, nature reserves, etc.) and areas of high biodiversity value.* In general, internationally and/or nationally recognized areas of high biodiversity value will encompass one or more of the above values and will likely qualify as critical habitat (see Box 3). These would include the following:

[15] The IUCN Red List of Threatened Species available at http://www.iucnredlist.org/.

- Legally protected areas and areas officially proposed for protection.[16] Areas that meet the criteria of the IUCN's Protected Area Management Categories should be considered critical habitats.[17]
- Internationally recognized areas, such as UNESCO Natural World Heritage Sites[18] and UNESCO Man and Biosphere Reserves,[19] and wetlands designated under the Convention on Wetlands of International Importance (the Ramsar Convention).[20]
- Many Key Biodiversity Areas (KBAs),[21] which encompass *inter alia*, Important Bird and Biodiversity Areas (IBAs),[22] Important Plant Areas, and Alliance for Zero Extinction Sites (AZE).[23]
- Areas determined to be irreplaceable or of high priority/significance based on systematic conservation planning techniques carried out at the land/seascape and/or regional scale by governmental bodies, recognized academic institutions and/or other relevant qualified organizations (including internationally-recognized NGOs).
- Areas and particular sites that have been voluntarily conserved and/or are considered protected by indigenous peoples[24] and/or local communities through customary laws or other effective means, such as Indigenous Protected Areas (IPAs) or Indigenous and Community Conserved Areas (ICCAs).[25] In the event that a project is proposed inside or in proximity to a community-conserved area, the local communities and/or indigenous peoples must be appropriately consulted. Where lands, territories, or natural resources claimed by indigenous communities are involved, SES Standard 6 Indigenous Peoples will be applicable, including the need for processes of free, prior informed consent (FPIC). See the Standard 6 Guidance Note in the SES Toolkit.

Illegal trade refers to unlawful harvest of and trade in live animals and plants or parts and products derived from them. Illegal trade contravenes either domestic or international law or both.[26] Illegal trade runs the gamut from

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[16] Standard 1 recognizes legally protected areas that meet the IUCN definition: "A clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values." Areas proposed by governments for such designation are included.

[17] IUCN Protected Areas Categories available at https://www.iucn.org/theme/protected-areas/about/protected-areas-categories.

[18] UNESCO World Heritage List available at http://whc.unesco.org/en/list/.

[19] Listings of UNESCO Man and Biosphere areas available at http://www.unesco.org/new/en/natural-sciences/environment/ecological-sciences/man-and-biosphere-programme/.

[20] Ramsar sites available at http://www.ramsar.org/about/wetlands-of-international-importance-ramsar-sites.

[21] Key Biodiversity Areas are nationally mapped sites of global significance for biodiversity conservation that have been selected using globally standard criteria and thresholds based on the framework of vulnerability and irreplaceability widely used in systematic conservation planning. See http://www.keybiodiversityareas.org/home. For KBA identification criteria, see https://portals.iucn.org/library/sites/library/files/documents/Rep-2016-005.pdf.

[22] See Birdlife International's listing of Important Bird and Biodiversity Areas (IBAs) at https://www.birdlife.org/worldwide/programme-additional-info/important-bird-and-biodiversity-areas-ibas.

[23] See listing for Alliance for Zero Extinction sites at https://zeroextinction.org.

[24] The term "indigenous peoples" is used in a broad sense. There is no universally accepted definition of indigenous peoples. SES 6 Indigenous Peoples establishes criteria for the identification of indigenous peoples, no matter the terms that may be applied in a certain country, such as national or ethnic minorities, or Native Americans, or Scheduled Classes, or Forest Peoples, aborigines, tribal, hill people, pastoralists, etc.

[25] See the ICCA Consortium. Also see Corrigan, C. and Hay-Edie, T. 2013. A toolkit to support conservation by indigenous peoples and local communities: building capacity and sharing knowledge for indigenous peoples' and community conserved territories and areas (ICCAs) UNEP-WCMC, Cambridge, UK, at https://sgp.undp.org/images/ICCA_toolkit_FINAL_18may2013.pdf.

[26] See the Convention on International Trade in Endangered Species in Wild Fauna and Flora (CITES) and the CITES Appendices of species threatened by international trade.

illegal logging of protected forests to supply the demand for exotic woods, to the illegal fishing of endangered marine life for food, and the poaching of elephants to supply the demand for ivory. Endangered animals and plants are often the target of illegal trade because of their rarity and increased economic value.

Mitigation hierarchy: Risk reduction measures follow a mitigation hierarchy that favours avoidance of potential adverse impacts over minimization, mitigation where adverse residual impacts remain, and, as a last resort, application of offset and compensation measures.

No net loss and net gains: "No net loss" is defined as the point at which project-related impacts on biodiversity are balanced by measures taken to avoid and minimize the project's impacts, to undertake on-site restoration and finally to offset significant residual impacts, if any, on an appropriate geographic scale. "Net gains" are additional conservation outcomes that can be achieved for the biodiversity values of habitats.

Sustainable management of renewable natural resources involves the use, development and protection of these resources in a way or at a rate that enables people and communities to provide for their current social, economic, and cultural well-being while sustaining the potential of these resources to meet the reasonably foreseeable needs of future generations. This includes safeguarding the life-supporting capacity of the atmospheric, hydrological and soil systems as well as "**living natural resources**" which are defined as the plants and animals cultivated for human or animal consumption and use, whether in the wild or in a cultivated situation. It includes all types of forestry, biofuels, agriculture, including both annual and perennial crops and animal husbandry, including livestock; and both wild and capture fisheries including all types of marine and freshwater organisms, both vertebrate and invertebrate.

Traditional knowledge is understood as the knowledge, innovations and practices of indigenous and/or local communities embodying traditional lifestyle relevant for the conservation and sustainable use of biodiversity.[27]

3. Screening

3.1 Identifying Potential Impacts on Biodiversity

Requirements of Standard 1 are to be considered and addressed in an integrated manner during the screening process, using UNDP's Social and Environmental Screening Procedure (SESP), to identify potential adverse risks and impacts related to biodiversity, ecosystems and ecosystem services. If risks and/or impacts are identified that contribute to a Moderate, Substantial or High Risk categorization (see Box 3), then relevant Standard 1 requirements need to be addressed in project design and implementation, including as part of overall impact assessment, management and mitigation, stakeholder engagement and monitoring activities.

The SESP should be utilized early in project design, typically at the project concept stage. The SESP Social and Environmental Risk Screening Checklist provides a range of questions to help identify if the project may present adverse impacts and risks regarding natural and critical habitats, biodiversity, or sustainable management of living natural resources. Table 2 below provides additional guidance on the screening questions related to Standard 1.

When screening for potential adverse impacts to biodiversity and ecosystems, it is important to recall that:

[27] See CBD, Glossary of Relevant Key Terms and Concepts Within the Context of Article 8(J) and Related Provisions, 2019, at https://www.cbd.int/doc/guidelines/cbd-8j-GlossaryArticle-en.pdf.

(i) **all activities** outlined in the project document (e.g. those included in the Project Results Framework) need to be screened and reviewed for potential direct, indirect and cumulative impacts in the project's area of influence[28]

(ii) project activities need to be screened for potential biodiversity and ecosystem risks and impacts **as if no mitigation or management measures were to be put in place** in order to form a clear picture of potential inherent risks/impacts, in the event that mitigation measures are not implemented or fail.

Box 3. SES social and environmental risk categories

- **Low Risk:** Projects that include activities with minimal or no adverse social or environmental risks and/or impacts.
- **Moderate Risk:** Projects that include activities with potential adverse social and environmental risks and impacts that are few in number, limited in scale, largely reversible and can be identified with a reasonable degree of certainty and readily addressed through application of recognized good international practice, mitigation measures and stakeholder engagement during project implementation.
- **Substantial Risk:** Projects that include activities with potential adverse social and environmental risks and impacts that are more varied or complex than those of Moderate Risk projects but remain limited in scale and are of lesser magnitude than those of High Risk projects (e.g. reversible, predictable, smaller footprint, less risk of cumulative impacts). Substantial Risk projects may also include those with a varied range of risks rated as "Moderate" that require more extensive assessment and management measures.
- **High Risk:** Projects that include activities with potential significant adverse social and environmental risks and impacts that are irreversible, unprecedented, and/or which raise significant concerns among potentially affected communities and individuals as expressed during the stakeholder engagement process. High Risk activities may involve significant adverse impacts on physical, biological, socioeconomic, or cultural resources. High Risk projects may have the potential to aggravate existing situations of fragility or conflict, adversely affect human rights and/or lead to extensive environmental degradation. Comprehensive assessment and management plans required.

Screening helps to determine whether threats to biodiversity will be a major project issue and, if so, what features require studying and assessment. This process can be complex and therefore often requires the judgment of **qualified and experienced experts.** Project location and types of activities need to be carefully reviewed. Examples of red flags that may indicate potential major biodiversity issues are: project sites within, near or upstream of protected areas (including marine protected areas); medium- to large-scale land/water use conversion (e.g. agriculture, forest plantations; aquaculture); activities that may convert, fragment or degrade natural habitat; and introduction of new species into the project area.

Table 2. Guidance for Responding to Standard 1 Risk Based Questions in SESP *Note: The right hand column cross-references relevant sections of this Guidance Note. However, it must be emphasized that the general requirements regarding risk identification and development of appropriate management measures apply to all issue areas.*	*Reference to sections of this guidance note*
Would the project potentially involve or lead to:	
1.1 adverse impacts to habitats (e.g. all types: modified, natural, and critical habitats) and/or ecosystems and ecosystem services?	**4.1.1, 4.1.2**

[28] It is important for UNDP to review all project-related activities (including those directly supported by partners) to ensure that potential social and environmental risks of those activities do not compromise the outcomes and outputs of UNDP-supported activities. Where partner-related social and environmental risks are identified, UNDP works with the partner to ensure a consistent approach to social and environmental risk mitigation and management.

This broad question prompts the screener to begin consideration whether any project activities may directly or indirectly lead to adverse risks and impacts on areas of land, air or water (noting that more targeted questions follow). Locations of project activities should be defined and reviewed with as much specificity as possible in order to help identify the biophysical sensitivity of proposed areas (where project locations are not yet defined, screeners should try to anticipate whether proposed project activities may cause adverse impacts to habitats). Clearly project activities that could lead to habitat loss, conversion or fragmentation or to hydrological changes or to pollution impacts (e.g. agrochemical use) would be flagged here. It is necessary to consider perhaps less than obvious potential downside impacts (e.g. adverse impacts on soils, water, wildlife, sensitive species, etc., from large-scale solar installations, alternative livelihoods projects, or upstream policy reforms that may affect land use). Activities that could affect or disrupt ecosystems services (see Annex 1) should be flagged.	
1.2 activities proposed within or adjacent to critical habitats and/or environmentally sensitive areas, including legally protected areas (e.g. nature reserve, national park), areas proposed for protection, or recognized as such by authoritative sources and/or indigenous peoples or local communities?	**4.1.1, 5.1.6, 5.1.7**
Project activities in or near environmentally sensitive areas require an abundance of caution. Project developers should review lists that identify geographical areas where important biodiversity may be found. Existing spatial and landscape mapping may help with the identification of natural and critical habitats that could be affected. National Biodiversity Strategies and Action Plans (NBSAP) often provide detailed information on conservation priorities and on types and conservation status of ecosystems. Regional/international databases may provide important information (see Box 3 and ft. nt. 16). The screening question requires an expansive approach to identifying environmentally sensitive areas. In addition to legally protected areas, consideration should also be given to areas proposed for protected status or areas/sites considered protected by local communities and indigenous peoples, such as Indigenous Protected Areas (IPAs) and Indigenous and Community Conservation Areas (ICCAs). These categories fall within Standard 1's definition of critical habitats. Projects that include activities to strengthen protected areas (e.g. reform of protected area legislation, expansion of protected area systems, specific protected area management) should be flagged here.	
1.3 changes to the use of lands and resources that may have adverse impacts on habitats, ecosystems, and/or livelihoods? (Note: if restrictions and/or limitations of access to lands would apply, Standard 5 would also be applicable)	**4.1.1, 4.1.2, 5.1.12-14**
Proposed changes to land, marine and resource use require careful examination given the potential range of adverse impacts that may arise. Re-zoning areas for expanded agriculture, livestock breeding or forestry may lead to significant conversion of natural habitats. Restrictions on hunting, fishing or resource extraction could have adverse livelihood impacts on local communities, and could displace such activities to other areas. Re-zoning areas for aquaculture or marine tourism/eco-tourism, which unless properly designed and implemented could have negative impacts (e.g. damage to coral reefs, pollution). Both proposed policy-level changes and localized interventions should be considered when reviewing project activities for potential alterations to land, marine and resource use. While proposed changes to zoning or protected area status may be intended to strengthen the sustainability of habitats, nevertheless, careful examination and identification of potential downside risks to biodiversity and local communities is required. The imposition of access restrictions to areas traditionally used or occupied by local communities and indigenous peoples may have adverse livelihoods impacts (e.g. economic displacement). The requirements of Standard 5 on Displacement and Resettlement would need to be considered. If lands or territories of indigenous peoples may be involved, then Standard 6 Indigenous Peoples would also need to be consulted.	

1.4 risks to endangered species (e.g. reduction, encroachment on habitat)**?**	**5.1.9**
For projects that may affect habitats, it is important to identify whether any threatened species may be present in the project's area of influence. A primary reference is the IUCN Red List of Threatened Species. Standard 1 requires that project activities do not lead to any reduction in any recognized Vulnerable, Endangered, or Critically Endangered species (following IUCN's categories). There may also be equivalent national or regional listings of threatened species that can be consulted. Project locations need to be specified in order to identify whether any threatened species could be adversely impacted. Where there are endemic, restricted range species in the project area that have not been classified yet by IUCN or the host country, appropriate species experts should be engaged to evaluate the species utilizing the IUCN criteria. Projects that aim to protect endangered species need to be reviewed for potential downside risks (e.g. potential perverse incentives that may contribute to habitat degradation).	
1.5 exacerbation of illegal trade?	**5.1.9**
Illegal trade in protected species is estimated to be a multibillion-dollar business involving the unlawful harvest of and trade in live animals and plants or parts and products derived from them. Wildlife and plants are traded as skins, leather goods or souvenirs; as food; as traditional medicine; as pets, and in many other forms. Project developers need to identify whether target project areas and communities may be involved in illegal trade and consider how the project would avoid exacerbating illegal trade. This would include considering potential indirect impacts, such as avoiding perverse incentives whereby income from alternative livelihood schemes are reinvested in poaching activities, or increasing access to forests that may lead to an expansion of illegal trade activities. The CITES Convention lists species threatened by international trade in several Appendices. The CITES Secretariat and specialist organizations such as TRAFFIC provide useful resources on illegal trade.[29]	
1.6 introduction of invasive alien species?	**5.1.10**
Invasive alien species (IAS) – plants, animals, pathogens and other organisms that are non-native to an ecosystem – are a major cause of biodiversity loss. IAS invade or spread rapidly by out-competing native plants and animals when they are introduced into a new habitat that lacks traditional controlling factors. Introductions can occur deliberately (e.g. use in farming, forestry, aquaculture, horticulture, recreational purposes, or even as pets and garden plants) or accidentally (e.g. as contaminants of other commodities or as 'hitchhikers' and 'stowaways' on board vessels or equipment). Screeners need to consider whether project-related activities could introduce IAS. Under no circumstances will known IAS be introduced. Activities such as reforestation, revegetation, agriculture, and aquaculture may pose such risks. Accidental introduction of IAS also needs to be considered. For example, if the project involves the importation of materials and supplies, are appropriate national control and inspection measures in place (e.g. requirement for phytosanitary certificates)? Where the project proposes utilization of alien species, Standard 1 requires a risk assessment to determine potential invasive behavior. See Box 4 for guidance materials related to IAS.	
1.7 adverse impacts on soils?	**5.1.13**
The world's soils are rapidly deteriorating due to soil erosion, nutrient depletion, loss of soil organic carbon, soil sealing, development of acidity, salinization, alkalization, and other threats. Soil erosion has largely been triggered by intensive agriculture (including use of fertilizers and pesticides), tillage, mono-cropping, livestock overgrazing, urban sprawl, deforestation, pollution (including through micro-	

[29] See Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), at https://www.cites.org/. See TRAFFIC at https://www.traffic.org/. See also World Bank Group, Tools and Resources to Combat Illegal Wildlife Trade, 2018, at http://pubdocs.worldbank.org/en/389851519769693304/24691-Wildlife-Law-Enforcement-002.pdf.

plastics)and industrial and mining activities, as well as and long-term climatic changes. Project activities may contribute to soil compaction. Improper vegetation/forest/grasslands management techniques may lead to further erosion. Where projects may impact soils, sustainable soil management practices need to be utilized to prevent and limit soil degradation, erosion and the loss of valuable land to desertification. A range of guidelines exist to promote sustainable soil management practices (see section 5.1)	
1.8 harvesting of natural forests, plantation development, or reforestation?	**5.1.12**
Forest harvesting operations pose potentially significant adverse risks to biodiversity and ecosystems through *inter alia* overexploitation, habitat conversion, loss, and fragmentation. Standard 1 calls for the conservation of natural forests and outlines requirements regarding natural habitats where adverse impacts cannot be avoided (see section 4). UNDP does not support projects that involve the conversion of natural forests (see para. 17 of Standard 1), and seeks to refrain from any forest conversion activities, including of secondary forests. Where commercial, industrial-scale timber harvesting of plantation forests is envisioned, Standard 1 requires application of independent credible certification of sustainable forest management. For small-scale landholders and local communities, appropriate, culturally sensitive sustainable resource management approaches should be developed. Reforestation and habitat enrichment (including plantations) are important approaches for addressing biodiversity loss and climate change mitigation and adaptation. However, a proper balance between these two objectives is needed. Assisted natural regeneration or planting a mix of native species is best for strengthening biodiversity while plantations of fast growing production species can sequester carbon faster, but often have little biodiversity value. Standard 1 requires that biodiversity and ecosystem functionality be maintained in all forest restoration projects.	
1.9 significant agricultural production?	**5.1.12**
While modern agriculture has enabled food production to increase, contributing much to improving food security and reducing poverty, it has also been a leading driver of biodiversity loss, primarily through land-use conversion, overexploitation, intensification of agricultural production systems, excessive chemical and water use, nutrient loading, pollution and introduction of alien species. In addition, homogenization of agricultural production systems has led to significant agricultural biodiversity loss through genetic erosion and the increasing levels of genetic vulnerability of specialized crops and livestock. Standard 1 requires that risks and impacts to biodiversity associated with support for agricultural production be identified and sector specific sustainable management practices be utilized.	
1.10 animal husbandry or harvesting of fish populations or other aquatic species?	**5.1.12**
Support for sustainable livelihoods may involve expansion of livestock and/or aquaculture, both of which may significantly improve food security and livelihoods. However, a range of potential adverse impacts need consideration, such as nutrient and waste buildup, disease and parasite outbreaks, intensive use of water resources, escape of exotic species, location in environmentally sensitive areas, among others. Standard 1 calls for implementation of sustainable management practices, from independent certification for large-scale producers to development of appropriate, culturally sensitive sustainable resource management approaches for small-scale producers and/or local communities. The requirements include attention to animal welfare and minimization of antimicrobial resistance.	
1.11 significant extraction, diversion or containment of surface or ground water?	**5.1.14**
Significant diversion, containment or extraction of surface and ground water can lead to degradation of freshwater ecosystems. Groundwater extraction can alter aquifers or introduce contamination. Rivers and lakes are complex systems tightly linked to surrounding watersheds and catchment areas and are greatly influenced by human uses or modifications. Aquatic ecosystems require that sediments, chemical and nutrient inputs, thermal and light conditions, and plant and animal populations fluctuate within	

natural ranges. Activities such as construction of dams, reservoirs, river basin developments, diversion of surface or subterranean streams, and groundwater extraction can alter these dynamic flows or deplete aquifers. The precautionary principle should be applied in managing environmental flows, and where necessary, depletion and alteration should be limited to account for environmental flow needs.	
1.12 handling or utilization of genetically modified organisms/living modified organisms?	**5.1.11**
Modern biotechnology involves modifying the genetic material of an organism with the aim of developing or improving one or more characteristics in the organism. While this technology has the potential to generate benefits for humankind and contribute to sustainable development, there are concerns that living modified organisms resulting from biotechnology may have negative effects on biodiversity and human health. The Cartagena Protocol on Biosafety was adopted as an additional agreement to the Convention on Biological Diversity, and aims to ensure the safe transport, handling and use of living modified organisms (LMOs) resulting from modern biotechnology that may have adverse effects on biodiversity, also taking into account risks to human health. Standard 1 requires that a risk assessment be carried out in accordance with Annex III of the Biosafety Protocol for Projects that may involve the transfer, handling and use of GMOs/LMOs that result from modern biotechnology and that may have adverse effects on biological diversity	
1.13 utilization of genetic resources? (e.g. collection and/or harvesting, commercial development)	**5.1.12**
Using genetic resources, whether from plants, animals or micro-organisms, refers to the process of researching their beneficial properties and using them to increase scientific knowledge and understanding, or to develop commercial products. Uses of genetic resources are numerous, for example by the pharmaceutical industry for drug development, in industrial biotechnology (e.g. enzymes) to improve efficiency and quality of products and production process, and in agricultural biotechnology to improve plant, seed, and crop performance and efficiency. Standard 1 requires that the collection of genetic resources is conducted sustainably and the benefits derived from their utilization are shared in a fair and equitable manner, consistent with the CBD and the Nagoya Protocol, which sets out rules that govern access and benefit-sharing of genetic resources. If genetic resources are collected from traditional or customary lands of indigenous peoples, the provisions of Standard 6: Indigenous Peoples apply, including the requirement of free, prior and informed consent (FPIC).	
1.14 adverse transboundary or global environmental concerns?	**4.1.1, 5.1.14**
Project activities that raise transboundary or global environmental concerns need to be identified. Typical examples of transboundary environmental problems include the following: several countries polluting a river, a lake or an ocean; acid rain caused by emissions of SO2, and NOX; global warming caused by emissions of CO2 and other greenhouse gases; depletion of the ozone layer caused by emissions of CFCs and other ozone-depleting substances; movement of hazardous wastes and chemicals; overexploitation of shared resources, such as fish stocks or other migratory species. National obligations under a wide range of international agreements need to be respected where relevant, for example the Montreal Protocol (ozone layer depletion), the Stockholm Convention (persistent organic pollutants), the Basel Convention (movement of hazardous wastes); the Rotterdam Convention (movement of hazardous chemicals), the Espoo Convention (prior notification and sharing of relevant information for activities that would have significant adverse environmental impacts across borders).	

3.2 Determining the Applicability of Standard 1

Any “yes” responses to the screening questions indicate the potential for social and environmental risks that need to be summarized in Question 2 of the SESP template. The level of significance of each identified risk (based on Impact and Probability ratings) is estimated and recorded under Question 3. The Project is categorized according to the highest rated risk (Low, Moderate, Substantial, High) and this is recorded in Question 4. When the

significance of a potential risk is judged to be Moderate, Substantial or High, from a risk perspective, the related Standard is considered applicable and is then recorded under Question 5 of the template. See Table 3 below for indicative examples of Low, Moderate, Substantial and High social and environmental risks related to Standard 1.

Table 3. Indicative examples of risk significance for activities that may affect biodiversity and ecosystem services

Risk Significance	Example
Low	Project to promote transboundary cooperation and integrated water resources management of shared river basin. Project activities involve convening transnational working group and research studies on water usage, with no demonstration/pilot activities or IWRM plans. No or low risk to biodiversity and ecosystem services from project activities Project to support mapping of habitats, species
Moderate	Project to support alternative livelihoods and food security through expansion of existing fish farming in long-ago modified/degraded habitats. Potential moderate risks to biodiversity and ecosystems include nutrient and effluent buildup that could contaminate nearby streams, disease and parasite outbreaks, escape of non-native species Project that supports small-scale afforestation with ecologically appropriate local species
Substantial	Project to rehabilitate illegal mining area in buffer zone to a protected area Project that supports development of a national plan that incentivizes agricultural expansion A micro-hydro (run-of-river) project designed to increase energy access for a remote rural community could have an impact on fisheries and fish movement (this example would likely be considered High Risk if there were multiple run-of-river projects being put in place on the same river which would greatly increase the cumulative impacts, or if the target area is considered critical habitat for freshwater biodiversity)
High	Project to promote lower carbon emissions by building a solar energy farm includes construction of transmission lines through critical habitat. Potential high risks to biodiversity and ecosystems include habitat fragmentation and alteration of habitat of threatened species Project to promote alternative livelihoods includes commercial forest harvesting operations of plantation forests in areas adjacent to national park. Potential high risks to biodiversity and ecosystems include degradation of biodiversity values in landscape of national park, disruption of biological corridors, conversion of critical habitat through edge effects

3.3 Categorization of the Project

As noted above, the screening process leads to an overall risk categorization of the project, which is based on the highest level of significance of any one risk. For example, if five different risks were identified, one with a high level of significance and the other four with a moderate level of significance, the project would be categorized as “High Risk.” In cases where screening identifies multiple risks of Moderate or Substantial significance, users may need to decide to categorize the project at a higher risk categorization level given the potential cumulative nature of the risks and/or complexity of assessing and managing a wide range of risks. The Project Risk categorization determines the nature and scope of assessment that will be required.

4. Assessment

If Standard 1 is determined to be applicable for the project, potential impacts on natural resources, biodiversity, ecosystems and ecosystem services need to be examined as an integral part of assessing the project's full range of potential adverse social and environmental impacts.

Social and environmental assessment integrates social and environmental considerations into project decision-making so that adverse impacts can be avoided and benefits can be delivered in an appropriate manner. The assessment provides data and analysis for preparing mitigation and management measures.

Assessments are to be conducted with the meaningful and effective participation of the affected peoples concerned, whose inputs and contributions are to be reflected in the assessment report's analysis and conclusions. Please refer to the SES Guidance Notes on Social and Environmental Assessment and Management as well as Stakeholder Engagement in the SES Toolkit.

The assessment and development of management measures must integrate relevant requirements not only from Standard 1, but also from all applicable SES Principle(s) and/or Standard(s). The general steps and requirements for assessing the potential social and environmental impacts of Moderate, Substantial and High Risk Projects are outlined in the UNDP Guidance Note on Social and Environmental Assessment in the SES Toolkit. Complex Moderate Risk projects require targeted forms of social and environmental assessment, while projects that present potentially Substantial and High Risks require more extensive forms of assessment, i.e. Environmental and Social Impact Assessment (ESIA) or Strategic Environmental and Social Assessment (SESA) (noting that ESIAs for High Risk projects will be more involved and complex than those for Substantial Risk projects).

Timing of assessments: Social and environmental assessment is most effective when initiated early during project preparation as it allows for the timely identification of potential risks and impacts and incorporation of impact avoidance and mitigation measures into the project design process – that is, at a time when they can be more easily accommodated and budgeted. Early assessment also ensures that the project is designed in compliance with applicable social and environmental policies, laws, regulations, standards, and UNDP requirements. However, many UNDP projects may not have full information regarding specific project components and locations at the time of project appraisal. Some projects may require that assessments be financed as part of the project budget (that is, in the first phase of project implementation).

Where project components and locations are not yet fully defined, then a framework approach (e.g. an Environmental and Social Management Framework, ESMF) would need to be utilized that includes preliminary social and environmental analysis and establishes procedures for undertaking assessments and developing appropriate management measures/plans during project implementation. However:

- ***In all cases the required social and environmental assessment and adoption of appropriate mitigation and management measures must be completed, disclosed, and discussed with stakeholders (via applicable consultation processes) prior to implementation of any activities that may cause adverse social and environmental impacts. Activities that cannot proceed until completion of the assessment and adoption of mitigation measures should be clearly identified in the Project Document.***

4.1 Address Standard 1 Requirements in the Social and Environmental Assessment

The CBD treaty requires parties to apply impact assessment to projects, programmes, plans and policies with a potential negative impact on biodiversity (Article 14). Standard 1 reflects this requirement and calls for examination of significant direct and indirect threats to natural resources, biodiversity, ecosystems and ecosystem services. The following sections outline key issues and requirements to be considered during the social and environmental assessment process (both for targeted assessments for Moderate Risk projects and more comprehensive assessments for Substantial and High Risk projects).

4.1.1 Direct, indirect and cumulative impacts on habitats, species, ecosystems

The social and environmental assessment process needs to consider the full range of factors that may adversely impact biodiversity and ecosystem services (see Standard 1, para. 6). These may include, *inter alia*:

- risks of habitat loss, degradation and fragmentation (e.g. changes in land/marine use, potentially leading to habitat conversion)
- risks to species (e.g. endemic, migratory), including overexploitation, incidental take and illegal trade
- overutilization of natural resources such as water, forest and plant resources, sands and soils
- pollution through introduction of emissions, effluents, chemicals, plastics
- hydrological changes due to effects on water recharging and river flow regimes
- nutrient loading through intensified agricultural/aquacultural activities
- introduction of invasive alien species and genetically modified species
- climate change impacts
- differing values (e.g. social, cultural, economic) attached to biodiversity and ecosystem services by potentially affected communities.

Box 4. Guidance on biodiversity-inclusive impact assessment

- CBD Voluntary Guidelines on Biodiversity-inclusive Impact Assessment (CBD Decision VIII/28)
- Good Practices for Biodiversity Inclusive Impact Assessment and Management (2015)

Building off of the screening process, the assessment includes scoping, baseline studies, and impact analysis to examine the biodiversity attributes and ecosystem services likely to be affected by the project. Box 4 includes resources on good practices for biodiversity-inclusive assessments. The scoping stage helps to determine which direct and indirect biological impacts are likely to be significant, and thereby determines the focus issues of the impact assessment. Scoping also determines the appropriate spatial and temporal scope of the assessment and identifies data gaps and needed baseline studies. Consulting with government officials, conservation organizations and local communities is important at this stage to help identify key biodiversity values and impacts, including those linked to social issues and local livelihoods.

Baseline studies define the habitats that will be affected in the project's the area of influence, describing the distribution, range and status of the species and biological communities present, and the location, status and main biodiversity values of nearby protected areas or other important areas for biodiversity. Baseline studies should be informed by a literature review and initial desktop analysis, utilizing the most up-to-date information as is available (and noting limitations of the data where warranted). Landscape/seascape mapping may form part of the review and analysis (especially important for projects that may impact natural or critical habitats). [30] Biological baseline surveys with detailed ground sampling may be required, conducted over a number of seasons to account for varying conditions (note: appropriate lead times required). Habitat adjoining the project site may have to be surveyed to determine connectivity with habitat on the project site and to assess the likely edge effects on this adjoining area.

Potential adverse impacts from project activities need to be considered not just for primary project site or areas, but more broadly in the project's area of influence which may include associated facilities (not funded or financed

[30] Numerous regional ecosystem mapping efforts have been undertaken by a range of organizations. For example, United Nations Environment Programme-World Conservation Monitoring Centre (UNEP-WCMC); Ocean Data Viewer; UN Food and Agriculture Organization (FAO) Forest Resource Assessments; The Nature Conservancy; NatureServe (Terrestrial Ecosystems Map for South America); Global Forest Watch; Conservation International; BirdLife International; Integrated Biodiversity Assessment Tool (IBAT); International Union for Conservation of Nature (IUCN); Group on Earth Observation (GEO) Global Earth Observation System of Systems (GEOSS); etc.). This information can directly inform assessments of landscape integrity, resource development and management analyses, ecosystem services valuations, and reporting and prediction of environmental trends.

as part of the proposed project but whose viability and existence depend on the project) and areas potentially affected by induced and cumulative impacts from incremental adverse impacts of the project when added to other past, existing, planned or reasonably predictable future projects and developments (e.g. incremental contribution to pollutant emissions, forest depletion due to multiple logging concessions). Assessing cumulative impacts enlarges the scale and timeframe for assessing combined effects of multiple activities and impacts.

The impact analysis assesses the project-related direct, indirect and cumulative impacts on populations, species, ecosystems, and ecosystem services (see Annex 1) identified during scoping and the baseline studies. The assessment determines each impact's nature, scale, reversibility, magnitude, likelihood, extent, frequency/duration and timing (e.g. one-off or repetitive, impacts on breeding or migration) and effect. Determining the significance of impacts involves considering the type of habitat and ecosystem services affected by the project and their biodiversity values as assessed and viewed by experts, local communities and other project stakeholders.

Standard 1 requires identification of habitat type and applies increasingly stringent requirements based on an areas' biodiversity values (it is important to review the definitions of habitat types in Section 2.3). An area of habitat rarely has uniform biodiversity value due to natural variability and commonly contains a mosaic of areas with different degrees of modification, which can make the identification of habitat as either natural or modified a complex task. This determination is best done by suitably qualified professionals who can classify habitats based on a range of indicators (noting that there is no prescriptive set of metrics for determining whether a habitat is modified or natural given the wide range of habitats in which projects take place). Delineating modified and natural habitats should not focus on the project site in isolation, but on the greater landscape/seascape in which the project is located.

Modified habitats. Modified habitats usually have a lower biodiversity value than natural habitat, but can still harbor endangered species, contain areas of rare remnant vegetation or provide unique ecosystems. In addition, biodiversity values can be high in the transition zone between modified habitat and undeveloped natural habitat, as many species are able to find suitable ecological niches and these areas can serve as breeding grounds for adaptive variations. Some modified wetland habitats (e.g. reservoirs), for example, can be of global significance if they attract large concentrations of birds.

Natural habitats. Determining what constitutes natural habitat requires use of credible scientific analysis and best available information, including local knowledge as well as use of relevant expertise in conducting the assessment. An assessment of current and historic conditions should be conducted. It is important to note that natural habitats are not to be interpreted solely as untouched or pristine habitats. The majority of habitats designated as natural will have undergone some degree of modification from human activity. The question is the degree of impact. Where habitats still contain principal characteristics of its native ecosystem(s), such as complexity, structure, and diversity, then it should be considered natural habitat regardless of the presence of some invasive species, secondary forest, human habitation or other alteration.

Critical Habitats. When project activities are proposed in a critical habitat (again, see Section 2.3), qualified and experienced external experts need to be retained to assist in conducting the assessment. This is also needed when the project's area of influence may extend into critical habitat.

If project activities will take place within or adjacent to a protected area (see Box 3), it is necessary to determine if proposed project activities are permissible by law and in accordance with the provisions of the area management plans. National land and resource use plans, including the NBSAP, should also be considered. In many countries, project site investigation and environmental and social impact assessment activities can only be undertaken within protected areas with the prior consent of the relevant authority.

Obtaining approval for proposed project activities permitted within a protected area will often rest on the approval authority's understanding of the activities, and likely impacts on protected area values. Accordingly, early

and clear consultation with authorities and protected area sponsors (including relevant local communities and indigenous peoples) is critical, usually commencing during the development of the project concept.

The boundaries of some protected areas may be ill-defined on maps or in the field. In these instances, the project developer should consult with the protected area management authority to accurately identify the boundaries in relation to proposed project activities. Buffer zones may be legally demarcated around protected areas or be informally recognized. If project activities are proposed within buffer zones, it is advisable to identify the area and undertake consultation and related assessment activities.

Consider differing values (e.g. social, cultural, economic) attached to biodiversity by potentially affected communities (SES, Standard 1, para. 6). Biodiversity is viewed differently by varying stakeholders. For example, a forested area considered important as a carbon sink by national authorities may be considered sacred by local communities (making Standard 4 also relevant). As part of the assessment process, it is important to establish a core set of "biodiversity values" that different stakeholders – in particular, project-affected communities – attach to particular attributes of potentially affected biodiversity and ecosystem services. Stakeholder engagement is key to understanding the range of potential impacts the project may have on differing biodiversity values.

For some projects, biodiversity values may be numerous and attention to potential effects may need to be prioritized. For example, the "irreplaceability" of a feature could be considered (e.g. based on its unique character or the number of spatial options left where conservation can occur) or a feature's "vulnerability" (e.g. based on the time available for conservation before the feature is significantly compromised or lost). Relative importance of conserving a wide range of identified biodiversity values and ecosystem services could be determined by the status of irreplaceability in the landscape/seascape and vulnerability in being able to remain there.

Utilize a landscape/seascape approach (SES, Standard 1, para. 6). Project-related impacts should be assessed across potentially affected landscapes or seascapes, particularly where impacts may adversely affect natural or critical habitats. The term "landscape/seascape" is broadly defined and might correspond to an ecoregion, a biome, or any other ecologically significant unit of space on a regional or sub-regional level (i.e. not site specific). The intention here is to identify project-related impacts, especially those on habitat connectivity and/or on downstream catchment areas, outside the boundaries of the project site. Landscape/seascape analysis is a fundamental step in determining ecologically-appropriate mitigation options that align with broader conservation efforts in the region. This type of analysis – which seeks to assess issues in an integrated manner, combining natural resources management with environmental and livelihood considerations – is especially important in preventing degradation and fragmentation of natural habitat, especially from cumulative impacts.

***Ensure use of qualified experts*.** Qualified professionals are needed to properly identify biodiversity values and ecosystem services and to propose appropriate mitigation options (SES, Standard 1, para. 7). Specialist selection will vary depending on needed skillsets. For example, a biologist familiar with specific taxon may be needed, or an ecologist with regionally-specific experience. Evolutionary or landscape biologists might assist in the identification of certain biodiversity values. Biodiversity management specialists familiar with specific sectoral or industry interventions (e.g. forestry, agribusiness, extractive industries) may assist in identifying mitigation options in line with best international practice that also meet the SES requirements.

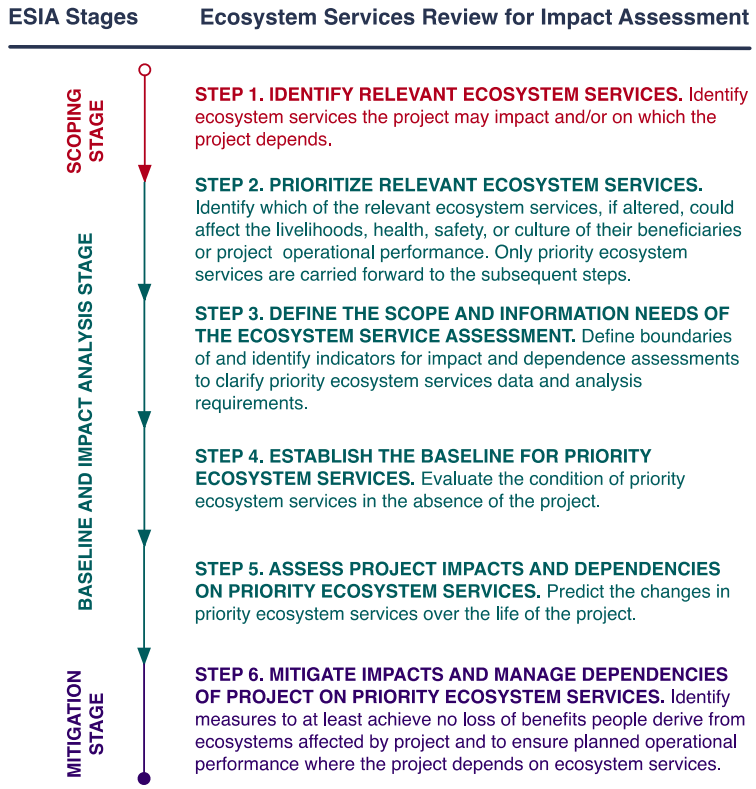
4.1.2 Impacts on ecosystem services

Standard 1 requires that potential impacts on ecosystem services be analyzed in the assessment process. Standard environmental and social impact assessments (ESIA) have typically not accounted for a project's impacts on the benefits derived from ecosystem services (see Annex 1 for an indicative list of ecosystem services). That is now changing. Integrating impacts on ecosystem services in the assessment process focuses attention on both the socio-economic dimensions of a project's environmental impacts and the implications of ecosystem change for project performance.

For example, a project that supports the expansion of shrimp farming in a tropical coastal area would need to account for potential adverse impacts on mangrove forests and the range of ecosystem services they provide (e.g. provisioning services in the form of habitat for other fish, regulating services in the form of protection from natural hazards). Projects that support intensification of agricultural and livestock production would need to consider potential degradation of a range of ecosystem services such as erosion control, nutrient cycling, and freshwater supply (e.g. regulating services, supporting services).

Figure 2. Six steps for integrating ecosystem services in the assessment process

(WRI Ecosystem Services Review for Impact Assessment)



Potential impacts on ecosystem services can be analyzed in an integrated ESIA framework (see Figure 2).[31] Key to the assessment process is the identification of "priority ecosystem services" and the development of measures to achieve no loss of the benefits that people derive from these services.

Priority ecosystem services are those services on which project impacts would affect the well-being (e.g., livelihoods, health, safety, culture) of the ecosystem service beneficiaries, and those services that could prevent the project from achieving planned development outcomes and outputs. Key questions for determining relevant priority ecosystem services include:

- Could the project affect the ability of others to benefit from this ecosystem service?
- Is this ecosystem service important to beneficiaries' livelihoods, health, safety, or culture?
- Do beneficiaries have viable alternatives to this ecosystem service?
- Could this ecosystem service change in ways that could negatively affect operational performance? (For example, abstraction of groundwater for irrigated farming could result in the drying up of local streams or lakes, affecting fisheries production, recreational use of the wetlands, and biodiversity outcomes.)

[31] World Resources Institute has developed a methodology for integrating the review of impacts on ecosystem services as part of the assessment process World Resources Institute, Weaving Ecosystem Services into Impact Assessment: A Step-by-Step Method and Technical Appendix, (2013), by Florence Landsberg, Jo Treweek, M. Mercedes Stickler, Norbert Henninger, Orlando Venn, available at http://www.wri.org/publication/weaving-ecosystem-services-into-impact-assessment. Detailed guidance is available in WRI's Technical Appendix.

- Does the project have viable alternatives to this ecosystem service?

Where avoidance of adverse impacts on priority ecosystem services is not possible, then the SES require that mitigation and management measures aim to maintain the value and functionality of the affected ecosystem services.

It must be noted that Standard 1 focuses on project-level social and environmental impacts to biodiversity and ecosystem services. The Standard does not provide specific guidance on national-level valuation of ecosystem services[32] or the development of national policy-level options assessments for protecting ecosystem services, as outlined in UNDP's Targeted Scenario Analysis.[33]

5. Management and Monitoring

Mitigation and management measures need to be developed and implemented for each impact and risk identified in the social and environmental assessment. These measures aim to avoid or reduce adverse biodiversity impacts, following a mitigation hierarchy, seeking to achieve at a minimum no net loss of biodiversity and net gains where possible. Alternative project designs and locations are to be considered to avoid potential impacts. Mitigation and management measures need to meet (and ideally exceed) not only Applicable Law (i.e. national law and obligations under international law) but also the requirements specified in Standard 1. These measures are typically presented in an Environmental and Social Management Plan (ESMP) or other relevant management plan that also set out the institutional arrangements (e.g. roles and responsibilities) and resources required to manage biodiversity impacts, and the implementation and monitoring programs.

Timing of completion of biodiversity management plans. As depicted in Figure 1 and explained in the Guidance Note on Social and Environmental Assessment and Management, complex Moderate, Substantial and High Risk Projects require a management plan for consideration by the PAC at project appraisal (management measures for straightforward Moderate Risk projects need to be outlined in the SESP). The form of this plan will vary depending on the nature and scale of potential risks and the timing of assessments. The default position is for assessments and the development of management plans be undertaken prior to project appraisal. Where the assessment must be funded through the project budget and/or is not possible during project design when site locations are not yet known and hence conducted during project implementation, the Project Document needs to incorporate activities and budget to conduct appropriate assessment and the development of management measures/plans during project implementation. In such cases, an Environmental and Social Management Framework should be prepared prior to project approval to outline the procedures for subsequent (and often landscape or site-specific) assessments and management plans, including biodiversity management plan(s). Whether the assessment is conducted pre- or post- appraisal, the following SES requirement must be observed:

- ***Appropriate management plans need to be in place and mitigation measures taken prior to the conduct of any activity that may cause adverse impacts on biodiversity and ecosystem services.***

5.1 Address Standard 1 Requirements in Management Plans/Measures

Standard 1 contains a range of requirements that need to be addressed in the development of management measures to avoid or reduce impacts on biodiversity and ecosystem services. Not all requirements may be relevant

[32] See for example The Economics of Ecosystems & Biodiversity (TEEB), Mainstreaming the Economics of Nature (Synthesis Report, 2010), available at http://www.teebweb.org/our-publications/teeb-study-reports/synthesis-report/.

[33] See UNDP's Targeted Scenario Analysis methodology (2013), available at http://www.undp.org/content/undp/en/home/librarypage/environment-energy/environmental_finance/targeted-scenario-analysis.html.

to a particular project. The paragraphs below provide guidance on how to address various Standard 1 requirements in the design of appropriate management measures, where relevant.

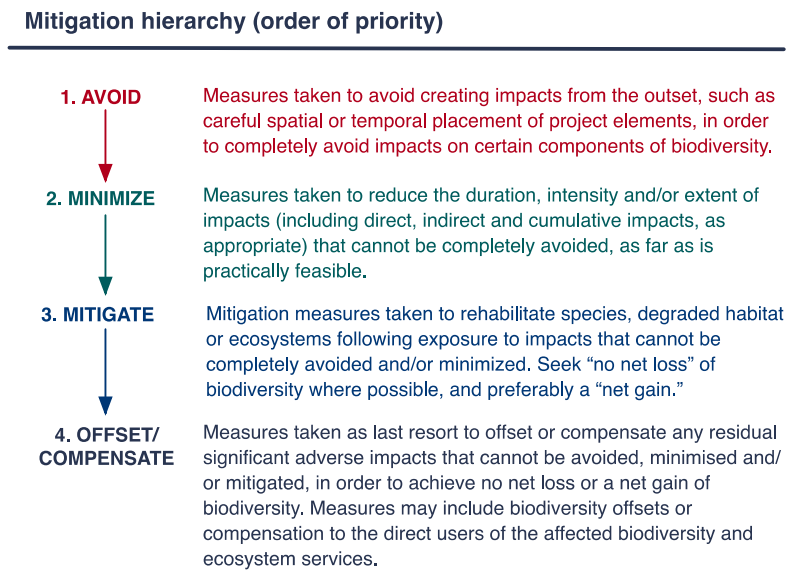
5.1.1 Precautionary approach

The precautionary approach or principle (Standard 1, para. 5) calls for a risk-averse and cautious approach in cases where impacts cannot be predicted with confidence, and/or where there is uncertainty about the effectiveness of mitigation measures.[34] If the impacts on important biodiversity resources cannot be established with sufficient certainty, then the activity should either be halted until further information is available, or a 'worst-case' scenario (e.g. activity considered High Risk) should be adopted with regard to biodiversity impacts and the project's design, implementation and management should seek to ensure that risks are avoided and, if that is not possible, minimized to acceptable levels. This approach is especially relevant when the project includes activities that may have adverse impacts on habitats and biodiversity but the specific locations will not be defined until the project implementation phase.

5.1.2 Mitigation hierarchy

Risk reduction measures need to follow a mitigation hierarchy (see Figure 3). Standard 1 (para. 11) places significant emphasis on the avoidance of impacts on biodiversity and ecosystem services as the first step in the hierarchy of actions required to address potential adverse impacts. Avoidance of impacts is sometimes the only means to prevent irreplaceable loss of biodiversity and associated ecosystem services. The emphasis on avoidance in the mitigation hierarchy should thus reflect the irreplaceability and vulnerability of the affected biodiversity/ecosystem service.

Figure 3. Mitigation hierarchy



Where avoidance of adverse impacts is not possible, the next step is to minimize the duration, intensity and extent of potential impacts. Residual impacts are then subjected to mitigation measures (e.g. restoration of species, habitats) designed to achieve at least "no net loss" of biodiversity where possible and preferably a net gain (note that net gains are required for projects that may affect critical habitats; see below). As a last resort, significant residual impacts are to be offset or compensation provided to direct users of affected biodiversity.

[34] Principle 15 of the Rio Declaration on Environment and Development (1992) notes that "[w]here there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent serious threats of environmental degradation." Rio Declaration available at http://staging.unep.org/Documents.Multilingual/Default.asp?documentid=78&articleid=1163. For further information on the precautionary approach, see UNESCO, The Precautionary Principle, 2005, available at http://unesdoc.unesco.org/images/0013/001395/139578e.pdf.

"No net loss" is defined as the point at which project-related impacts on biodiversity are balanced by measures taken to avoid and minimize the project's impacts. The concept refers to the biodiversity values of interest associated with the particular project site and their conservation on an ecologically relevant scale. Typically the loss of identified biodiversity values would be quantified and then paired with an assessment to determine if losses could be balanced by gains made through mitigation measures or, as a last resort, offsets (see below). Where the gain exceeds the loss, the term "net gain" may be applied.

Appropriate methods and metrics will vary from site to site, and competent specialists would need to demonstrate that "no net loss" could be achieved (e.g. through creation or restoration of an equivalent area and quality of habitat that had been destroyed). It must be noted that "no net loss" is not possible in all cases, e.g. where endemic species have highly restricted distribution or potentially affected biodiversity is irreplaceable. In such cases, redesigning project activities to avoid potential adverse impacts is necessary.

5.1.3 Siting Preference

Project activities (and associated facilities) that may have adverse impacts should be sited as much as possible in already degraded areas rather than contributing to new conversion/degradation of natural habitats (Standard 1, para. 8). Selection of project areas with low value for biodiversity and ecosystem services and low sensitivity to anticipated impacts should be demonstrated in the alternatives analysis conducted as part of the assessment. As part of early project due diligence (e.g. concept development, scoping exercise), UNDP should also ensure that projects would not be situated in areas that have been recently modified (e.g. clearing of natural forest, filling or channeling of wetlands), whether in anticipation of the project or as part of general conversion/degradation processes.

This raises the question for how much time does habitat degradation have to occur before an area is considered modified or of low biodiversity value? Habitat should be considered modified if it has existed in that state for an extended period of time and is not otherwise likely to be returned to a natural state. How long? Certain sustainability standards set a baseline year. For example, the Roundtable for Sustainable Palm Oil (RSPO) sets 2005 as a baseline year for no new plantings in areas of High Conservation Value or primary forests.[35] Habitat should not be considered modified if it was cleared in anticipation of the project. Also, natural habitats that have experienced natural disturbances (e.g. forest fire, floods, hurricanes or tornados) should not be considered modified habitat.

5.1.4 Modified habitats

Standard 1 requires project developers/implementers to minimize further "unwarranted" conversion or degradation of modified habitat (Standard 1, para. 9). Since nearly any converted area could be considered modified, it is not possible to avoid siting some projects with physical footprints in modified habitats. The point here is to avoid contributing to further degradation and/or conversion of modified habitats that retain important biodiversity values. Modified habitats that still retain significant biodiversity values should not be converted, and conversion of areas with lesser biodiversity values should be minimized where technically and financially feasible. Footprint minimization should be a guiding design principle. Impacts on any globally significant biodiversity within the modified habitat (e.g. reservoirs that attract large concentrations of birds) should be assessed and monitored. This will be particularly important in buffer zones to protected areas where wildlife use adjoining modified habitats.

Previously intact habitats recently converted by unsustainable land/marine use practices should not be considered modified habitat nor should natural habitats recently affected by natural disturbances such as fire or storms.

[35] Roundtable for Sustainable Palm Oil (RSPO), Principles and Criteria, April 2013, no. 7.3, at http://www.rspo.org/key-documents/certification/rspo-principles-and-criteria.

5.1.5 Natural habitats

Adverse impacts on natural habitats are to be avoided. Recall that natural habitats are defined as land and water areas where the biological communities are formed largely by native plant and animal species, and where human activity has not essentially modified the area's primary ecological functions and species composition.

Where avoidance is not possible, Standard 1 requires that the following criteria be met in order for the project to continue (Standard 1, para. 10). It must be noted Standard 1 (para. 19) also requires that project activities do not involve the conversion of natural forests.[36] The two main criteria are:

i. no viable alternatives exist to locate the project on heavily modified and degraded lands/marine areas rather than in natural habitat. A locations analysis to explore potential viable options should be conducted as part of the alternatives analysis of the social and environmental assessment.

ii. appropriate conservation and mitigation measures are included in the project's social and environmental management plan. Mitigation measures should be designed to achieve at least "no net loss of biodiversity" where possible, and preferably a net gain. A Biodiversity Action Plan (see Annex 2) may be required that stipulates the conservation outcomes, implementation actions, and monitoring and evaluation arrangements. Mitigation measures may include a combination of the following actions:

- onsite mitigation measures such as minimizing habitat loss, fragmentation, degradation (e.g. biological corridors, apply footprint minimization principles throughout project cycle).
- identification of 'set asides' to avoid impacts on biodiversity. Set asides are land/water areas within the project area or adjacent to it excluded from development and are targeted for the implementation of conservation enhancement measures. Set-asides will likely contain significant biodiversity values and/or provide ecosystem services of significance.
- physical restoration, reinstatement and rehabilitation. Basic principles for restoration should include (a) protection of topsoil and restoration of vegetation cover as quickly as possible after any construction or disturbance (requiring adequate separation and storage of topsoil during construction when excavations occur); (b) reestablishment of original habitat to its pre-disturbance conditions; and (c) where native species (especially protected species) cannot be retained *in situ*, consideration of conservation techniques such as translocation/relocation. Biodiversity and ecosystem functionality must be maintained or enhanced for forest restoration projects as well as for other ecosystems (e.g. coastal or ocean areas).
- as a last resort, offsetting biodiversity losses through effective long-term conservation of ecologically comparable area/s elsewhere (comparable in size, quality and function), while respecting any ongoing use rights of indigenous peoples or traditional communities. See below for offset requirements.
- again, as a last resort, compensating the direct users of the affected biodiversity, commensurate with the loss caused by the project (e.g. lost production or resource benefits due to project-related access restrictions to forests or other areas) through financial or other forms of compensation. Payment for Environmental/Ecosystem Services (PES) may be a form of compensation (acknowledging that PES is often utilized as a stand-alone program to encourage conservation outcomes) (see Box 5).

Box 5. Payment for Environmental/Ecosystem Services (PES)

[36] Natural forests are forest lands and associated waterways where the ecosystem's biological communities are formed largely by native plant and animal species and where human activity has not essentially modified the area's primary ecological functions. Global Forest Watch includes data and tools to identify areas of deforestation.

Payments for environmental services (also known as payments for ecosystem services or PES), are payments to farmers or landowners who have agreed to take certain actions to manage their land or watersheds to provide an ecological service. As the payments provide incentives to resource owners and managers, PES is a market-based mechanism, similar to subsidies and taxes, to encourage the conservation of natural resources.

A number of risks need to be considered in relation to PES schemes, including insecure tenure rights of landholders, leakage of pressure on ecosystem services to other areas, perverse incentives that harm biodiversity (e.g. planting non-native species), corruption and elite capture.

A wide range of guidance is available on developing PES.[37]

5.1.6 Critical habitats

UNDP has a large portfolio of projects designed to strengthen biodiversity in areas of critical habitat. However, other UNDP supported projects may take place in areas near or within critical habitats that, unless managed properly, could inadvertently lead to adverse social and environmental impacts. In accordance with the SES (Standard 1, para. 13), no project activity is permitted in areas of critical habitat unless all of the following are demonstrated:

i. no measurable adverse impacts on the criteria or biodiversity values for which the critical habitat was designated, and on the ecological processes supporting those biodiversity values (determined on an ecologically-relevant scale).
    - This requirement explicitly emphasizes the importance of considering biodiversity values *across an ecologically relevant scale*, including the landscape/seascape scale. Project developers should work with recognized ecologists and species specialists in defining critical habitat based on the biodiversity values triggering that critical habitat designation, not based on an imposed artificial project boundary in a landscape/seascape. The conservation of the ecological processes necessary to maintain the critical habitat is clearly as important as the conservation of the individual values themselves. Many biodiversity values are interdependent and cannot be conserved in isolation.
    - It is critical to maintain biological corridors and habitat connectivity to provide for wildlife passage to key habitats outside and between critical habitats (e.g. to allow migratory fish to travel between freshwater spawning sites and the sea, or to allow animal migration)

ii. no reduction of any recognized Vulnerable, Endangered, or Critically Endangered species.[38]

iii. any lesser impacts are mitigated (see types of mitigation measures noted above under natural habitats).

iv. a robust, appropriately designed, and long-term Biodiversity Action Plan (see Annex 2) is in place to achieve net gains of those biodiversity values for which the critical habitat was designated. For projects solely designed to strengthen biodiversity and maintain or restore ecosystems in areas of critical habitat, the project document itself would constitute such a plan.

[37] UNDP provides a summary page on PES at http://www.undp.org/content/sdfinance/en/home/solutions/payments-for-ecosystem-services.html. See also CIFOR, Payments for Ecosystem Services (PES): A practical guide to assessing the feasibility of PES Projects (2014), available at http://www.cifor.org/library/5260/payments-for-ecosystem-services-pes-a-practical-guide-to-assessing-the-feasibility-of-pes-projects/; The Katoomba Group, UNEP, Forest Trends, Payments for Ecosystem Services: Getting Started, A Primer (2008), available at http://www.unep.org/pdf/PaymentsForEcosystemServices_en.pdf.

[38] As listed on the International Union for the Conservation of Nature (IUCN) Red List of Threatened Species, at http://www.iucnredlist.org/.

5.1.7 Protected areas

UNDP has a major programmatic focus on strengthening protected areas around the world.[39] By design such projects would most likely address the critical habitats and protected areas requirements (see below) of Standard 1. However, UNDP needs to ensure that projects across all sectors that could affect protected areas also address these requirements. For protected areas, in addition to the above critical habitats requirements, the following will also apply:

i. act in a manner consistent with any existing protected area management plans
ii. consult protected area sponsors and managers, local communities, and other key stakeholders on the proposed activities
iii. implement additional programmes, as appropriate, to promote and enhance the conservation aims and effective management of the area.

In many countries, project site investigation and environmental and social impact assessment activities can only be undertaken within protected areas with the prior consent of the relevant authority. Obtaining approval for proposed project activities permitted within a protected area will often rest on the approval authority's understanding of the activities, and likely impacts on protected area values. Accordingly, early and clear consultation with authorities and protected area sponsors (including relevant local communities and indigenous peoples) is critical, usually commencing during the development of the project concept.

Project activities proposed inside legally protected or internationally recognized areas should result in tangible benefits to the conservation objectives of that area, and clear conservation advantages should be gained by the presence of the project (this goes for all projects, not just those focused on strengthening protected areas). This can be achieved through implementing activities that, for example, provide support for park management, address alternative livelihoods for any affected local communities, or support for research needed for the conservation aims of the protected area. The effectiveness of protected area management should be reviewed and if no management plan exists for the affected protected area, UNDP should consider supporting the development of one with the suitable government agencies, conservation organizations, and local communities.[40] An important resource for working in protected areas is the IUCN Best Practice Guidelines on protected areas.

The boundaries of some protected areas may be ill-defined on maps or in the field. In these instances, the project developer should consult with the protected area management authority to accurately identify the boundaries in relation to proposed project activities. Buffer zones may be legally demarcated around protected areas or be informally recognized. If project activities are proposed within buffer zones, it is advisable to identify the area and undertake consultation and related assessment activities.

Strengthening or expanding protected areas may lead to the restrictions on access and certain types of activities (e.g. resource extraction, hunting, agriculture, fisheries). Where access restrictions of access may have potential adverse impacts on livelihoods of local communities, targeted measures are required to reach agreements and to restore livelihoods. The requirement of Standard 5 Displacement and Resettlement would be applicable. If such communities include indigenous peoples, then requirements of Standard 6 Indigenous Peoples would also apply.

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[39] See UNDP's report Protected Areas for the 21st Century, at http://www.undp.org/content/undp/en/home/librarypage/environment-energy/ecosystems_and_biodiversity/protected_areas_forthe21stcentury/.

[40] The Management Effectiveness Tracking Tool (METT) is commonly used for assessing effectiveness of protected area management; an updated handbook on utilizing the METT is available at https://www.protectedplanet.net/system/comfy/cms/files/files/000/000/045/original/WWF_METT_Handbook_2016_FINAL.pdf. The METT is integrated in the Global Environment Facility Biodiversity Tracking Tools, available at https://www.thegef.org/documents/gef-biodiversity-tracking-tool-gef-6.

Enforcement of protected areas and wildlife corridors requires special attention given serious risks to security and human rights. Rangers may face threats from people involved in illegal activities (e.g. poaching, logging, mining, illegal fishing) in these areas. In addition, rangers and other enforcement personnel may pose risks to local communities, including those that engage in traditional livelihoods and practices. Projects which engage/support enforcement personnel need to carefully screen such health, safety and security risks (which fall under other SES Principles/Standards, e.g. Principle on Human Rights; Standard 3 on Community Health, Safety and Security). Where a project engages enforcement personnel for protected areas, a security risk assessment should be undertaken as part of the assessment process and a corresponding security risk management plan should be developed. Enforcement personnel need to be appropriately vetted and trained, with appropriate measures and resources provided to promote their health and safety (see also Standard 7 on Labour and Working Conditions). Codes of conduct may need to be developed to reinforce proper conduct. Area-specific grievance mechanisms should be in place for local communities to raise concerns and complaints, as well as a monitoring mechanism to identify any serious incidents.

5.1.8 Biodiversity offsets

Biodiversity offsets are measurable conservation actions intended to compensate for unavoidable residual harm caused to biodiversity by project activities. Offsetting usually aims to create ecologically comparable areas (comparable in size, quality and function), close to the affected project site if possible, in which biodiversity is managed and protected. Standard 1 sets strict requirements regarding the utilization of offsets as part of a mitigation strategy for impacts on biodiversity and ecosystem services (see Box 6).

Biodiversity offsets may be considered only as a last resort after appropriate avoidance, minimization and restoration measures have been applied. The decision to undertake a biodiversity offset therefore should never be a substitute for the implementation of good management practices on the actual project site. Biodiversity offsets are only to be undertaken if significant residual impacts remain after *all prior steps* in the mitigation hierarchy (see Figure 3 above) have been fully assessed and implemented.

Offsets must be designed to achieve *measurable conservation outcomes*, that is, an agreed set of conservation actions which could demonstrate how biodiversity losses caused by the project would be balanced by equivalent biodiversity gain. Biodiversity offsets have to be commensurate to the magnitude of the residual impact of the project and seek to deliver long-term *in situ* (that is, on-the-ground) conservation outcomes at an appropriate geographic scale with respect to the particular biodiversity value in question. It should be noted that training or capacity building or financing research would rarely be considered a demonstrable “on-the-ground” outcome. Also, “in situ” should not be interpreted as “on the project site” but rather “in the natural environment” and on an ecologically relevant scale with respect to the biodiversity value in question.

Offsets must be designed at a minimum to achieve "no net loss" of biodiversity for residual impacts on modified and natural habitats and "a net gain"[41] of biodiversity for critical habitats. This requires that the pre-project net area and quality of biodiversity be maintained and/or enhanced in terms of key biodiversity components such as species diversity (numbers and/or composition), habitat extent and/or structure, and ecosystem function. Actions to deliver no net loss/net gain conservation outcomes for a specific development project may include management actions such as improving the conservation status of an area by reintroducing target native species, installing erosion control works to stabilize land and promote re-vegetation, or establishing ecosystems where they did not previously exist such as new wetlands. Alternatively, it could involve actively protecting an area to prevent degradation and allow regeneration, or reducing or removing biodiversity threats or pressures. For example, pressure may be removed by entering into contract or covenant agreements with individuals or communities in which they give up the right to convert habitat in the future in return for compensation payments or other benefits now. Alternatively, it could involve patrolling an area to prevent harvesting or fencing it to prevent grazing. As noted earlier, "no net loss" is not possible in all cases, e.g. where endemic species have highly restricted distribution or potentially affected biodiversity is irreplaceable. In such cases, redesigning project activities to avoid potential adverse impacts is necessary.

Box 6. SES requirements on use of biodiversity offsets (Standard 1, para. 12)

- Considered as last resort only after appropriate avoidance, minimization, and restoration measures have been applied
- Achieve measureable conservation outcomes in situ and on an appropriate geographic scale
- Result in no net loss and preferably a net gain of biodiversity for modified and natural habitats
- Considered only in exceptional circumstances for critical habitats, and in such circumstances a net gain is required
- Adhere to the "like-for-like or better" principle
- Involve external experts with knowledge in offset design and implementation

Biodiversity offsets must adhere to the principle of "like-for-like or better," which indicates that biodiversity offsets must be designed to conserve the same biodiversity values that are being impacted by the project, or seek to conserve areas of higher biodiversity values ('trading up'). A precautionary approach is recommended for the design of biodiversity offsets to increase the likelihood of successful outcomes. For example, a 1:1 ratio of habitat area replacement may be insufficient to ensure no net loss due to edge effects (e.g., drying, fire, blow-down, etc.) and partial failure of rehabilitation or protection methods. There is no generally accepted standard for an offset ratio, but ratios of 3:1, 10:1, and greater are considered best practice.

Marine offsets may present have a set of additional challenges due to a range of factors, including (1) biophysical differences, such as greater marine connectivity, lower likelihood of restoration success, and data paucity, and (2) social or governance differences, such as a lack of private ownership and a greater probability of leakage for marine offsets. Some of these inherent differences to terrestrial offsets are considered to have important implications for offset feasibility and effectiveness and need to be considered.[42]

When developing an offset, the use of experts with relevant academic qualifications in biology, ecology or ecological restoration, and experience in offset implementation in the host country or a similar developing country is required. In addition to meeting the SES requirements, current internationally recognized best practices are to

[41] Net gains are additional conservation outcomes that can be achieved for the biodiversity values for which the critical habitat was designated.

[42] See, for example, Nicole Shumway, James E M Watson, Megan I Saunders, Martine Maron, "The Risks and Opportunities of Translating Terrestrial Biodiversity Offsets to the Marine Realm," *BioScience*, Vol. 68, Issue 2, February 2018, pp. 125–133, at https://doi.org/10.1093/biosci/bix150.

be followed, such as those developed by the Business and Biodiversity Offset Programme (BBOP).[43] Biodiversity offsets should be designed to comply with all relevant national and international law, and planned and implemented in accordance with the CBD and its ecosystem approach, as articulated in NBSAPs.

International experience with biodiversity offsets indicates the need for the following additional elements to be addressed in the design of offsets:

- *Location:* biodiversity offsets should be located within the same general area as the development activity, and have connectivity with areas of continuous vegetation/habitat.
- *Additionality:* biodiversity benefits from offsets have to directly result from the additional actions that would not have occurred otherwise. An action that protects an area that is not being degraded is not an offset.
- *Leakage:* projects involving biodiversity offsets need to anticipate and seek to avoid the shifting of activities that cause adverse impacts from the offset area to other locations .
- *Timing and duration:* biodiversity offsets have to be delivered in a timely manner and be long-term. Offset implementation should commence as early as possible, ideally prior to the occurrence of project impacts.
- *Stakeholders' involvement:* dialogue and consultation with all key stakeholders and the involvement of experts is vital for biodiversity offset design. Groups and organizations with appropriate experience and local knowledge should be engaged to work closely with project proponents, including local NGOs and other community partners.
- *Financial support:* An appropriate financial mechanism (e.g. conservation trust fund) should be established to ensure sufficient and sustainable financial flows to implement the offset and ensure that all necessary gains are delivered.
- *Monitoring and enforcement:* biodiversity offsets have to be enforceable and regularly monitored and audited. This would often require that the area of offset is secured for conservation use in perpetuity to prevent further fragmentation or development.

5.1.9 Endangered species and illegal trade

For projects that may affect habitats, it is important to identify whether any threatened species may be present in the project's area of influence. A primary reference is the IUCN Red List of Threatened Species, however there may be national and regional listings that also need to be consulted. Standard 1 requires that project activities do not lead to any reduction in any recognized Vulnerable, Endangered, or Critically Endangered species (following IUCN's categories) (Standard 1, para. 13). Project locations need to be specified in order to identify whether any threatened species could be adversely impacted. Where there are endemic, restricted range species in the project area that have not been classified yet by IUCN or the host country, appropriate species specialists should be engaged to evaluate the species utilizing the IUCN criteria.

Illegal trade in protected species is estimated to be a multibillion-dollar business involving the unlawful harvest of and trade in live animals and plants or parts and products derived from them. Illegal trade runs the gamut from illegal logging of protected forests to supply the demand for exotic woods, to the illegal fishing of endangered marine life for food, and the poaching of elephants to supply the demand for ivory. Illegal trade is often unsustainable, harming wild populations of animals and plants and pushing endangered species toward extinction. Endangered animals and plants are often the target of such crime because of their rarity and increased economic

[43] See for example BBOP's principles and standards on biodiversity offsets and implementation handbook, available at http://bbop.forest-trends.org/pages/guidelines. Also see IUCN's Biodiversity Offset resources at https://www.iucn.org/theme/business-and-biodiversity/our-work/business-approaches-and-tools/biodiversity-offsets.

value. Furthermore, illegal trade negatively impacts a country's natural resources and local communities that might otherwise benefit from tourism or legal, sustainable trade.

Standard 1 (para. 14) requires that supported activities do no increase the risk of illegal trade of protected species. With 183 Parties, the Convention on International Trade in Endangered Species in Wild Fauna and Flora (CITES) remains one of the world's most powerful tools for wildlife conservation through the regulation of international trade in over 36,000 species of wild animals and plants. CITES-listed species are used by people around the world in their daily lives for food, health care, furniture, housing, tourist souvenirs, cosmetics or fashion. CITES seeks to ensure that international trade in such species is sustainable, legal and traceable. Appendices to the treaty list species threatened by international trade. The CITES Trade Database provides an accessible tool for retrieving data on species, importing and exporting countries.[44]

Wildlife trade (both legal and illegal) and biodiversity loss has also been associated with the rise of zoonotic diseases (see Box 7).

Box 7. Note on biodiversity loss, zoonoses and pandemics

According to the IPBES (Intergovernmental Platform on Biodiversity and Ecosystems Services), pandemics have their origins in diverse microbes carried by animal reservoirs, but their emergence is entirely driven by human activities. The underlying causes of pandemics are the same global environmental changes that drive biodiversity loss and climate change. These include land-use change, agricultural expansion and intensification, and wildlife trade and consumption. These drivers of change bring wildlife, livestock, and people into closer contact, allowing animal microbes to move into people and lead to infections – known as zoonotic diseases (also zoonoses).

The IPBES has highlighted numerous key points that are relevant for the assessment and management of projects that may involve or increase risks of zoonotic diseases:

- Unsustainable exploitation of the environment due to land-use change, agricultural expansion and intensification, wildlife trade and consumption, and other drivers, disrupts natural interactions among wildlife and their microbes, increases contact among wildlife, livestock, people, and their pathogens and has led to almost all pandemics.
- Biodiversity loss associated with transformation of landscapes can lead to increased emerging disease risk in some cases, where species that adapt well to human-dominated landscapes are also able to harbour pathogens that pose a high risk of zoonotic transmission.
- Pathogens of wildlife, livestock and people can also directly threaten biodiversity, and emerge via the same activities that drive disease risk in people (e.g. the emergence of chytridiomycosis in amphibians worldwide due to the wildlife trade).
- Illegal and unregulated trade and unsustainable consumption of wildlife as well as the legal, regulated trade in wildlife have been linked to disease emergence. Diseases that emerge from wildlife and spread widely in people may then threaten biodiversity outside the pathogen's original host range.
- Risk management strategies include: developing and incorporating pandemic and emerging disease risk health impact assessments in major development and land-use projects; assessing how effective habitat conservation measures including protected areas and habitat restoration programmes can reduce pandemics; reducing or removing species in wildlife trade that are identified by expert review as high-risk of disease emergence; enhancing law enforcement collaboration on all aspects of the illegal wildlife trade; promoting sustainable mechanisms to achieve greater food security and reduce consumption of wildlife.

See IPBES Workshop on Biodiversity and Pandemics, Executive Summary (2020)

[44] In addition, the UN Office on Drugs and Crimes (UNDOC) tracks seizure data and publishes important information, including the World Wildlife Crime Report (2020). See also the International Consortium on Combating Wildlife Crime (ICCWC) is a collaborative effort of the CITES Secretariat, INTERPOL, the United Nations Office on Drugs and Crime (UNODC), the World Bank and the World Customs Organization (WCO), to strengthen criminal justice systems and provide coordinated support at national, regional and international level to combat wildlife and forest crime.

5.1.10 Invasive alien species

According to the 2019 Global Assessment Report on Biodiversity and Ecosystems, nearly one fifth of the Earth's surface is at risk of plant and animal invasions, impacting native species, ecosystem functions and nature's contributions to people, as well as economies and human health. The rate of introduction of new invasive alien species seems higher than ever before and shows no signs of slowing.[45]

An alien plant or animal species is one that is introduced beyond its original range of distribution (not naturally occurring in the project area, region or country). Invasive alien species (IAS) invade or spread rapidly by out-competing native plants and animals when they are introduced into a new habitat that lacks their traditional controlling factors. Introductions can occur deliberately or accidentally (e.g. by seed or animal movement along road corridors, or from the discharge of ballast water from ships). They add to the cost of agriculture, forestry, fisheries, and other human enterprises, competing with or consuming production species, thereby reducing yields and increasing production costs. They can act as disease vectors, and can physically impede the operation of facilities (e.g. obstructing irrigation canals), thus reducing the lifespan of development investments.

IAS are a major cause of biodiversity loss and preventing the introduction of IAS avoids the often substantial costs involved in eradication and reduced production. Box 8 contains resources on IAS.

Standard 1 (para. 17) requires that (a) under no circumstances will known IAS be introduced in new environments, and (b) that no new alien species (i.e. species not currently established in the country or region of the project) will be intentionally introduced unless it is subjected to a risk assessment to determine the potential for invasive behavior and carried out in accordance with the existing regulatory framework, if such a framework exists. If a regulatory framework does not exist, its introduction should be assessed in light of the species behavior in similar conditions (e.g. climate, soils). It should have a proven record of not becoming invasive in similar growing conditions. In addition, risks of accidental or unintended introduction of invasive alien species needs to be assessed.

BOX 8. Resources on invasive alien species (IAS)

- Convention on Biological Diversity IAS website
- CBD IAS Guidance and Tools
- CBD Toolkit on IAS target of Aichi Biodiversity Target
- Invasive Species Specialist Group guidelines and toolkits

5.1.11 Biosafety risks

Modern biotechnology involves modifying the genetic material of an organism with the aim of developing or improving one or more characteristics in the organism. While this technology has the potential to generate benefits for humankind and contribute to sustainable development, there are concerns that living modified organisms resulting from biotechnology may have negative effects on biodiversity and human health.

In 2000, the Cartagena Protocol on Biosafety was adopted as an additional agreement to the Convention on Biological Diversity. It aims to ensure the safe transport, handling and use of living modified organisms (LMOs) resulting from modern biotechnology that may have adverse effects on biodiversity, also taking into account risks to human health. The Biosafety Protocol requires Parties to make decisions on import of LMOs for

Box 9. Biosafety resources

- Cartagena Protocol on Biosafety
- Risk Assessment under the Protocol
- Biosafety Clearing-House
- Frequently asked questions on Biosafety Protocol

[45] IPBES (2019), Summary for policymakers of the global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, p. 13, at https://ipbes.net/global-assessment.

intentional introduction into the environment in accordance with scientifically sound risk assessments. These assessments aim at identifying and evaluating the potential adverse effects of LMOs. The Protocol sets out principles and methodologies on how to conduct a risk assessment. The Protocol also requires Parties to adopt measures and strategies for preventing adverse effects and for managing and controlling risks identified by risk assessments.

UNDP's SES requires that a risk assessment be carried out in accordance with Annex III of the Biosafety Protocol for Projects that may involve the transfer, handling and use of GMOs/LMOs that result from modern biotechnology and that may have adverse effects on biological diversity (SES, Standard 1, para. 18). Annex III "Risk Assessment" calls for identification of novel characteristics of LMOs that may have adverse effects on biodiversity and human health, an evaluation of the likelihood and consequences of the adverse effects being realized, and estimation of overall risk and recommendations for managing these risks.

A Biosafety Clearing House (BCH) is a mechanism set up by the Biosafety Protocol to facilitate the exchange of information on LMOs. Among other resources, the BCH provides information on identifying LMOs and summaries of risk assessments on the potential adverse effects of LMOs on biodiversity and human health. See Box 9 for guidance resources.

5.1.12 Sustainable management of renewable natural resources

Sustainable management of renewable natural resources involves the use, development and protection of these resources in a way or at a rate that enables people and communities to provide for their current social, economic, and cultural well-being while sustaining the potential of these resources to meet the reasonably foreseeable needs of future generations. This includes safeguarding the life-supporting capacity of the atmospheric, hydrological and soil systems as well as "living natural resources" (i.e. plants and animals cultivated for human or animal consumption and use, see definitions section).

Box 10. Key requirements regarding sustainable management of living natural resources

- Manage resources in a sustainable manner
- Where available, apply appropriate, industry-specific best management practices and credible certification systems
- Support appropriate and culturally sensitive sustainable resource management practices for small-scale producers
- Ensure collection of genetic resources is conducted sustainably and that benefits derived from their utilization are shared in a fair and equitable manner, consistent with CBD Nagoya Protocol. Ensure free prior informed consent (FPIC) if resources collected from indigenous lands or territories

The overriding principle here is for these resources to be managed in a sustainable manner. This means that the land or water resource maintains its productive capacity over time, and that agricultural, aquacultural and fishing practices do not degrade the surrounding environment. Sustainable management also ensures that people who are dependent on these resources are properly consulted, enabled to participate in development, and share equitably in the benefits of that development.

Sustainable management of agriculture and livestock is a major challenge. Modern agriculture is a leading driver of biodiversity loss, primarily through land-use conversion, overexploitation, intensification of agricultural production systems, excessive chemical and water use, nutrient loading, pollution and introduction of alien species. In addition, homogenization of agricultural production systems has led to significant agricultural biodiversity loss through genetic erosion and the increasing levels of genetic vulnerability of specialized crops and livestock.

In marine ecosystems, overexploitation of fish, shellfish and other organisms has had a large and widespread impact. An increasing proportion of marine fish stocks are overfished (33 per cent in 2015), including stocks of economically important species, while 60 per cent are maximally sustainably fished and only 7 per cent are

underfished. In 2011, illegal, unreported or unregulated fishing represented up to one third of the world's reported catch.[46]

Standard 1 (see Box 10) states that sustainable management will be achieved through the application of appropriate industry-specific good management practices and available technologies. Depending on the industry sector and geographic region, there is a range of such resources which should be consulted.[47] In recent years a number of industry sectors have developed and/or adopted formal environmental and social sustainability standards which incorporate good environmental and social practice. Adherence to such formal standards, which incorporate principles, criteria and indicators specific to the needs of a sector or geographic region, can then be subject to independent audit and verification of compliance.

A range of sustainable management standards require High Conservation Value (HCV) assessments to identify biodiversity values in managed landscapes, such as agricultural and forestry areas (e.g. Forest Stewardship Council FSC, Roundtable for Responsible Palm Oil (RSPO), the Better Sugarcane Initiative (Bonsucro), or the Sustainable Agriculture Network (SAN).

A wide range of standards and initiatives have been developed to promote sustainable agriculture, aquaculture, and fisheries, such as the Sustainable Agriculture Network's Sustainable Agriculture Framework, the Global Aquaculture Alliance's Best Aquaculture Practices, the Aquaculture Stewardship Council standards, the Marine Stewardship Council fisheries standards, the FAO Code of Conduct for Responsible Fisheries.[48]

Where a sector has an appropriate standard, SES Standard 1 requires its application and independent, credible verification or certification that project proponents are in conformity for all operations over which they have management control. In the absence of a relevant and credible global, regional, or national standard for the particular living natural resource in the country concerned, the project will:

- Apply good international industry operating principles, management practices, and technologies; and
- Where relevant, include activities to engage in and support the development of a national standard, including studies that contribute to the definition and demonstration of sustainable practices.

Standard 1 also specifically notes that activities which involve commercial, industrial-scale timber harvesting require such certification (Standard 1, para. 19).

An appropriate certification system is one that is independent, cost-effective, based on objective and measurable performance standards, and developed through consultation with relevant stakeholders such as local people and communities, indigenous peoples, and civil society organizations representing consumer, producer, and conservation interests. Such a system has fair, transparent, and independent decision-making procedures that avoid conflicts of interest.

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[46] IPBES, Summary for Policymakers of the Global Assessment Report on Biodiversity and Ecosystem Services (2019), pp. 28-29, at https://www.ipbes.net/sites/default/files/2020-02/ipbes_global_assessment_report_summary_for_policymakers_en.pdf.

[47] A key resource for updates on sustainability standards and management practices is the International Trade Centre's Standards Map, available at www.standardsmap.org. In the forestry sector, sustainable forest management standards include those developed by the Forest Stewardship Council (FSC, https://ic.fsc.org/en), as well as a range of national forest standards. Commodity-specific multi-stakeholder initiatives have been developed such as the Roundtable on Sustainable Palm Oil (RSPO, http://www.rspo.org). There are comparable initiatives currently under development in other commodity sectors (sugar cane, cotton, soy, etc.).

[48] See the Sustainable Agriculture Framework, at https://www.sustainableagriculture.eco/sustainable-agriculture-framework; the Global Aquaculture Alliance's Best Aquaculture Practices at https://www.bapcertification.org/Standards; the Aquaculture Stewardship Council's standards at https://www.asc-aqua.org/what-we-do/our-standards; the Marine Stewardship Council's standards at https://www.msc.org/en-us/standards-and-certification/developing-our-standards; the FAO Code of Conduct for Responsible Fisheries at http://www.fao.org/3/i1900e/i1900e00.htm.

It is important to note that while a large number of standards have been proposed, many may lack adequate coverage of relevant sustainability issues, or may lack the ability to be independently and uniformly applied and certified. In general, standards which conform to the ISEAL Code of Good Practice for Setting Social and Environmental Standards will be consistent with the above requirements.[49]

In the absence of an appropriate certification system, the project proponent may choose to demonstrate sustainable natural resource management through an independent evaluation of management practices.

Where the project involves production, harvesting, and/or management of living natural resources by ***small-scale landholders and/or local communities***, the application of sector specific certification schemes may be too onerous. In such cases, UNDP should instead support adoption of appropriate and culturally sensitive sustainable resource management practices, and seek to improve practices where such opportunities exist.[50] Standard 1 (para. 19) notes that for forest-related activities preference should be given to small-scale community-level management approaches where they best reduce poverty in a sustainable manner.

Plantations. Projects which may involve forest plantations (e.g. oil palm, areca palm, rubber, species for pulp and paper, acacia mangium, etc.) need to ensure that they are sited away from areas of critical habitats and do not lead to the conversion of natural habitats, and preferably not secondary forests.[51] Plantations should not be situated on areas of natural habitats that were recently degraded or converted (for example, as noted earlier, the RSPO sets 2005 as a baseline year).[52] Per Standard 1 (para. 19), forest plantations need to be:

- *environmentally appropriate* (e.g. site and natural species matching, avoid monocultures, use of integrated pest management, prevent spread of invasive species, do not degrade soil, promote protection of natural forests, set aside high conservation value areas, provide wildlife corridors)
- *socially beneficial* (e.g. involve communities in planning and management, respect social and economic well-being of forest workers and local communities, respect indigenous rights, safe working conditions)
- *economically viable* (e.g. sufficient capital for establishment costs and technical capacity for planting and stand management; certification strengthens management practices, brand loyalty, and may provide access to new markets).

Access and benefit sharing of genetic resources. For projects that involve the utilization of genetic resources, project developers need to ensure that the collection of such resources is conducted sustainably and that benefits derived from their utilization are shared in a fair and equitable manner. Using genetic resources, whether from plants, animals or micro-organisms, refers to the process of researching their beneficial properties and using them to increase scientific knowledge and understanding, or to develop commercial products.

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[49] See various ISEAL good practice documents at http://www.isealalliance.org.

[50] The Forest Stewardship Council has developed an approach for 'small low-intensity managed forest' (SLIMF) certification that could be considered, available at https://ca.fsc.org/en-ca/certification/forest-management-certification/small-low-intensity-forests.

[51] Secondary forests are forests regenerating largely through natural processes after significant removal or disturbance of the original forest vegetation by human or natural causes at a single point in time or over an extended period, and displaying a major difference in forest structure and/or canopy species composition with respect to pristine primary forests. See FAO, "What are Secondary Forests?," at http://www.fao.org/3/J0628E16.htm.

[52] See the following resources for additional guidance on forest plantations. The Planted Forest Code provides a framework and concise synopsis of the major issues to consider in plantation projects, at http://www.fao.org/forestry. The Forest Stewardship Council FSC standards can be applied to certify plantations, at https://ic.fsc.org/file-download.fsc-and-plantations.a-1723.pdf. The Marrakech Accord outlines the agreements and guidelines for eligibility of reforestation and afforestation activities for carbon financing, at http://www.unfccc.int/cop7/.

Genetic resources can be put to commercial or non-commercial use. Users of genetic resources include research institutes or companies seeking access for basic scientific research or product development. Such activities need to be undertaken in a manner consistent with the Convention on Biological Diversity and, in particular, the Nagoya Protocol (fully operational in 87 countries in mid-2020) which set out rules that govern access and benefit-sharing of genetic resources.[53] See Box 11 for guidance materials.

Box 11. Resources on Nagoya ABS Protocol

- Nagoya Protocol Factsheets and Toolkits
- Access and Benefit Sharing Information Clearing House (ABSCH)
- IUCN Explanatory Guide to the Nagoya Protocol

Access and benefit-sharing refers to the way in which genetic resources may be accessed, and how users and providers reach agreement on the fair and equitable sharing of the benefits that might result from their use. To gain access, users must first get permission (known as prior informed consent or PIC) from the provider country. In addition, the provider and the user must negotiate an agreement (known as mutually agreed terms or MAT) to share the resulting benefits equitably.

Where genetic resources are collected from traditional or customary lands of indigenous peoples, UNDP needs to ensure that the provisions of Standard 6: Indigenous Peoples apply, including the requirement of free, prior and informed consent (FPIC) and equitable benefit sharing.

Animal welfare and antimicrobial stewardship. For projects that may involve livestock, Standard 1 requires project developers to adopt appropriate measures to promote animal welfare, control for the potential invasiveness or escape of production species, and minimization of antimicrobial resistance. For projects that may support commercial livestock or aquaculture promotion, project developers should ensure that appropriate guidelines for animal welfare and antimicrobial management are incorporated and reflected in the project's environmental and social management plan (good practices should also be incorporated into small-scale livelihood projects that involve livestock and aquaculture). An industry-specific specialist should be engaged (e.g. with expertise in targeted species as well as production systems). See Box 12 for guidance materials.

Animal welfare refers to how an animal is coping with the conditions in which it lives. An animal is in a good state of welfare if it is healthy, comfortable, well-nourished, safe, able to express innate behaviour, and if it is not suffering from unpleasant states such as pain, fear, and distress. Good animal welfare requires disease prevention and veterinary treatment, appropriate shelter, management and nutrition, humane handling and humane slaughter or killing.[54]

Over-use and misuse of antibiotics in animals and humans are contributing to the rising threat of antibiotic resistance. WHO strongly recommends an overall reduction in the use of all classes of medically important antibiotics in food-producing animals, including complete restriction of these antibiotics for growth promotion and disease prevention without diagnosis. Healthy animals should only receive antibiotics to prevent disease if it has been diagnosed in other animals in the same flock, herd, or fish population. Critically important

Box 12. Guidelines on Animal Welfare and Antimicrobial Resistance

- IFC Good Practice Note on Improving Animal Welfare In Livestock Operations
- World Organization for Animal Health (OIE) Terrestrial and Aquatic Animal Health Codes
- WHO guidelines on use of medically important antimicrobials in food-producing animals

[53] Convention on Biological Diversity can be found at http://www.cbd.int/. The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity can be found at http://www.cbd.int/abs/.

[54] See the World Organisation for Animal Health (OIE) and the Terrestrial and Aquatic Health Codes, at https://www.oie.int/en/.

antimicrobials relied on by human populations should not be utilized.

Sustainable wildlife management. Some UNDP projects work with local communities that hunt wild animals for subsistence, livelihoods and recreation. However, growing human populations, advances in hunting technologies and the emergence of a booming commercial wild meat trade have contributed to unprecedented extraction rates, leading to the decline of numerous wildlife populations and endangering foundation species critical to the functioning of ecosystems.

Wildlife, if sustainably managed, can provide both long-term nutrition and sustained income to indigenous peoples and local communities, therefore contributing considerably to local livelihoods as well as safeguarding human and environmental health. Sustainable wildlife management refers to the sound management of wildlife species to sustain their populations and habitat over time, considering the socioeconomic needs of human populations. CBD has issued voluntary guidelines for a sustainable wild meat sector that seek to (i) ensure that the supply of wild meat is sustainably managed at the source; (ii) control the excessive demand of wild meat in towns and cities; and (iii) create an enabling environment for the sustainable management of wild meat.[55] These guidelines and other resources, such as those produced under the Collaborative Partnership on Sustainable Wildlife Management, should be considered when promoting sustainable wildlife management.[56]

5.1.13 Soil management

The world's soils are rapidly deteriorating: about a third of the world's land has already been significantly degraded.[57] Symptoms of soil degradation are numerous and include decline of soil fertility, nutrient depletion, development of acidity, salinization, alkalization, deterioration of soil structure, accelerated wind and water erosion, loss of organic matter and biodiversity. As a result, farm labour productivity and revenues from agriculture are falling, migration to urban areas is increasing, rural poverty is exacerbated. Soil erosion has largely been triggered by intensive agriculture, tillage, mono-cropping, overgrazing, urban sprawl, deforestation, pollution and industrial and mining activities, as well as and long-term climatic changes.

SES Standard 1 (para. 21) requires that projects avoid, and where avoidance is not possible, minimize adverse impacts on soils, their biodiversity, organic content, productivity, structure, and water-retention capacity. Where projects involve agriculture, livestock or other activities that may affect soils, sustainable soil management practices need to be utilized to prevent and limit soil degradation, erosion and the loss of valuable land to desertification. The Voluntary Guidelines for Sustainable Soil Management set out ten key guidelines that should be followed.[58]

Support for land-use planning initiatives should incorporate measures to halt land degradation and to promote sustainable soil management. One approach utilizes the concept of land degradation neutrality (LDN) which aims to preserve the land resource base by ensuring no net loss of healthy and productive land. LDN is pursued through a combination of measures that avoid, reduce and reverse land degradation. Achieving neutrality requires

[55] CBD/SBSTTA, Sustainable Wildlife Management: Guidance for a Sustainable Wild Meat Sector, CBD/SBSTTA/REC/XXI/2, 14 December 2017, available at https://www.cbd.int/doc/recommendations/sbstta-21/sbstta-21-rec-02-en.pdf.

[56] See the resources for the Collaborative Partnership on Sustainable Wildlife Management at http://www.fao.org/forestry/wildlife-partnership/en/.

[57] FAO, "Soils are endangered, but the degradation can be rolled back," 2015, at http://www.fao.org/news/story/en/item/357059/icode/.

[58] FAO, Voluntary Guidelines for Sustainable Soil Management, 2017, at http://www.fao.org/3/a-bl813e.pdf. See also FAO, Manual on integrated soil management and conservation practices, FAO Land and Water Bulletin 8, 2000, at http://www.fao.org/3/x4799e/x4799e.pdf.

estimating the likely impacts of land-use and land management decisions, then counterbalancing anticipated losses through strategically planned rehabilitation or restoration of degraded land within the same land type.[59]

5.1.14 Water resources

For projects that may affect water resources, UNDP promotes an integrated water resources management (IWRM) approach, defined as "a process which promotes the coordinated development and management of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems.[60]" A wide range of tools and methods are available for sustainable water management.[61]

Where project activities may restrict or alter riverine systems (e.g. dams, significant water diversion or withdrawals), the project should ensure that it does not contribute to further degradation of freshwater ecosystems. Environmental flow analysis and management should be undertaken, preferably at the river basin level. Environmental flow describes the quantity, quality and timing of water flows required to sustain freshwater ecosystems and the human livelihoods and well-being that depend on these ecosystems.[62] The precautionary principle should be applied in managing environmental flows, and where necessary, depletion and alteration should be limited to account for environmental flow needs. Where flows are already highly altered, various management strategies, including water trading, conservation, and floodplain restoration should be utilized to restore environmental flows to appropriate levels.

In addition, when a UNDP project could negatively affect the quality or quantity of water in an international waterway, UNDP or its partner needs to notify all riparian states in writing, at least 90 days prior to a decision on whether or not to proceed with the project, so that the riparians have the opportunity to raise objections or concerns or to request additional information (SES Standard 1, ft. nt. 46). In situations where there is an international body that coordinates management of the waterway, such as a river basin commission, formal presentation of the proposed project at a meeting of that body will meet this notification requirement.

5.1.15 Customary sustainable use of biological diversity and traditional knowledge

Biodiversity, customary sustainable use and traditional knowledge are intrinsically linked. Indigenous and local communities, through customary sustainable use of biological diversity, constantly shape and reshape social and ecological systems, landscapes, seascapes, plants and animal populations, genetic resources and related management practices, and are therefore well placed to adapt to changing conditions such as climate change, and to contribute to the maintenance of biodiversity and ecosystem services, and the strengthening of the resilience of the social and ecological systems.

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[59] See UN Convention on Combatting Desertification (UNCCD), Achieving Land Degradation Neutrality at https://www.unccd.int/actions/achieving-land-degradation-neutrality and the GEF-STAP Guidelines for Land Degradation Neutrality at https://knowledge.unccd.int/knowledge-products-and-pillars/ldn-target-setting-building-blocks/guidelines-land-degradation.

[60] See UN World Water Programme Assessment paper on "Integrated Water Resources Management in Action" (2009) for further background and guidance on IWRM, available at http://unesdoc.unesco.org/images/0018/001818/181891E.pdf.

[61] For example, see Cap-Net UNDP, an international network for capacity development in sustainable water management and their listing of water management tools at http://www.cap-net.org/resources/water-management-tools/.

[62] As defined by The Brisbane Declaration on environmental flows, 10th International River Symposium and International Environmental Flows Conference, 3–6 September 2007, available at https://www.conservationgateway.org/Documents/Brisbane-Declaration-English.pdf.

Article 10(c) of the Convention on Biological Diversity (CBD) states that "Parties shall (...) protect and encourage customary use of biological resources in accordance with traditional cultural practices that are compatible with conservation or sustainable use requirements."

Article 8(j) states that each "contracting Party shall, as far as possible and as appropriate (…) respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge innovations and practices."

Where relevant, UNDP projects should value traditional knowledge and encourage customary use of biological resources. Project developers need to ensure full and effective participation of relevant local communities where such traditional knowledge and practices are affected, supported or utilized in project activities. Recognizing that indigenous and local communities are the holders of their traditional knowledge, innovations and practices, access to their traditional knowledge, innovations and practices should be subject to their prior informed consent or approval and involvement. Both Standard 4 on Cultural Heritage and, where indigenous peoples are involved, Standard 6 would also be applicable.

5.1.16 Primary Suppliers

The production and export of natural resource commodities are a major driver of deforestation and conversion/degradation of other natural habits. Six big commodities – palm oil, cattle, timber, pulp wood, soy, and cocoa – comprise the largest share. Regionally, cattle and soy production greatly impact tropical forests in South America; in Southeast Asia, palm oil and wood products are the main drivers of deforestation; and in West Africa, deforestation stems primarily from cocoa, palm oil, and logging.[63] Other examples of natural-resource commodity production that may involve significant conversion or degradation of habitats include gravel or sand extraction from riverbeds or beaches and aquaculture that displaces mangroves or natural wetlands.

Standard 1 (para. 26) requires that when purchasing natural resource commodities in relation to project activities, sourcing needs to be limited where possible to those primary suppliers that can demonstrate that they are not contributing to significant conversion or degradation of natural or critical habitats. Primary suppliers are those suppliers who, on an ongoing basis, provide directly to the project goods or materials essential for the project's core functions (that is, production and/or service processes essential for a specific project activity without which the project cannot continue).

The project's environmental and social assessment determines whether there are known risks regarding significant conversion/degradation of natural or critical habitats related to natural-resource commodities to be purchased under the project. Expertise in sustainable sourcing and supply chain management may need to be engaged.[64]

Where there are appropriate certification and verification systems accepted for sustainable management of living natural resources in the country of origin, it is recommended to procure natural resource commodities certified

[63] See International Sustainability Unit, TSA, CDP, ClimateFocus, "Zero-deforestation Commodity Supply Chains by 2020: Are We on Track?," (2017), p. 5, at https://climatefocus.com/sites/default/files/20171106%20ISU%20Background%20Paper.pdf.

[64] Various resources on deforestation and supply chains include Forest Trends Supply Chain Initiative (database on company commitments to reducing deforestation related to agricultural commodities) and Global Canopy's Supply Chains Program (including its Trase tool and Forest 500 ratings). As noted earlier, Global Forest Watch includes data and tools to identify areas of deforestation.

under such systems. This may include certified sourcing standards (e.g. FSC), Environmental Product Descriptions (EPDs) [65] and ecolabels.

Where primary suppliers cannot demonstrate the sustainable sourcing of natural resource commodities, within a reasonable period, the responsible party needs to shift to primary suppliers that can. The ability of the project to fully address these risks will depend upon the level of control or influence over primary suppliers. This depends in part on the terms and conditions of contracts with the primary supplier.

It must be noted that SES Standard 7: Labour and Working Conditions also includes requirements regarding primary suppliers, namely identifying risks to the fundamental rights of workers (i.e. child labour, forced labour, discrimination, freedom of association and equal opportunity, and health and safety risks), which have also been identified in some natural-resource commodity sectors. Assessing and addressing primary supply chain risks should be an integrated process. See also the SES Guidance Note on Standard 7: Labour and Working Conditions.

5.2 Monitoring Project Implementation

Management plans include monitoring and reporting requirements that are to be fully integrated into the project's overall monitoring plan. This includes tracking social and environmental management measures through the Project Risk Register (entered as risk management actions).

The extent of monitoring will be proportionate to the nature of the project, the project's social and environmental risks and impacts, and compliance requirements. A project should not be considered complete until the measures and actions set out in the management plan have been implemented.

UNDP requires monitoring of the following:

i. progress of implementation of mitigation/management plans required by the SES
ii. complaints and grievances from project-affected stakeholders
iii. follow-up on any identified corrective actions, and
iv. completion and disclosure of any required monitoring reports on SES implementation (including on-going reporting to project-affected stakeholders).

A project should not be considered complete until the measures and actions set out in the management plan have been implemented. In exceptional cases and/or where project closure is required, an updated, detailed action plan should be developed on how any outstanding management items from the ESMP(s) (or other management plans such as a Biodiversity Action Plan, Indigenous Peoples Plan) will be completed.

For Substantial and High Risk projects (and complex Moderate Risk projects, as appropriate), the implementing partner needs to provide periodic reports to the project-affected communities that describe progress with implementation of project management measures and action plans and on issues that the consultation process or grievance mechanisms have identified as a concern.

Any material change or additions to the mitigation measures or action plans are communicated to affected communities. Reports are provided at a frequency proportionate to the concerns of affected communities but not less than annually. The ESMF and/or ESMP(s) needs to include reporting requirements.

The project's overall monitoring plan includes tracking progress against results indicators and regular updates to the Project Risk Register. Project management regularly reviews the data and makes course corrections as necessary (which may also be in response to actions requested by relevant regulatory authorities and feedback

[65] An Environmental Product Declaration (EPD) is an independently verified and registered document that communicates transparent and comparable information about the life-cycle environmental impact of products. The relevant standard for Environmental Product Declarations is ISO 14025, where they are referred to as "type III environmental declarations."

from stakeholders, including project-affected communities). Given the complexity of natural (and many modified) habitats, biodiversity management needs to be considered within the context of adaptive management. Findings from monitoring programs should be regularly evaluate and management and mitigation responses should be adapted as necessary to more effectively ensure the protection of the biodiversity values in question.

Monitoring should focus on those components of biodiversity most likely to change as a result of the project. The use of indicator organisms or ecosystems that are most sensitive to the predicted impacts may provide the earliest possible indication of undesirable change. Since monitoring has to consider natural fluxes as well as human-induced effects, complementary indicators may be appropriate in monitoring. Indicators should be specific, achievable, relevant and timely and where possible aligned with existing monitoring indicators and processes.[66] Given the diversity of species and ecosystems, the development of appropriate indicators will always require the expertise of specialists.

Where appropriate, stakeholders and third parties, such as independent experts, local communities or NGOs, should complement or verify monitoring activities.

Based on the monitoring results, any necessary corrective actions are undertaken. The implementing partner needs to promptly notify UNDP and stakeholders of any incident or accident related to the project activities that has had (or is likely to have) significant adverse impacts on people or the environment. Immediate measures are to be undertaken by the responsible partner to address and remedy the incident or accident, and to prevent any recurrence. Similarly, where monitoring indicates a potential lack of compliance with project commitments, including in addressing SES requirements, the implementing partner informs UNDP which works with the partner to bring the project back into compliance.

If there are substantive changes to the project during implementation or changes in the project context that alters the project's risk profile, then some level of rescreening, re-assessment and revised management measures will be required (see Figure 1 at the beginning of this Guidance Note).

UNDP's review activities should be appropriate to the type and scope of the requirements, and may include:

- reviewing monitoring reports, conducting site visits and reviewing project-related information
- reviewing compliance with SES requirements
- advising partners on how to manage issues related to the SES
- communicating risks and probable consequences of failure to comply with the SES requirements, and initiating remedies if the partner fails to (re)establish compliance.

[66] CBD, Biodiversity in EIA and SEA, pp. 40-41. On indicators, see also detailed guidance in Conservation International, The Energy and Biodiversity Initiative, Indicators for Monitoring Impacts and Conservation Actions, available at http://www.theebi.org/pdfs/indicators.pdf (noting a focus on private sector oil and gas operations).

Annex 1. Indicative List of Ecosystem Services

Ecosystem services are the benefits that people derive from ecosystems. Below is an indicative list of ecosystem services by type (provisioning services, regulating services, cultural services, and supporting services), together with examples. The list has been adapted from the Millennium Ecosystem Assessment and expanded by World Resources Institute, "Weaving Ecosystem Services into Impact Assessment. A Step-by-Step Method. Version 1 (2013)," by F. Landsberg, J. Treweek, M. Mercedes Stickler, N. Henninger, O. Venn, available at http://www.wri.org/publication/weaving-ecosystem-services-into-impact-assessment.

SERVICE	SUBCATEGORY	DEFINITION	EXAMPLES
Provisioning services: The goods or products obtained from ecosystems			
Food	Crops	Cultivated plants or agricultural products harvested by people for human or animal consumption as food	Grains Vegetables and fruits
	Livestock	Animals raised for domestic or commercial consumption or use	Chickens Pigs and cattle
	Capture fisheries	Wild fish captured through trawling and other non-farming methods	Cod and tuna Crabs
	Aquaculture	Fish, shellfish, and/or plants that are bred and reared in ponds, enclosures, and other forms of freshwater or saltwater confinement for purposes of harvesting	Shrimp Oysters Salmon
	Wild foods	Edible plant and animal species gathered or captured in the wild	Fruits and nuts Fungi Bushmeat
Biological raw materials	Timber and other wood products	Products made from trees harvested from natural forest ecosystems, plantations, or non-forested lands	Industrial roundwood Wood pulp and paper
	Fibers and resins	Non-wood and non-fuel fibers and resins	Cotton, silk, hemp, twin, rope Natural rubber
	Animal skins	Processed skins of cattle, deer, pigs, snakes, sting rays, or other animals	Leather rawhide, cordwain
	Sand	Sand formed from coral and shells	White sand Colored sand from shells
	Ornamental resources	Products derived from ecosystems that serve aesthetic purposes	Tagua nut, wild flowers, coral jewelry
Biomass fuel		Biological material derived from living or recently living organisms—both plant and animal—that serves as a source of energy	Fuelwood and charcoal Grain for ethanol production Dung
Freshwater		Inland bodies of water, groundwater, rainwater, and surface waters for household, industrial, and agricultural uses	Freshwater for drinking, cleaning, cooling, industrial processes, electricity generation, or mode of transportation
Genetic resources		Genes and genetic information used for animal breeding, plant improvement, and biotechnology	Genes used to increase crop resistance to disease or pests
Biochemicals, natural medicines, and pharmaceuticals		Medicines, biocides, food additives, and other biological materials derived from ecosystems for commercial or domestic use	Echinacea, ginseng, garlic Paclitaxe as basis for cancer drugs Tree extracts for pest control
Regulating services: The contributions to human well-being arising from an ecosystem's control of natural processes			
Regulation of air quality		Influence ecosystems have on air quality by emitting chemicals to the atmosphere (i.e., serving as a "source") or extracting chemicals from the atmosphere (i.e., serving as a "sink")	Lakes serve as a sink for industrial emissions of sulfur compounds Tree and shrub leaves trap air pollutants near roadways
Regulation of climate	Global	Influence ecosystems have on the global climate by emitting greenhouse gases or aerosols to the atmosphere or by absorbing greenhouse gases or aerosols from the atmosphere	Forests capture and store carbon dioxide[SEP] Cattle and rice paddies emit methane
	Regional and local	Influence ecosystems have on local or regional temperature, precipitation, other climatic factors	Forests can impact regional rainfall levels
Regulation of water timing and flows		Influence ecosystems have on the timing and magnitude of water runoff, flooding, and aquifer recharge, particularly in terms of the water storage potential of the ecosystem or landscape	Permeable soil facilitates aquifer recharge[SEP] River floodplains, wetlands[SEP] retain water—which can decrease flooding—reducing need for flood control

		infrastructure
Erosion control	Role ecosystems play in retaining and replenishing soil and sand deposits	Vegetation such as grass and trees prevents soil loss due to wind and rain and prevents siltation of waterways Coral reefs, oyster reefs, and sea grass beds reduce loss of land and beaches due to waves and storms
Water purification and waste treatment	Role ecosystems play in the filtration and decomposition of organic wastes and pollutants in water; assimilation and detoxification of compounds through soil and subsoil processes	Wetlands remove harmful pollutants from water by trapping metals and organic materials[LSEP] Soil microbes degrade organic waste, rendering it less harmful
Regulation of diseases	Influence that ecosystems have on the incidence and abundance of human pathogens	Some intact forests reduce occurrence of standing water—breeding area for mosquitoes—which lowers prevalence of malaria
Regulation of soil quality	Role ecosystems play in sustaining soil's biological activity, diversity, and productivity; regulating and partitioning water and solute flow; storing and recycling nutrients and gases; among other functions	Some organisms aid in decomposition of organic matter, increasing soil nutrient levels[LSEP] Some organisms aerate soil, improve soil chemistry, and increase moisture retention
Regulation of pests	Influence ecosystems have on the prevalence of crop and livestock pests and diseases	Predators from nearby forests—such as bats, toads, and snakes—consume crop pests
Pollination	Role ecosystems play in transferring pollen from male to female flower parts	Bees from nearby forests pollinate crops
Regulation of natural hazards	Capacity for ecosystems to reduce damage caused by natural disasters such as hurricanes and tsunamis and to maintain natural fire frequency and intensity	Mangroves, coral reefs protect coastlines from storm surges Biological decomposition reduce potential fuel for wildfires
Cultural services: The nonmaterial contributions of ecosystems to human well-being		
Recreation and ecotourism	Recreational pleasure people derive from natural or cultivated ecosystems	Hiking, camping, bird watching Going on safari, scuba diving[LSEP]
Ethical and spiritual values	Spiritual, religious, aesthetic, intrinsic, "existence," or similar values people attach to ecosystems, landscapes, or species	Spiritual fulfillment derived from sacred lands and rivers[LSEP] People's desire to protect endangered species, rare habitats
Educational and inspirational values	Information derived from ecosystems used for intellectual development, culture, art, design, and innovation	Structure of tree leaves has inspired technological improvements in solar power cells[LSEP] School fieldtrips to nature preserves aid in teaching scientific concepts and research skills
Supporting services: The natural processes that maintain the other ecosystem services		
Habitat	Natural or semi-natural spaces that maintain species populations and protect the capacity of ecological communities to recover from disturbances	Native plant communities often provide pollinators with food and structure for reproduction Rivers and estuaries provide nurseries for fish reproduction and juvenile development Large natural areas and biological corridors allow animals to survive forest fires, other disturbances
Nutrient cycling	Flow of nutrients (e.g., nitrogen, sulfur, phosphorus, carbon) through ecosystems	Transfer of nitrogen from plants to soil, from soil to oceans, from oceans to the atmosphere, and from the atmosphere to plants
Primary production	Formation of biological material by plants through photosynthesis and nutrient assimilation	Algae transform sunlight and nutrients into biomass, thereby forming the base of the food chain in aquatic ecosystems
Water cycling	Flow of water through ecosystems in its solid, liquid, or gaseous forms	Transfer of water from soil to plants, plants to air, air to rain

Annex 2. Elements of Biodiversity Action Plan

Where biodiversity values of importance to conservation are associated with a project or its area of influence, the preparation of a Biodiversity Action Plan (BAP) provides a useful means to focus a project's mitigation and management strategy. For project activities that may affect natural habitats, critical habitats and protected areas, Standard 1 notes that a BAP needs to be in place. For projects solely designed to strengthen biodiversity and maintain or restore ecosystems in areas of critical habitat, the project document itself would constitute such a plan. Biodiversity plans are highly encouraged when also operating in modified habitats with biodiversity values of importance to conservation.

Targeted biodiversity-related mitigation and management measures may be integrated into more general Environmental and Social Management Plans (ESMPs) or related plans. However, a BAP provides focused attention to actions in ecologically critical areas. A BAP may be included as part of a broader ESMP.

As noted in the Section 2.1 of this guidance note, National Biodiversity Strategies and Action Plans (NBSAP) are the primary instruments for implementing the Convention on Biological Diversity at the national level. A BAP is a more targeted instrument for enhancing and conserving biodiversity and ecosystem services in particular habitats, demonstrated on an appropriate geographic scale. A BAP should seek to achieve net gains to the biodiversity values for which the critical habitat was designated. A BAP is highly context specific.

There is no one widely recognized, cross-sectoral framework for the development of a BAP. Typically a BAP will be undertaken to address significant gaps in information for undertaking biodiversity-related actions (such as insufficient baseline data or understanding of key biodiversity values) and would articulate a management plan where/when adequate information is available for developing appropriate actions.

General elements of a BAP include the following:

(1) Description of biodiversity context: Identifies national and/or regional biodiversity context; location of projects site/s; relevant physiography; general description of relevant ecosystems, habitats, flora, fauna; priority biodiversity features and components of elevated significance.

(2) Objectives and targets biodiversity actions and mitigation: Identifies measures and actions to enhance and conserve biodiversity and/or in accordance with the mitigation hierarchy avoid, minimize, mitigate, potentially significant adverse social and environmental impacts to acceptable levels. Describes – with technical details – each biodiversity-related action/mitigation measure, including the type of issue/impact to which it relates and the conditions under which it is required (e.g., continuously or in the event of contingencies), together with designs, implementation descriptions and operating procedures, as appropriate; takes into account, and is consistent with, other relevant mitigation plans (e.g. indigenous peoples, economic displacement).

(3) Implementation action plan (schedule, cost estimates and source of financing): Outlines an implementation schedule for measures that must be carried out as part of the project, showing phasing and coordination with overall project implementation plans; and the capital and recurrent cost estimates and sources of funds for implementing the BAP (i.e. budget). Describes institutional arrangements, identifying which party is responsible for carrying out the actions/mitigation and monitoring measures.

(4) Stakeholder Engagement: Outlines context-specific plan to engage in meaningful, effective and informed consultations with relevant stakeholders, including locally affected groups. Includes information on (a) means used to inform and involve affected people and description of effective processes for receiving and addressing stakeholder concerns and grievances regarding the project's social and environmental performance.

(5) Monitoring and reporting: Identifies monitoring objectives and specifies the type of monitoring, with linkages to the biodiversity actions and mitigation measures. Describes parameters to be measured, methods to be used, sampling locations, frequency of measurements, detection limits (where appropriate), and definition of thresholds that will signal the need for corrective actions. Establishes reporting schedule and format.