

Government Planning for Biodiversity Net Gain: Technical Notes to the Roadmap





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About this Document

These technical notes to accompany the roadmap for government has been prepared by the Business and Biodiversity Offsets Programme (BBOP)¹. BBOP ran from 2004-2018 to help developers, conservation groups, communities, governments and financial institutions develop and apply best practice towards achieving no net loss and preferably a net gain of biodiversity through the thorough application of the mitigation hierarchy (avoid, minimise, rehabilitate/restore, offset). The Principles, Standard and Handbooks published by BBOP were developed and tested by members of the BBOP Secretariat and Advisory Group and all the BBOP documents have benefited from contributions and suggestions from many people who registered on the BBOP consultation website and numerous others who joined us for discussions in meetings and webinars.

All BBOP Advisory Group members support the Principles, and many companies and governments have integrated them into their own commitments and also use the Standard and other tools. We commend the full set of BBOP materials to readers as a source of guidance on which to draw when considering, designing and implementing projects as well as policies that aim for the best outcomes for biodiversity in the context of development.

BBOP has now concluded its work but best practice in this area is still developing. We hope the legacy of BBOP is that its materials continue to be used and the concepts and methodologies presented here are refined over time based on practical experience, research and broad debate within society. All those involved in BBOP are grateful to the companies who volunteered pilot projects and the members that developed and applied draft versions of the Standard and other tools as they were developed.

To learn more, see: <https://www.forest-trends.org/bbop/>

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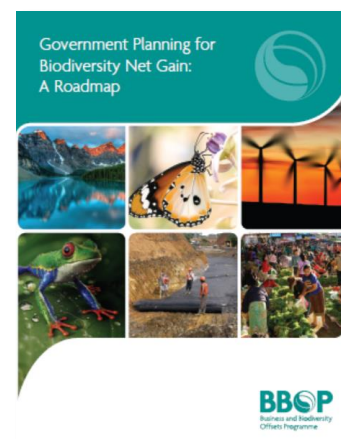
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Government Planning for Biodiversity Net Gain: Technical Notes to the Roadmap

Purpose and contents

An introduction to, and rationale behind, these Technical Notes

These Technical Notes accompany the principal separate document: Government Planning for Biodiversity Net Gain: a Roadmap and provide supplementary information. No Net Loss (NNL) and preferably a Net Gain (NG) (or 'Biodiversity Net Gain' - BNG) are the desired outcome for biodiversity after development, compared with a clear baseline or reference scenario. Achieving Biodiversity Net Gain means considering biodiversity in processes and decisions that feed into development planning at the national, regional and local levels. For individual projects, this entails early risk and opportunity assessment, environmental impact assessment and applying the mitigation hierarchy, forging partnerships and managing, monitoring and reporting. It is the increased attention to biodiversity impacts and risks in all these activities that will enable a NNL/NG outcome, or some other outcome that government settles on.



Technical Note 1: Definitions of key terms

Please note that many of these terms are used by a wide range of parties and particular definitions may vary, for instance in legislation by different countries and specific commitments by individual companies.

Term	Definition	Source
No Net Loss (NNL)	<p>A goal for a development project, policy, plan or activity in which the impacts on biodiversity it causes are balanced or outweighed by measures taken to avoid and minimise the impacts, to restore affected areas and finally to offset the residual impacts, so that no loss remains. NNL must be defined relative to an appropriate reference scenario ('NNL of what compared with what?'). For governments, this goal may be set at a national, regional or local level.</p> <p>The point at which impacts on biodiversity are balanced by measures taken to avoid and minimize the impacts, to undertake on-site restoration and finally to offset significant residual impacts, if any, on an appropriate geographic scale (e.g., local, landscape-level, national, regional).(IFC)</p>	<p>BBOP Glossary 2018. https://www.forest-trends.org/bbop_pubs/glossary_2018</p> <p>Other sources with similar but distinct definitions:</p> <p>IFC Performance Standard 6. http://www.ifc.org/wps/wcm/connect/bff0a28049a790d6b835faa8c6a8312a/P_S6_English_2012.pdf?MOD=AJPERES</p>

	<p>Notes:</p> <p>1.>NNL must be defined relative to an appropriate frame of reference or reference scenario ('>NNL compared with what?'). For example, the reference scenario can be what is likely to have occurred in the absence of a particular project and its mitigation measures (including any biodiversity offset), or a scenario that provides a better outcome for biodiversity conservation (e.g. where the reference scenario does not assume a declining biodiversity trend). It is important to set out clearly the assumptions underlying the definition of this frame of reference.</p> <p>2. While mitigation measures can be designed with the aim of achieving>NNL/NG of all the biodiversity affected, it is not possible to measure each component separately, so that surrogates are usually used to represent biodiversity overall. In general, such surrogates are based on selected components of biodiversity (e.g. vegetation or a species, sometimes a set of measurable ecological functions).</p>	<p>See also IUCN Biodiversity Offset Policy https://cmsdata.iucn.org/downloads/iucn_biodiversity_offsets_policy_jan_29_2016.pdf</p>
Biodiversity Net Gain (BNG)	<p>A goal for a development project, policy, plan or activity in which the impacts on biodiversity it causes are outweighed by measures taken to avoid and minimise the impacts, to restore affected areas and finally to offset the residual impacts, to the extent that the gain exceeds the loss. BNG must be defined relative to an appropriate reference scenario ('net gain of what compared with what?'). For governments, this goal may be set at a national, regional or local level.</p>	<p>BBOP Glossary (as above)</p>
Net Positive Impact	<p>An overall benefit for biodiversity.</p> <p>A net gain to biodiversity features measured in quality hectares (for habitats), number or percentage of individuals (for species) or other metrics appropriate to the feature.</p>	<p>Rio Tinto 2012. http://old.stage.riotintodev.com/documents/Biodiversity_action_planning_guidance_note.pdf</p>
Net Positive, or Net Positive Approach	<p>Net Positive is a new way of doing business which creates an overall – or 'Net' – positive impact; 'putting more back into the environment or society than a company takes out'. Any trade-offs (loss in one area for gain in another) must be explained.</p> <p><i>Note: This term is slightly different from Net Gain or Net Positive, which relate explicitly to biodiversity. 'Net Positive' potentially allows for some loss of biodiversity that could be outweighed by gains in another sphere, still satisfying 'net positive'.</i></p>	<p>Forum for the Future. https://www.forumforthefuture.org/Handlers/Download.ashx?IDMF=be63777c-211c-471a-8229-dc70c45f0ad7</p>
Zero Net Deforestation	<p>No overall loss of forest area or forest quality, while acknowledging that some forest loss could be offset by forest restoration; it thus allows some flexibility to meet local needs, recognising that, in some circumstances, conversion of forests in one site may contribute to the sustainable development and conservation of the wider landscape. ZND is explicitly not achieved by conversion of primary or natural forests to fast-growing plantations).</p>	<p>WWF: http://awsassets.panda.org/downloads/wwf_2020_zero_net_deforest_brief.pdf</p> <p>Consumer Goods Forum https://www.theconsumergoodsforum.com/initiatives/environmental-sustainability/key-projects/deforestation/</p>

<p>Managed Retention</p>	<p>An approach in which the goal to be achieved by applying the mitigation hierarchy is defined such that net biodiversity losses resulting from development and associated mitigation (including compensation), are capped at a certain level and managed so that the outcome for biodiversity achieves at least this level of conservation. The managed retention approach is generally applied at the jurisdictional level (country, or state). Good practice is to define the level for capping losses with reference to quantifiable jurisdiction-level targets that correspond with specific national and international biodiversity conservation goals. This is important to ensure that these targets and goals are not compromised. It is also good practice to describe the final outcome that is desired clearly —e.g. the amount of different ecosystems to be retained in good condition. A managed retention approach is generally appropriate for situations in which current biodiversity levels are above the threshold or target that has been set.</p>	<p>As an example of a Managed Retention approach, see e.g. DEA&DP (2011)².</p>
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² Department of Environmental Affairs and Development Planning (DEA&DP). 2011. Information Document on Biodiversity Offsets, EIA Guideline and Information Document Series. Western Cape Department of Environmental Affairs & Development Planning.

Mitigation hierarchy	<p>The mitigation hierarchy is defined as:</p> <ol style="list-style-type: none"> a. <u>Avoidance</u>: measures taken to avoid creating impacts from the outset, (including direct, indirect and cumulative impacts), such as careful spatial or temporal placement of elements of infrastructure, in order to completely avoid impacts on certain components of biodiversity. b. <u>Minimisation</u>: measures taken to reduce the duration, intensity and / or extent of impacts (including direct, indirect and cumulative impacts, as appropriate) that cannot be completely avoided, as far as is practically feasible. c. <u>Rehabilitation / restoration</u>: measures taken to rehabilitate degraded ecosystems or restore cleared ecosystems following exposure to impacts that cannot be completely avoided and / or minimised. d. <u>Offset</u>: measures taken to compensate for any residual significant, adverse impacts that cannot be avoided, minimised and / or rehabilitated or restored, in order to achieve <u>no net loss</u> or a <u>net gain</u> of biodiversity. Offsets can take the form of positive management interventions such as <u>restoration</u> of degraded habitat, <u>arrested degradation</u> or <u>averted risk</u>, protecting areas where there is imminent or projected loss of biodiversity. e. <u>Compensation</u>: measures to recompense, make good or pay damages for loss of biodiversity caused by a project that can fall short of achieving no net loss. For instance: conservation actions may not have been planned to achieve no net loss; losses and gains of biodiversity may not have been quantified; no mechanism may be in place for long term implementation; it may be impossible to offset the impacts; or compensation payments may be used for training, capacity building, research or other outcomes that will not result in measurable conservation outcomes on the ground. 	BBOP Glossary (as above)
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Definitions of other terms commonly used in relation to the mitigation hierarchy and net gain of biodiversity are given in the BBOP Glossary 2018.

Over 30 countries or states have enacted laws or introduced policies that specifically require biodiversity offsets or compensatory conservation for particular sets of impacts (for instance, on wetlands, on certain nationally listed species, or on biodiversity in its entirety). Some of these make specific provision for NNL/NG as a policy goal. In addition, biodiversity offsets or compensatory conservation are sometimes included in the conditions for project approval as a result of dialogue between the proponent of a project and the permitting authority, typically following an environmental impact assessment process. There is also a growing incidence of companies undertaking biodiversity offsets voluntarily. Some publications with information concerning policy developments on NNL/NG are as follows:

- Research in 2010 by the Ecosystem Marketplace, updated in 2011, found 45 existing compensatory mitigation programmes around the world, ranging from programmes with active mitigation banking of biodiversity credits to programs channelling development impact fees to policies that drive one-off offsets. In 2011, there were another 27 programmes in various stages of development or investigation. The global annual investment in offsets and compensations in 2011 was estimated as \$2.4-\$4 billion at a minimum, and probably much more, as 80% of existing programmes is insufficiently transparent for the Ecosystem Marketplace to have included their market size in this estimate. The conservation impact of this investment includes at least 187,000 hectares of land under some sort of conservation management or permanent legal protection per year.³
- In their report for IUCN, ten Kate and Crowe (2014) found that 39 countries have existing laws or policies on NNL/NG, biodiversity offsets or compensation, and 22 countries (some of which already have laws and policies and are numbered in the existing 39) are developing laws or policies on NNL/NG, biodiversity offsets or compensation, and listed them in an Annex.⁴
- In 2016, The Biodiversity Consultancy updated its global study and found over 100 countries that “have, are developing, or are starting to discuss national government policies that require, encourage, guide, suggest or enable the use of offsets” (see figure on right).⁵
- In 2016, Maron et al.⁶ published the following statistics, based on research and a database established by Wild Business: There are 69 countries known to have national policy in place or under development that requires or enables biodiversity offsets, 28 EU countries, therefore subject to directives requiring no net loss for Natura 2000 sites, 5 countries containing subnational regions that have their specific no net loss policies and 136 countries in which development projects are eligible for funding from the International Finance Commission (IFC), one of several lenders that may require NNL/NG of biodiversity of clients.
- In 2017, The Global Inventory of Biodiversity Offset Policies (GIBOP)⁷ was launched by the International Union of Conservation of Nature (IUCN) and The Biodiversity Consultancy. This online, open-access

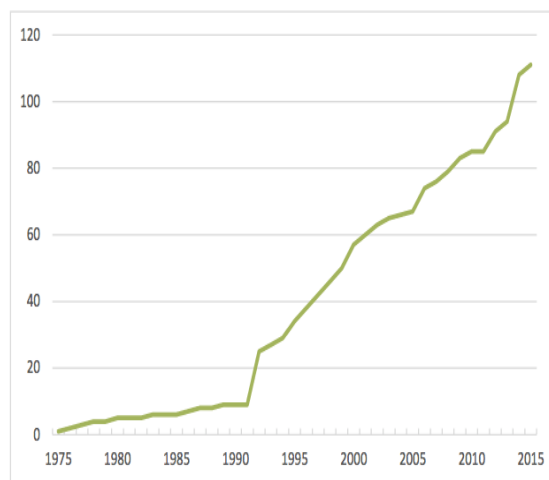


Figure 1: Rise in number of countries that have, are developing, or are starting to discuss national government policies that require, encourage, guide, suggest, or enable the use of offsets.

³ Madsen et al, 2011

⁴ ten Kate and Crowe, 2014

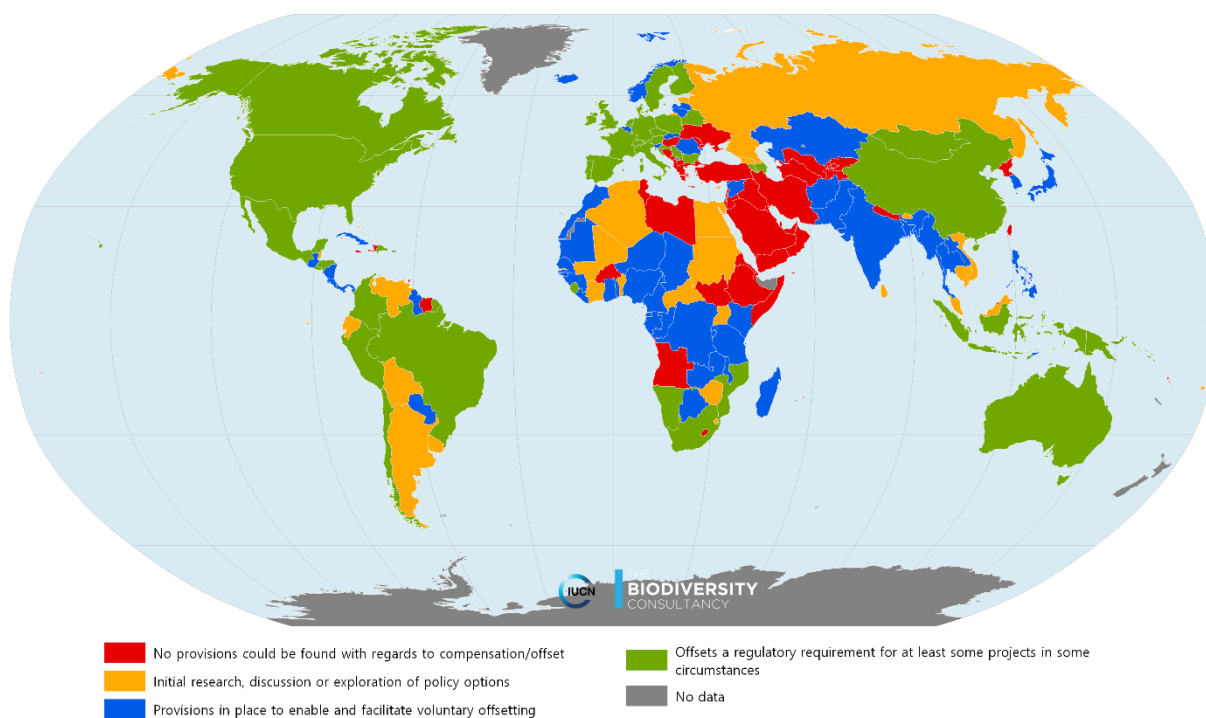
⁵ The Biodiversity Consultancy, 2016

⁶ Maron et al, 2016

⁷ GIBOP can be accessed here: <https://portals.iucn.org/offsetpolicy/>

database contains a review of the provisions of laws and legislation on the mitigation hierarchy including biodiversity offsets. Preliminary analysis⁸ revealed that currently, 43 countries make offsets a regulatory requirement while 63 enable and facilitate voluntary offsetting, and 26 countries are at an initial stage of exploring some policy options. It also confirmed that most biodiversity mega-diverse countries are already at an advanced stage in their development of biodiversity offset policy. The analysis shows that many of the countries that are highly dependent on the extractives sector for their economy (e.g. mining) tend to have more advanced offset policies.

The following image is a global snapshot of biodiversity offset policies development from GIBOP. (See [https://portals.iucn.org/offsetpolicy/.](https://portals.iucn.org/offsetpolicy/))



The goal of NNL/NG can generally not be achieved by working on mitigation alone. This is because applying the mitigation hierarchy to development projects is highly unlikely to achieve NNL/NG, since mitigation measures are usually only required in the context of certain losses of biodiversity. Furthermore biodiversity is lost for many reasons. Some of the drivers of biodiversity loss are not covered by law and policy requiring mitigation. Requirements for mitigation are typically confined to activities covered by the need for planning permission and environmental impact assessments that involve loss of habitat (which can allow many smaller losses to proceed without compensation) and some mitigation measures may fail. Other significant underlying causes of loss of biodiversity, such as climate change and the spread of invasive alien species unconnected to a particular project or activity, are unlikely to require mitigation. Some activities (such as poaching) may be illegal, but with penalties such as fines that are not designed to achieve NNL/NG and their prohibition may be difficult to enforce.

Consequently, governments looking at overarching policies of Biodiversity Net Gain (and even No Net Loss) for their entire jurisdiction will need to address the full range of impacts on biodiversity, and thus policies addressing the impacts from development following the mitigation hierarchy (avoid, minimise, restore,

⁸ IUCN, The Biodiversity Consultancy and IGF, 2017

offset) will need to be complemented by other approaches that can address other biodiversity losses. A comprehensive package of policies designed to achieve a Net Gain of biodiversity might include:

Law and policy requiring individual projects to mitigate their impacts with a view to achieving NNL/NG (as described in the Government Roadmap); and complementary policies that are independent of compensation requirements such as:

- Payments for Ecosystem Services (PES)
- Reduced Emissions from Deforestation and Degradation (REDD and REDD+)
- Expansion of Protected Areas (including community protected areas)
- Environmental levies
- Fines for illegal activities that act as a genuine economic deterrent and which are applied to conservation on the ground.

United Nations Sustainable Development Goals (2015)

GOAL 14⁹

Conserve and sustainably use the oceans, seas and marine resources for sustainable development

Goal 14 Targets

14.1 By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution

14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans

14.3 Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels

14.4 By 2020, effectively regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices and implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics

14.5 By 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on the best available scientific information

14.6 By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, eliminate subsidies that contribute to illegal, unreported and unregulated fishing and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the World Trade Organization fisheries subsidies negotiation

14.7 By 2030, increase the economic benefits to Small Island developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism

14.a Increase scientific knowledge, develop research capacity and transfer marine technology, taking into account the Intergovernmental Oceanographic Commission Criteria and Guidelines on the Transfer of Marine Technology, in order to improve ocean health and to enhance the contribution of marine biodiversity to the development of developing countries, in particular small island developing States and least developed countries

14.b Provide access for small-scale artisanal fishers to marine resources and markets

14.c Enhance the conservation and sustainable use of oceans and their resources by implementing international law as reflected in UNCLOS, which provides the legal framework for the conservation and sustainable use of oceans and their resources, as recalled in paragraph 158 of The Future We Want

GOAL 15¹⁰

Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

⁹ <https://sustainabledevelopment.un.org/sdg14>

¹⁰ <https://sustainabledevelopment.un.org/sdg15>

Goal 15 Targets

- 15.1** By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements
- 15.2** By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally
- 15.3** By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world
- 15.4** By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development
- 15.5** Take urgent and significant action to reduce the degradation of natural habitats, **halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species**
- 15.6** Promote fair and equitable sharing of the benefits arising from the utilization of genetic resources and promote appropriate access to such resources, as internationally agreed
- 15.7** Take urgent action to end poaching and trafficking of protected species of flora and fauna and address both demand and supply of illegal wildlife products
- 15.8** By 2020, introduce measures to prevent the introduction and significantly reduce the impact of invasive alien species on land and water ecosystems and control or eradicate the priority species
- 15.9** **By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts**
- 15.a** Mobilize and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems
- 15.b** Mobilize significant resources from all sources and at all levels to finance sustainable forest management and provide adequate incentives to developing countries to advance such management, including for conservation and reforestation
- 15.c** Enhance global support for efforts to combat poaching and trafficking of protected species, including by increasing the capacity of local communities to pursue sustainable livelihood opportunities

Convention on Biological Diversity Aichi Targets (2015)

The CBD's Strategic Plan for Biodiversity 2011–2020¹¹ and the Aichi Targets¹², '*Living in Harmony with Nature*' – is a ten-year framework for action by all countries and stakeholders to save biodiversity and enhance its benefits for people. The text of the Strategic Plan and the Aichi Targets is set out in the box below.

The fifteenth meeting of the Conference of the Parties in 2020 is expected to update the Convention's strategic plan¹³. This will be in the context of the 2050 Vision of the current Strategic Plan for Biodiversity 2011-2020 as well the 2030 Agenda for Sustainable Development and other relevant international processes, and in the light of an assessment of progress in achieving the goals and Aichi Biodiversity Targets of the current plan as well as of future scenarios of change.

Planning by governments, developers and other stakeholders for NNL/NG can make a major contribution to implementing the CBD Strategic Plan and achieving the Aichi Targets. Similarly, work to achieve the Aichi Targets can form an important part of national planning for NNL/NG:

- **NNL/NG planning can help achieve the Aichi targets:** Planning for NNL/NG helps governments achieve the vision, mission, goals and Aichi targets, especially if NNL/NG are specifically adopted as policy goals at the national level and are articulated with explicit reference to existing conservation commitments

¹¹ <http://www.cbd.int/sp/default.shtml>

¹² <https://www.cbd.int/doc/strategic-plan/2011-2020/Aichi-Targets-EN.pdf>

¹³ <https://www.cbd.int/post2020/>; <https://www.cbd.int/doc/press/2018/pr-2018-07-18-sbstta22-sbi2-en.pdf>

and priorities. Planning for NNL/NG can help achieve the Vision of the Strategic Plan, because NNL/NG explicitly sets a visionary outcome for conservation (and restoration) of biodiversity and ecosystem services, as articulated in the Vision. Planning for NNL/NG can help governments achieve their goals set out in NBSAPs because establishing a NNL/NG goal and putting this into operation embeds the conservation priorities and activities established in NBSAPs into land-use planning, planning and delivery of mitigation measures (i.e. conservation and restoration), licensing of economic activities and planning of operations by companies with impacts on biodiversity to minimize negative impacts and indeed achieve a net positive impact. The design and implementation of NNL/NG strategies should be participatory, and can create sustainable livelihoods as and conservation outcomes that underpin quality of life and good health. NNL/NG can reduce pressure on biodiversity and succeeds best through benefit-sharing. Compared to a plausible reference scenario when NNL/NG is not required, it can generate additional financial resources dedicated to conservation. Planning for NNL/NG and running a system designed specifically for NNL/NG involves building capacity that is helpful for the conservation and sustainable use of biodiversity (in conservation, in mainstreaming, in land-use planning, in improving corporate management of risks and impacts on biodiversity, for instance). Planning for NNL/NG should involve establishing robust reference scenarios, baselines and measures of biodiversity and reporting these transparently, so it supports decision-making based on sound science and the precautionary approach.

- **The Aichi targets can help achieve NNL/NG:** NBSAPs (under Article 6(a) of the CBD) can help with national and project-level planning for NNL/NG because the conservation priorities established in NBSAPs can be used to determine how to apply the mitigation hierarchy and undertake landscape/seascape-level planning and priorities for avoidance, restoration and conservation through offsets), priority conservation areas and activities, data and research to support exchange rules and metrics. The conservation priorities established in NBSAPs can be used to determine how to apply the mitigation hierarchy and undertake landscape/seascape-level planning and priorities for avoidance, restoration and conservation through offsets), priority conservation areas and activities, data and research to support exchange rules and metrics. Since NNL/NG planning involves integrating consideration of biodiversity into economic decision-making, it can help mainstream biodiversity into agriculture, energy, extraction, manufacturing and other sectors, which is often a challenging goal of NBSAPs, in line with CBD Article 6(b).
- **Specific targets:** All twenty Aichi Targets (below) are relevant to NNL/NG, but some are clearly directly relevant, such as Targets 5, 11, 12, 14 and 15.

However, despite these undoubted opportunities and synergies between NNL/NG and the Aichi targets, it is important to note that planning for NNL/NG will only help achieve the Aichi targets if it is done to a high standard, including particularly the framing of a robust reference scenario for NNL/NG and clear accounting of conservation contributions from offsets. For a description of some core criteria for high standards, please see the BBOP Standard (Technical Note 6), the World Bank's Environmental and Social Safeguard Policies, the IFC Performance Standards and the Equator Principles Association (Technical Note 5), IUCN policy on biodiversity offsets (Technical Note 4) and ten Kate and Crowe (2014).

CBD's Strategic Plan for Biodiversity 2011–2020 and the Aichi Targets (<https://www.cbd.int/sp/>)

The Strategic Plan provides an overarching framework on biodiversity, not only for the biodiversity-related conventions, but for the entire United Nations system and all other partners engaged in biodiversity management and policy development. Its purpose is to promote effective implementation of the Convention through a strategic approach, comprising a shared vision, a mission, and strategic goals and targets ("the Aichi Biodiversity Targets"), to inspire broad-based action by all Parties and stakeholders. It also provides a flexible framework for the establishment of national and regional targets and for enhancing coherence in the implementation of the provisions of the Convention and the decisions of the Conference of the Parties

NATIONAL IMPLEMENTATION

To implement the Strategic Plan for Biodiversity 2011-2020, Parties are:

- reviewing, and as appropriate, updating and revising their national biodiversity strategies and action plans (NBSAPs) in line with the Strategic Plan for Biodiversity 2011-2020;
- developing national targets, using the Strategic Plan and its Aichi Biodiversity Targets as a flexible framework, and integrating these national targets into the updated NBSAPs. The national targets are developed taking into account national priorities and capacities with a view of also contributing to the collective efforts to reach the global Aichi Biodiversity Targets;
- adopting the updated NBSAPs as a policy instrument;
- using the updated NBSAPs for the integration of biodiversity into national development, accounting and planning processes;
- monitoring and reviewing implementation of the NBSAPs and national targets, using indicators.

For further details on the revision of NBSAPs please consult www.cbd.int/nbsap

Additional information about the Strategic Plan can be found at www.cbd.int/sp

The Strategic Plan is comprised of a shared vision, a mission, strategic goals and 20 ambitious yet achievable targets, collectively known as the Aichi Targets. The Strategic Plan serves as a flexible framework for the establishment of national and regional targets and it promotes the coherent and effective implementation of the three objectives of the Convention on Biological Diversity.

THE VISION

"By 2050, biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people."

THE MISSION

"Take effective and urgent action to halt the loss of biodiversity in order to ensure that by 2020 ecosystems are resilient and continue to provide essential services, thereby securing the planet's variety of life, and contributing to human well-being, and poverty eradication. To ensure this, pressures on biodiversity are reduced, ecosystems are restored, biological resources are sustainably used and benefits arising out of utilization of genetic resources are shared in a fair and equitable manner; adequate financial resources are provided, capacities are enhanced, biodiversity issues and values mainstreamed, appropriate policies are effectively implemented, and decision-making is based on sound science and the precautionary approach."

Strategic Goal A: Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society



Target 1: By 2020, at the latest, people are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably.



Target 2 - By 2020, at the latest, biodiversity values have been integrated into national and local development and poverty reduction strategies and planning processes and are being incorporated into national accounting, as appropriate, and reporting systems.



Target 3 - By 2020, at the latest, incentives, including subsidies, harmful to biodiversity are eliminated, phased out or reformed in order to minimize or avoid negative impacts, and positive incentives for the conservation and sustainable use of biodiversity are developed and applied, consistent and in harmony with the Convention and other relevant international obligations, taking into account national socio economic conditions.



Target 4 - By 2020, at the latest, Governments, business and stakeholders at all levels have taken steps to achieve or have implemented plans for sustainable production and consumption and have kept the impacts of use of natural resources well within safe ecological limits.

Strategic Goal B: Reduce the direct pressures on biodiversity and promote sustainable use



Target 5 - By 2020, the rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced.



Target 6 - By 2020 all fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem based approaches, so that overfishing is avoided, recovery plans and measures are in place for all depleted species, fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits.



Target 7 - By 2020 areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity.



Target 8 - By 2020, pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity.



Target 9 - By 2020, invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment.



Target 10 - By 2015, the multiple anthropogenic pressures on coral reefs, and other vulnerable ecosystems impacted by climate change or ocean acidification are minimized, so as to maintain their integrity and functioning.

Strategic Goal C: Improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity



Target 11 - By 2020, at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.



Target 12 - By 2020 the extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained.



Target 13 - By 2020, the genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives, including other socio-economically as well as culturally valuable species, is maintained, and strategies have been developed and implemented for minimizing genetic erosion and safeguarding their genetic diversity.

Strategic Goal D: Enhance the benefits to all from biodiversity and ecosystem services.



Target 14 - By 2020, ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being, are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable.



Target 15 - By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including restoration of at least 15 per cent of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification.



Target 16 - By 2015, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization is in force and operational, consistent with national legislation.

Strategic Goal E: Enhance implementation through participatory planning, knowledge management and capacity building



Target 17 - By 2015 each Party has developed, adopted as a policy instrument, and has commenced implementing an effective, participatory and updated national biodiversity strategy and action plan.



Target 18 - By 2020, the traditional knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity, and their customary use of biological resources, are respected, subject to national legislation and relevant international obligations, and fully integrated and reflected in the implementation of the Convention with the full and effective participation of indigenous and local communities, at all relevant levels.



Target 19 - By 2020, knowledge, the science base and technologies relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss, are improved, widely shared and transferred, and applied.



Target 20 - By 2020, at the latest, the mobilization of financial resources for effectively implementing the Strategic Plan for Biodiversity 2011-2020 from all sources, and in accordance with the consolidated and agreed process in the Strategy for Resource Mobilization, should increase substantially from the current levels. This target will be subject to changes contingent to resource needs assessments to be developed and reported by Parties.

Technical Note 4: IUCN policy on biodiversity offsets

In September 2016, at the World Conservation Congress, IUCN adopted a 'Policy on Biodiversity Offsets'.

Intended to guide the work of the IUCN Secretariat, Commissions and Member organisations, the purpose of the policy is to provide a framework to guide the design, implementation and governance of biodiversity offset schemes and projects. It provides guidance as to where offsets are, and are not, an appropriate conservation tool to ensure that, when offset schemes are used, they lead to positive conservation outcomes compared to business as usual and thus minimize the risk of negative conservation outcomes. It covers all aspects of the design, implementation and governance of biodiversity offsets within the context of the mitigation hierarchy, including circumstances where biodiversity offsets are not appropriate and the policy applies to all sectors and types of development where biodiversity offsets are proposed.

The policy statement itself is as follows:

“5. Policy Statement - Under the specific conditions outlined in this policy, it is IUCN’s position that biodiversity offsets can contribute to positive conservation outcomes. However, biodiversity offsets are only appropriate for projects which have rigorously applied the mitigation hierarchy (avoid, minimise, restore/rehabilitate and offset; see section 6) and when a full set of alternatives to the project have been considered.

- Offsets must only occur after all previous steps in the mitigation hierarchy have been considered and no alternatives are available. Avoidance is the first and most important step in the mitigation hierarchy. Biodiversity offsets must never be used to circumvent responsibilities to avoid and minimise damage to biodiversity, or to justify projects that would otherwise not happen.
- The mitigation hierarchy must be applied at the landscape or seascape level with mitigation actions designed and implemented at a site or project level. Governments should ensure the mitigation hierarchy is embedded in the framework of landscape and seascape level planning and legislation and is part of existing and future strategic development plans.
- Only after applying the earlier steps in the mitigation hierarchy should biodiversity offsets be employed to address the residual impact in order to achieve at least No Net Loss and preferably a Net Gain at the project level. The terms No Net Loss or Net Gain refer to the outcome achieved compared to a reference scenario. This reference scenario can be what is likely to have occurred in the absence of the project and the offset, or one that provides a better outcome for biodiversity conservation. Societal values should also be accounted for and used to inform the design and implementation of biodiversity offsets.
- In certain circumstances, residual impacts on biodiversity (after completing the avoidance, minimization and rehabilitation steps of the mitigation hierarchy) cannot be offset. Additionally, there are some components of biodiversity for which impacts could theoretically be offset, but with a high risk of failure. Under these circumstances, biodiversity offsets are not appropriate, and this means the project as designed should not proceed.”

The rest of the policy document goes on to address: the role of biodiversity offsets within the mitigation hierarchy; the mitigation hierarchy and landscape and seascape planning; the goal for biodiversity offsets; limits to biodiversity offsets; key elements of biodiversity offsets (measuring and exchanging biodiversity, additionality, timeframe, uncertainty, monitoring and evaluation, governance) and it provides a glossary.

The full text of the policy is available at

https://portals.iucn.org/library/sites/library/files/resrecfiles/WCC_2016_RES_059_EN.pdf

Technical Note 5: International Finance Corporation's Performance Standard 6 and associated Equator Principles commitments

The International Finance Corporation's revised Performance Standards took effect from 1 January 2012. They are a requirement of clients seeking project finance from the IFC, and from 2012 are also a condition of project finance from the financial institutions that have adopted the Equator Principles, and thus apply the IFC's Performance Standards (see below).

Performance Standard 6¹⁴ is entitled 'Biodiversity Conservation and Sustainable Management of Living Natural Resources' and some of its key provisions and relationship with the mitigation hierarchy including biodiversity offsets are explained in the following Box.

Introduction to IFC Performance Standard 6 and its provisions on the mitigation hierarchy, including biodiversity offsets	
What is PS6?	The Performance Standards set out requirements for corporate clients of the IFC (and of banks that have adopted the Equator Principles) seeking project finance. There are 8 Performance Standards, and PS6 is titled 'Biodiversity Conservation and Sustainable Management of Living Natural Resources'. The amended version described below will come into effect on 1 January 2012.
What is its objective?	<ul style="list-style-type: none"> • Protect and conserve biodiversity • Maintain the benefits from ecosystem services • Promote the sustainable management of living natural resources <p>PS6 covers projects:</p> <ul style="list-style-type: none"> • Located in modified, natural or critical habitats • Which potentially impact on or are dependent on ecosystem services over which the client has direct management control or significant influence • Including production of living natural resources (e.g. agriculture, husbandry, fisheries, forests)
What are requirements of clients for impacts on 'modified habitat'?	<p>Modified habitat comprises: 'Areas that may contain a large proportion of non-native plant and/or animal species, and/or where human activity have substantially modified the area's primary ecological functions and species composition.' It may include areas managed for agriculture, forest plantations, reclaimed coastal zones and reclaimed wetlands.</p> <ul style="list-style-type: none"> • PS applies to areas of modified habitat including significant biodiversity value, as determined by the risk and impact identification process in Performance Standard 1. • The client should minimise impacts on such biodiversity and implement mitigation measures as appropriate.
What are requirements of clients for impacts on 'natural habitat'?	<p>Natural habitat comprises: 'Areas composed of viable assemblages of plant and/or animal species of largely native origin, and/or where human activity has not essentially modified an area's primary ecological functions and species composition.'</p> <p>The client will not significantly convert or degrade natural habitats, unless all of the following have been demonstrated:</p> <ul style="list-style-type: none"> • No other viable alternatives within the region exist for development of the project on modified habitat; • Consultation has established the views of stakeholders, including Affected Communities, with respect to the extent of conversion and degradation; and

¹⁴ http://www.ifc.org/wps/wcm/connect/bff0a28049a790d6b835faa8c6a8312a/PS6_English_2012.pdf?MOD=AJPERES

	<ul style="list-style-type: none"> • Any conversion or degradation mitigated according to the mitigation hierarchy. • In areas of natural habitat, mitigation measures will be designed to achieve no net loss of biodiversity where feasible. Appropriate mitigation measures include: <ul style="list-style-type: none"> • Avoiding impacts on biodiversity through the identification and protection of set-asides; • Implementing measures to minimise habitat fragmentation, such as biological corridors; • Restoring habitats during operations and/or after operations; and • Implementing biodiversity offsets.
<p>What are requirements of clients for impacts on ‘critical habitat’?</p>	<p>Critical habitat comprises: ‘Areas with high biodiversity value, including:</p> <ul style="list-style-type: none"> (i) Habitat of significant importance to Critically Endangered and/or Endangered 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.’ <p>In areas of critical habitat, the client will not implement any project activities unless all of the following are demonstrated:</p> <ul style="list-style-type: none"> • No other viable alternatives within the region exist for development of the project on modified or natural habitats that are not critical; • Project doesn’t lead to measurable adverse impacts on biodiversity values for which critical habitat designated and on ecological processes supporting them; • Project doesn’t lead to net reduction in the global and/or national/regional population of any Critically Endangered or Endangered species over a reasonable period of time; and • Robust, appropriately designed, and long-term biodiversity monitoring and evaluation is integrated into the client’s management program. • In cases where a client can meet these requirements, the project’s mitigation strategy will be described in a Biodiversity Action Plan and will be designed to achieve net gains of those biodiversity values for which critical habitat was designated. • Where biodiversity offsets are proposed, client must demonstrate through an assessment that the project’s significant residual impacts on biodiversity will be mitigated to meet the above requirements.
<p>What are requirements of clients with projects within protected areas?</p>	<p>Where a proposed project is located within a legally protected area or an internationally recognised area (UNESCO Natural World Heritage Sites, UNESCO Man and the Biosphere Reserves, Key Biodiversity Areas, and wetlands designated under the (Ramsar) Convention on Wetlands of International Importance), the client will meet the requirements for natural or critical habitat, as applicable and, in addition, will:</p> <ul style="list-style-type: none"> • Demonstrate that the proposed development in such areas is legally permitted; • Act in a manner consistent with any government recognised management plans for such areas; • Consult protected area sponsors and managers, affected communities, indigenous peoples and other stakeholders on the proposed project, as appropriate; and • Implement additional programs, as appropriate, to promote and enhance the conservation aims and effective management of the area.

What are requirements of clients concerning 'ecosystem services'?

Client will undertake a systematic review to identify priority ecosystem services, namely:

- Ecosystem services which the project is likely to impact, resulting in adverse impacts to affected communities: Client will **avoid adverse impacts on such priority services**. Where such impacts are unavoidable, the client will minimise them and implement mitigation measures that aim to **maintain the value and functionality of priority services**. Affected communities will participate in determination of these priority ecosystem services. And/or:
- Ecosystem services on which the project is directly **dependent** for operations: Client shall minimise impacts on these priority ecosystem services and implement measures that **increase resource efficiency** of their operations.

Equator Principles Association (see equator-principles.com/)

The Equator Principles (EP) is a risk management framework, adopted by financial institutions for determining, assessing and managing environmental and social risk in projects. It is primarily intended to provide a minimum standard for due diligence to support responsible risk decision-making. As of October 2018, 94 Equator Principles Financial Institutions (EPFIs) in 37 countries have officially adopted the EP, covering over 70 percent of international Project Finance debt in emerging markets.

The Equator Principles Association Steering Committee agreed that the revised IFC Performance Standards would take effect for EP Association Members on 1 January 2012, just as they did for the IFC. See: https://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/sustainability-at-ifc/company-resources/sustainable-finance/equator+principles+financial+institutions

Technical Note 6: The BBOP Standard

The Standard on Biodiversity Offsets is intended to help determine whether the mitigation hierarchy has been followed and a biodiversity offset has been designed and subsequently implemented in accordance with the BBOP Principles. BBOP agreed its ten Principles in 2009, and the standard is presented as a hierarchy of Principles, Criteria and Indicators (PCI): an architecture similar to that used in a number of other standards, such as the Forest Stewardship Council, the Marine Stewardship Council, the Roundtable for Sustainable Palm Oil, Round Table on Responsible Soy, and others.

The Standard was designed to determine whether a particular project (for example, the expansion of a palm oil plantation, the building of a road, the construction of a mine, an oil and gas field and pipeline, a dam, a wind farm, a housing estate, or a tourism venture) has met the BBOP Principles (and to design projects so that they do). However, biodiversity offsets can also be used beyond the project level to address the broader effects of programmes, plans, policies and schemes that have larger-scale, on-the-ground impacts on biodiversity. It can be used to plan for no net loss at a level broader than single projects, for instance, when developing:

- A **regional** development plan or strategic environmental assessment
- A **national** scheme or system for biodiversity offsets
- **Conservation banks** to provide offsets for multiple projects

The Standard is accompanied by **Guidance Notes** which offer an interpretation of each Indicator and include key questions for assessment; factors to consider in assessing conformance (conformance requirements and situations that are likely to represent causes of non-conformance); as well as related activities from other Indicators.

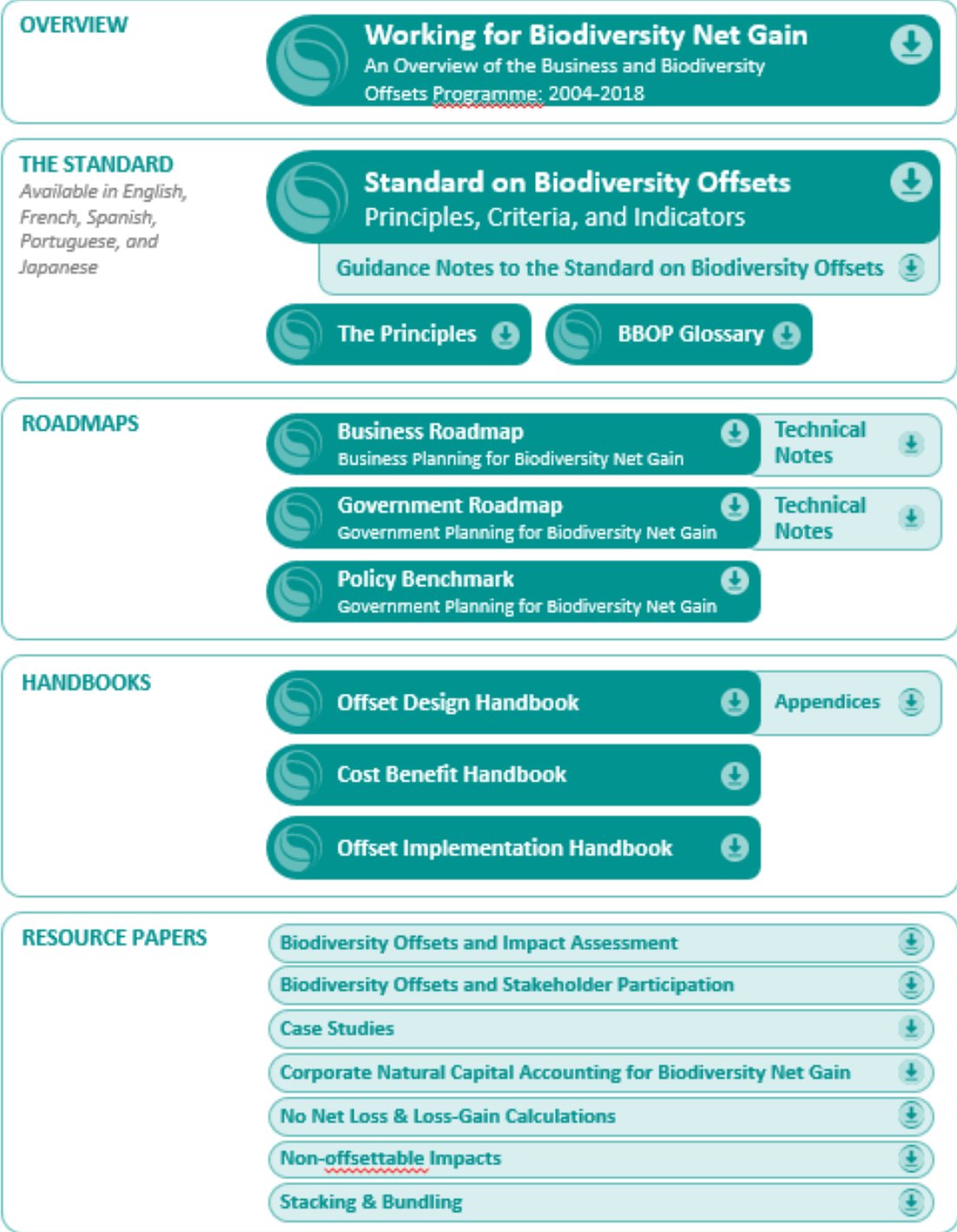
The Standard is intended for use by:

- **Offset designers and implementers:** Reference to the BBOP Principles is common in projects applying the mitigation hierarchy (including biodiversity offsets), and the Standard can provide guidance for offset design and implementation so developers can show how the Principles have been met. This can help ensure that any later assessment demonstrates that the mitigation measures meet the Standard. The Standard can be used in conjunction with 'How to' tools for offset design and implementation such as BBOP's Handbooks.
- **Assessors and Auditors:** The Standard can be used to determine whether an offset has been designed and subsequently implemented in accordance with the BBOP Principles.
- **Policy-makers:** Those involved in developing and administering policy on the mitigation hierarchy and biodiversity offsets (whether they work for governments, individual companies or industry associations), may also find the Standard and Guidance Notes useful, as they capture international best practice on identifying impacts on biodiversity and applying the mitigation hierarchy (avoid, minimise, rehabilitate/restore, offset). Elements can be integrated into national policy and guidelines.
- **Civil society:** The documents could help representatives from local communities, indigenous peoples and civil society organisations affected by or interested in a project or mitigation measures including biodiversity offset. The Standard can inform their dialogue with developers.

The Principles, Criteria and Indicators focus on the ecological aspect (i.e. intrinsic values) of biodiversity, and also embrace its socioeconomic and cultural values, since these must be taken into consideration in following the mitigation hierarchy and demonstrating no net loss or a net gain of biodiversity. 'Principles' are interpreted as the fundamental statements about a desired outcome. 'Criteria' are the conditions that need to be met in order to comply with a Principle. 'Indicators' are the measurable states which allow the assessment of whether or not a particular Criterion has been met.

The BBOP Principles, Criteria, Indicators and accompanying Guidance Notes constitute the core of BBOP’s work to develop best practice for biodiversity offsets. Since BBOP was established at the end of 2004, it has also produced a number of other tools and products illustrated in **Figure 1**:

Figure 1: BBOP Standard on Biodiversity Offsets and Associated Material



The Standard is available at: https://www.forest-trends.org/bbop_pubs/standard-on-biodiversity-offsets/

A glossary of the terms found in the Standard and the other documents shown here is available at: https://www.forest-trends.org/bbop_pubs/glossary_2018

All the documents listed in the diagram above and related papers and webinar presentations are available at: <https://www.forest-trends.org/bbop/resources/>.

Technical Note 7: Risks and opportunities from NNL/NG

Among the opportunities and risks that have been identified with planning for Biodiversity Net Gain and alternative goals (and especially biodiversity offsets) are as follows:

Opportunities associated with planning for NNL/NG:

- Policy-makers are exploring ways to plan for NNL/NG (including biodiversity offsets) because of the potential to offer conservation, development and social benefits.
- Reconcile tensions between policy objectives related to conservation, development and social benefits.
- Achieve more and better conservation outcomes than typically result from the planning of mitigation measures for development projects
- Tool for companies to manage biodiversity risk and opportunity,
- Way for society to mainstream considerations of biodiversity into economic decision-making, through governments' planning processes, licenses and permits and financial institutions' lending and investment decisions.
- Enable indigenous peoples and local communities to be involved in project planning and to establish conservation activities that contribute to sustainable livelihoods.
- Mitigation measures planned at the landscape scale can contribute to regional conservation and land-use planning, and to the priorities set out in national biodiversity strategies and action plans.
- Facilitate better relationships between governments and developers with regard to the mitigation of biodiversity impacts.
- Clear guidelines allow developers to plan and implement their mitigation measures in an orderly and efficient way.
- Create a new green economy of enterprises to undertake mitigation (including offsets) through habitat establishment and restoration, stimulating the rural economy and small and medium-sized enterprises.
- Generate additional private sector investments in conservation that add to the available resources, helping to meet governments' overall objectives for biodiversity conservation, supplementing national budgetary support for protected area networks and other *in situ* biodiversity activities.

Risks associated with planning for NNL/NG:

(Note: mitigation measures only succeed where there is adequate capacity to design and implement them, and adequate monitoring, evaluation and enforcement.)

- Risk that mitigation measures (including biodiversity offsets) are unrealistic and/or not implemented in practice.
- Risk system could be misused to allow inappropriate projects to proceed,
- Risk of 'leakage' by simply displacing the causes of biodiversity loss in the offset area to another location, and risk of 'cost shifting': that government reduces public sector commitments to conservation finance, transferring the costs of national conservation priorities to the private sector.
- There are limits to the kinds of impacts on biodiversity that can or should be offset, and the time scales required for restored sites to match the target state may be extremely long, so this may not result in 'no net loss' in any meaningful timeline.
- The basis for equating losses and gains using simple metrics may fail to capture the complexities of biodiversity, resulting in net loss.

- Mitigation measures are heavily dependent on the long-term management and protection of the sites where the activities take place, so that poor standards, monitoring and compliance can lead to significant failure rates
- Methods that accept a declining trajectory for biodiversity may lock in current trends.

The following table sets out some of the expectations and concerns of civil society and developers about policy on No Net Loss and Biodiversity Net Gain:

Some of the expectations and concerns of civil society and developers about NNL/NG policy		
	Civil society	Developers
Concerns	<ul style="list-style-type: none"> • Licence to trash – offsetting reduces the motivation to avoid and minimize the impacts of developments leading to worse overall biodiversity outcomes. • Cost shifting – governments will reduce their expenditure on conservation programmes as private investment in mitigation and offsets occurs. • Crowding out – investments made in biodiversity offsets will ‘crowd out’ the motivation for other private investments in conservation initiatives. • The introduction of offset schemes provides disincentives to regulate for biodiversity conservation outside the scope of the NNL/NG policy. 	<ul style="list-style-type: none"> • Cost pressures – more rigorous mitigation measures including biodiversity offsets will increase project costs substantially, putting development and jobs at risk. • Time delays – designing mitigation measures including finding a suitable offset can lead to delays in projects that are costly and can cause uncertainty to project implementation. • Impacts on consumers – the cost of mitigation including offsets are passed on to consumers, raising prices. This is a burden on consumers, e.g. housing affordability could be negatively affected.
Expectations	<ul style="list-style-type: none"> • Conservation – High conservation value areas will be protected and impacts there not authorized. Adequate investment will be made in conservation. • Compensation – Residual and cumulative impacts are compensated fully. • Access – People’s enjoyment and use of biodiversity and ecosystem services are maintained and accessible. 	<ul style="list-style-type: none"> • Streamlined processes – NNL/NG policy and planning policy are integrated so that it is quicker and simpler to obtain necessary permits. • Legal certainty – clear land tenure, permitting processes, legal certainty on long-term mitigation activities, including offsets. • Proportionate and obtainable – costs of mitigation design and implementation are reasonable and proportionate to project costs. Land and organizations willing to undertake mitigation measures (including offsets) can be found and relied on.

Technical Note 8: Biodiversity Net Gain and Natural Capital Accounting

This Technical Note was prepared by Kerry ten Kate with contributions from Sofia Ahlroth and Ian Dickie.

The Natural Capital Committee in the UK defines natural capital as: *‘The elements of nature that directly and indirectly produce value or benefits to people, including ecosystems, species, freshwater, land, minerals, the air and oceans, as well as natural processes and functions.* The Natural Capital Protocol (2016) defines natural capital as: *‘The stock of renewable and non-renewable natural resources (e.g. plants, animals, air, water, soils, minerals) that combine to yield a flow of benefits to people’.* These definitions are very similar, in particular, because they include:

- Identification of individual assets (stocks), which include ecological communities, species, soils, land, freshwaters, minerals, sub-soil resources, oceans, the atmosphere;
- The benefits from those assets to people (i.e. flows, including ecosystem services), and
- The interactions between assets (reflected in the terms *“natural processes and functions”* / *“combine to yield”*) that underpin the way assets provide benefits.

In response to concerns about the worldwide loss of natural capital, including biodiversity, and the effect this could have on the economy and people’s wellbeing, governments and companies have begun to account for the gains and losses in the stock of natural capital that result from their economic activity, using methods and terminology documented in the (national) System of Environmental-Economic Accounting (SEEA, 2012)¹⁵ and the (organizationally-defined) Natural Capital Protocol (2016), respectively. The Natural Capital Protocol is a framework designed to help natural capital assessments generate trusted, credible, and actionable information for business managers to inform decisions¹⁶.

Natural capital accounting can work at several levels, from national natural capital accounts, through accounts prepared for a region, city or landscape, to natural capital accounts prepared for a company or organisation. The latter can have a variety of boundaries, such as part or all of the organisation’s value chain, or for one or more specific sites or projects it manages. All these have implications for Biodiversity Net Gain, and this note will summarise some relevant considerations at the national level.

National natural capital accounts (NCA):

Much of the effort around the world on natural capital accounting currently concerns accounting at the national level, particularly the improvement of national income accounts.

As Nobel Laureate Joseph Stiglitz has noted, a private company is judged by both its income and its balance sheet, but most countries only compile an income statement (GDP) and know very little about the national balance sheet¹⁷. The System of National Accounting (SNA) includes both stocks and flows, but the most frequently used measure, Gross Domestic Product (GDP), only measures what is produced and consumed during a particular year - the country’s income - ,and says nothing about wealth and assets that underlie this income. When a country exploits its minerals, over-exploits fisheries or degrades water resources, for example, it is actually depleting wealth, but these activities would count positively towards GDP, while the declining assets are invisible in GDP.

NCA seeks to address this. In 2012, the UN Committee of Experts on Environmental-Economic Accounting (UN-CEEA) launched an internationally-agreed method to account for natural capital, and more than 30 countries have started to implement the SEEA. Now, many countries develop NCA to cover issues

¹⁵ <https://seea.un.org/>

¹⁶ <https://naturalcapitalcoalition.org/>

¹⁷ <http://www.worldbank.org/en/topic/environment/brief/environmental-economics-natural-capital-accounting>

beyond material resources like timber that are currently approved in SEEA to include ecosystem services and other natural resources that are not traded or marketed, and so are harder to measure.

The World Bank Group leads a partnership to advance natural capital accounting internationally. The Wealth Accounting and the Valuation of Ecosystem Services (WAVES) Global Partnership¹⁸ aims to promote sustainable development by ensuring that natural resources including biodiversity are mainstreamed into development planning and national economic accounts. Among the objectives of WAVES is to contribute to the development of methodologies for ecosystem accounting. WAVES also seeks to explore and expand on how NCA can contribute to better decision making. This includes reaching out to other communities, such as the private sector working with the Natural Capital Protocol, to explore synergies and mutual support between governments and businesses working with natural capital approaches.

National natural capital accounting and Biodiversity Net Gain (BNG):

Although natural capital accounting and NNL/NG reporting have developed (largely) independently, these concepts are intrinsically tied together: a change in biodiversity represents a change in natural capital. The developments in SEEA to include ecosystem services provide the opportunity for Natural Capital Accounts to reflect the contribution of biodiversity and ecosystem services to a country's economy and to record whether there is a net gain or net loss of biodiversity over time.

In the future, it would be useful to explore how national policy goals for NNL/NG of biodiversity could be integrated with these national accounting frameworks. For instance, the estimated benefits and the costs associated with investment in activities to attain and then maintain No Net Loss or a Net Gain of biodiversity could be recorded within national natural capital accounts in a variety of ways: in physical measures of the stocks of assets, recording expenditures (or 'investments') in achieving BNG, and through increased value of the enhanced natural capital assets. The latter would be based on the approach of valuing assets as the discounted value of the future flows of benefits they can provide (see below). For example, current biodiversity trends are an indicator of that future capacity for some services, and investments in ecosystems to achieve BNG can be expected to enhance ecosystems' capacity to provide certain future benefits. Each of these relationships is service-specific, but analysis can be linked to available environmental data. This would include monitoring changes in habitats and green corridors necessary to safeguard wildlife and flora.

BNG National and Corporate NCA:

For companies and other individual organisations, Natural Capital Accounting can help measure impacts and dependencies on natural capital to reflect them in decision-making. It is addressed in Technical Note 16 to the Business Roadmap. For instance, the CNCA framework uses an accounting process to produce a balance sheet and income statement for natural capital and this has been adapted specifically to integrate Biodiversity Net Gain (or No Net Loss).

Work is also underway to align principles and approaches for national and corporate natural capital accounts. In time, individual organisational natural capital accounts for biodiversity net gain could contribute to the picture at the national level, and data-sharing between governments and businesses would help in this regard.

¹⁸ <https://www.wavespartnership.org/>

Many countries have introduced their respective systems for mitigation, compensation, offsets and NNL/NG over a period of several years. This multi-year approach towards policy for NNL/NG can be illustrated by the case of Victoria, Australia, where the approach to NNL/NG, including the use of offsets, has emerged since 1989, and is still being developed today, as the following summary illustrates:

- 1989: Regulation of native vegetation clearing was introduced, in response to the realization that some 80% of native vegetation cover had been lost on private land compared to the pre-1750 state. The regulation led to the end of broad-scale clearing of native vegetation. However offsetting was sporadic and unquantified.
- 1998: Biodiversity mapping was brought in, with mapping of extant vegetation, modelled maps of native vegetation in the year 1750, mapping of bioregions, and mapping of the presence of threatened species. This provided a state-wide information base that supports offset design; however offsets were still not the norm.
- 2000: The (voluntary) auction-based incentive program ‘BushTender’ was brought in. While this is not an offset system, it introduced site assessment and landowner agreements. This developed key techniques that are core to offsets outside the regulatory environment and allowed the state to gain experience that could then be used for offsets.
- 2002: The Native Vegetation Management Framework policy was introduced. This clarified the basis for determining NNL (through ‘like-for-like’ or better offsets) and the metrics for offsets (habitat hectares and old trees). However, developers found it hard to find their offsets: identifying suitable locations and landowners prepared to cooperate.
- 2007/8: The offset market based on credit trading was introduced (BushBroker). This provided for third-party suppliers and brokers, and a credit register was set up. Credits used the same units of habitat hectares and old trees.
- 2013: Revisions that introduced a risk-based approach including changes to the like-for-like criteria and a new native vegetation information management system that extends the use of maps for permit assessment and offsetting processes. Offsets for threatened species losses now require like habitat which is identified using spatial modelling and mapping.

Since 2007, Victoria’s government-operated broker has conducted more than 400 trades of over Aus\$34 million in value. In addition, private brokers have been established. ELink, for instance, has undertaken more than 50 trades since 2010. The Victorian offset system is still evolving, with the 2013 changes placing a strong emphasis on the use of mapped information for assessment and offsetting, particularly for low-risk impacts.

A similar evolutionary story can be told for the development of mitigation for wetlands and streams in the USA, under the Clean Water Act (of 1973):

- The demand for offsets was initially stimulated by the announcement in 1989 of the policy goal of ‘no overall net loss’ of wetland acres and functions, also applicable to streams.
- From 1989 to 1995, the mitigation process was ad hoc. Federal guidance was issued in 1995, which promoted increased mitigation through the private sector. Three forms of implementation became possible: (i) permittee-responsible mitigation (where developers take responsibility for delivering their own offsets); (ii) mitigation banks; and (iii) payment to in-lieu funds.
- From 9 June 2008, new regulations promoted one standard for mitigation, with a “Preference” for mitigation banking.
- In November 2015, the President of the US issued a memorandum on ‘Mitigating Impacts on Natural Resources from Development and Encouraging Related Private Investment’, intended to strengthen and streamline landscape-level mitigation policy within five federal agencies. This directs them to

follow the mitigation hierarchy, giving preference to advanced compensation mechanisms like mitigation and conservation banking. Coinciding with the Executive Office's announcement, the Department of Interior (DOI) released a new policy that highlights mitigation as a core part of public land management decisions.

With advances in technology and with greater experience in policy and program development, the timelines for setting up systems for mitigation, compensation, offsets and NNL/NG are now likely to be shorter than described in these examples.

Technical Note 10: Assessing losses and gains at the jurisdictional level to determine the feasibility of a NNL/NG policy

Before introducing a national (or state-level) policy with a commitment to Biodiversity Net Gain, No Net Loss or another goal, it is helpful to establish the feasibility of achieving the goal under a given set of circumstances. This is done by estimating the residual losses of biodiversity over the medium term (for instance, two decades) under the expected development strategy and the potential gains - additional conservation outcomes - that can realistically be secured over the same time frame from restoration and averted loss activities, as relevant.

Such a 'Loss/gain analysis' (L/G analysis) uses the best available data to produce the key spatial layers and other information needed to define plausible, adequately detailed land use change scenarios that would illustrate potential forest losses and gains across the country, region or landscape in question. This involves choosing a meaningful timeframe for the analysis, selecting biodiversity proxies and provisional metrics, investigating and modelling patterns of land use change, and establishing a defensible reference scenario or scenarios as well as the underlying rules for assessing biodiversity losses and gains under a given scenario.

Key steps are outlined below. Consultation with specialists should be an integral part of the process, as they can guide the decisions and provide data for the analysis:

- Assemble relevant and readily available biodiversity and land use information and spatially explicit data required for the analysis and note significant data gaps and limitations.
- Define an appropriate frame of reference (timeframe, scale, conceptual biophysical reference scenario/counterfactual, etc.) and policy scenario/s to inform the land use change analysis. Establish the main focus of this policy (i.e. whether the focus is on different types of forest, or includes specific species – e.g. those of conservation concern, or includes terrestrial and aquatic systems, etc.) and its scope. (See the box below.)
- Develop proxies and provisional metrics to represent and quantify the chosen biodiversity component across the study area, and establish provisional exchange rules for losses and gains.
- Identify priority biodiversity on which impacts need to be avoided since they are irreplaceable and for other reasons (e.g. legal provisions). These areas should be 'masked out' as unavailable for development.
- For the chosen timeframe, establish the current biodiversity situation and land cover/use patterns and project likely future changes (losses and gains), taking into consideration the reference scenario and the scope of the policy.
- Describe the resulting land use change scenario/s, based on predicted changes between current and future land cover and use patterns, along with the underlying assumptions.
- Assess the extent to which it is feasible to achieve NNL or a Net Gain of biodiversity under different scenarios and/or under what conditions it would be feasible.
- Given that achieving NNL or Net Gain can be a challenge, it may help to investigate alternative compensation approaches, such as 'Managed retention' (see Technical Note 11, below) to determine their suitability and implications.

This work can help inform the drafting of appropriate policy and guidelines.

Choosing an appropriate reference scenario

One of the most important things to decide early on in such a Loss/Gain analysis is what the biophysical reference scenario (baseline / counterfactual) should be. This determines what NNL and NG actually mean and qualifies what 'net' refers to by answering the question: 'No Net Loss or Net Gain compared with what?' The reference scenario clarifies against what state or trajectory (trend) losses and gains are to be measured, what is considered as 'additional' with respect to offsetting, and what the expected biodiversity outcome of a NG policy would be (see Maron et al., 2018). It is a key dataset defining the bounds of a given land use change analysis.

There are several options for choosing a reference scenario for a NG policy, for instance one that stays constant and one that changes over time. Note: There are other possible reference scenarios that could be considered, but these two are clear alternatives and may serve as plausible options in the setting in question:

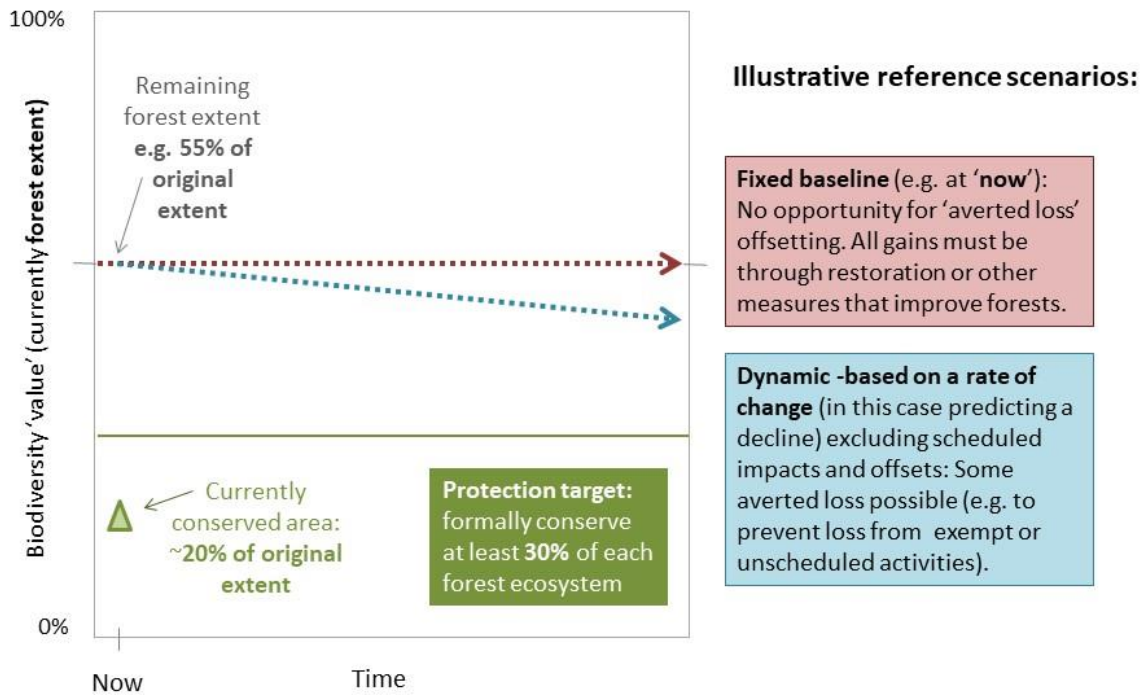
1. Static, compared to the state of biodiversity 'now': A reference scenario could be based on the current biodiversity situation. This means the outcome of the policy is compared with 'now' and losses and gains are measured relative to 'now'. This option would imply retaining biodiversity levels at least at their current levels in the landscape (if NNL is the goal) or improving biodiversity levels above the current level (if NG is the goal). Offsetting mechanisms based on restoration and other positive management interventions would be enabled, but gains could not be achieved in this approach by means of 'averted loss' offsetting.
2. Dynamic, compared to a trajectory (counterfactual) without impacts that are subject to the policy and associated offsets. This means that predicted losses and gains and the biodiversity outcome of the policy are compared with a trend which:
 - excludes impacts from development projects and offsets that would be covered by the NG policy (called 'scheduled' impacts in the Figure on the following page);
 - includes anticipated changes in the landscape due to impacts exempt from the policy ('unscheduled' impacts in the Figure on the following page); and
 - includes predicted outcomes from existing conservation commitments.

Across the landscape, not all impacts will be caused by large-scale developments. Many land use changes will be due to other causes, such as clearance for subsistence cultivation and smaller scale developments that may fall below the thresholds for obtaining an environmental impact assessment. These would generally be considered 'exempt' and outside of the scope of a NG Policy (hence not having to comply with a NG requirement – 'unscheduled' impacts).

It is important to note that impacts covered by the policy must be excluded from the counterfactual because – by the definition of NNL - these losses need to be compensated through equivalent gains under the policy, so their effect should thus be neutral¹⁹.) Offsetting mechanisms that improve the state and condition of biodiversity (e.g. restoration, where this is feasible, and other positive management interventions) would be enabled, and averted loss offsets are possible for exempt losses.

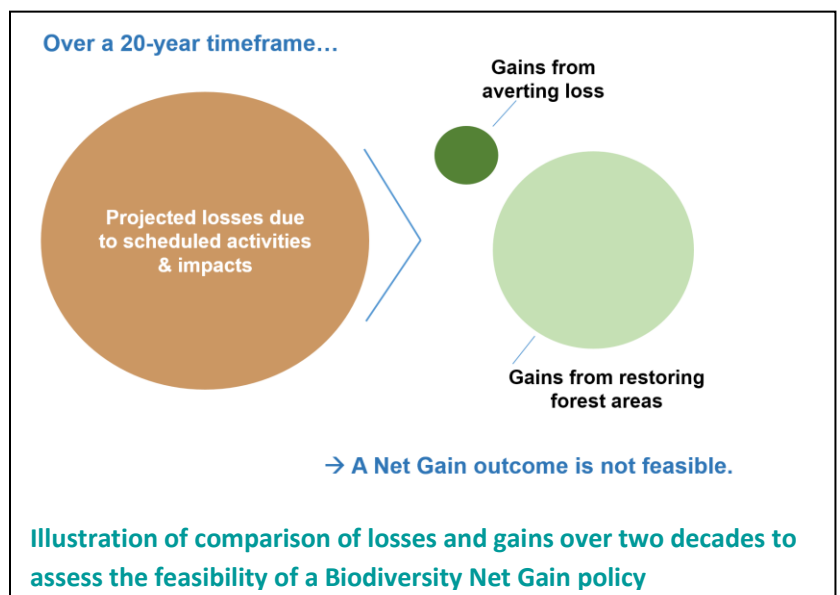
¹⁹ A crucial step is thus to determine which land use activities and impacts would be subject to the NG Policy and which activities would be exempt.

Illustration of two possible reference scenarios – one static, one dynamic



To achieve a genuine Net Gain outcome for biodiversity, relative to the reference scenario, the projected gains from offsetting need to be greater than the losses anticipated from development subject to the policy

If the results of this assessment suggest that a Net Gain or No Net Loss outcome is feasible under the anticipated development scenario, this would support the introduction of a policy. However, if the assessment suggests that achieving Net Gain over the next twenty years is likely to be impossible unless the projected losses are significantly curtailed, that suggests a pause for serious thought. The preferred option (for biodiversity) is clearly to re-think and modify the development plans so as to reduce the predicted losses and make Net Gain feasible. However, if this is not in line with the government’s sustainable development ambitions and plans, an alternative compensation approach (not relying on achieving a NNL or NG goal) will be needed. One such alternative goal, ‘Managed Retention’ is described in the next Technical Note.



Technical Note 11: Managed Retention

Managed retention – an alternative compensation approach to NNL/NG

Following an assessment along the lines described in Technical Note 9, a Net Gain (or No Net Loss) outcome for a country, state or landscape currently may not seem feasible or compatible with its chosen development path. In this case, an alternative approach will be needed. One way is to use compensatory conservation to help achieve certain biodiversity outcomes in an approach known as ‘Managed Retention’²⁰. This approach is not framed to meet a goal of NNL or NG of biodiversity (relative to a given reference scenario). Instead, it is based on setting a desired (or at least minimum desired) outcome for biodiversity in a jurisdiction and managing compensation for residual losses from development in such a way that this outcome is not compromised. Since this approach enables further biodiversity loss up to the fixed threshold, it can only be applied in situations where current biodiversity levels are significantly above this target or threshold. Compensation of this kind can add to the Protected Areas network, principally through protecting and retaining priority areas on a like for like or better²¹ basis and through restoring or otherwise improving biodiversity condition.

The key issue is to define the biodiversity retention threshold to be conserved, with regard to international, regional and local conservation targets. The resulting areas should be enough safely to ensure the representation and persistence of biodiversity (ecosystems, habitats and species). For instance, one country exploring this approach is considering a goal along the following lines:

‘Ensure that any losses of biodiversity caused by prescribed activities will be avoided and minimized to the extent possible, and residual losses compensated with the aim of ensuring the protection and restoration of at least 30% of the original extent of each ecosystem.’

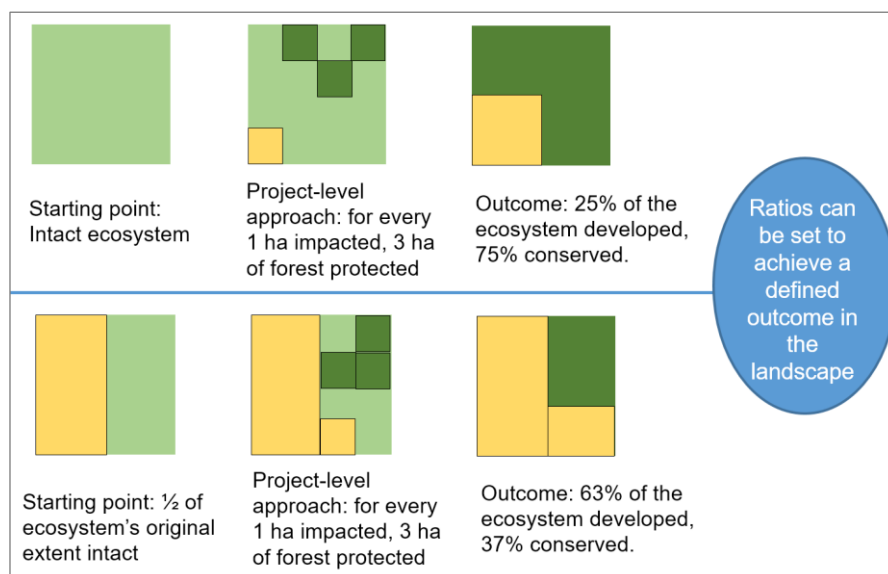
A basic ratio determines how much compensation must be provided for every hectare impacted, with ratios set so that the desired conservation outcome can be achieved (e.g. see the Figure on the following page).

A managed retention approach is appropriate in situations where biodiversity levels are generally *above* the desired outcome or minimum threshold as a degree of overall loss - up to the target or threshold - is accepted in the landscape.

²⁰ Alternative terms are also being used, such as ‘managed draw-down’ or ‘managed net loss’.

²¹ This is where loss could be compensated for by ‘trading up’ - protecting biodiversity of higher conservation concern.

Simple illustration of how a ratio-based approach can be developed to achieve a specific outcome for biodiversity retention (e.g. for different ecosystems) in the landscape.



The following is a simple outline of steps that can be used to take a Managed Retention approach:

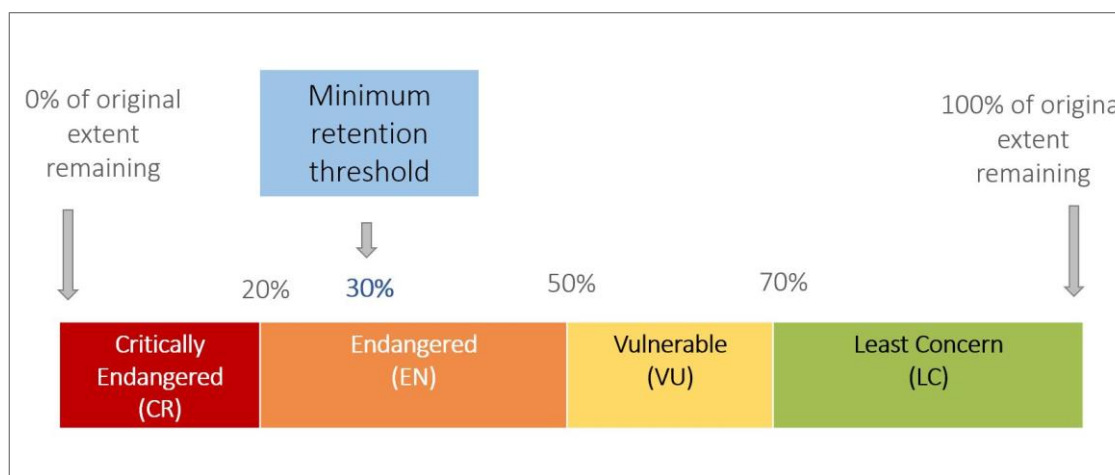
1. Set a target or minimum desired outcome for biodiversity. For instance, 'Retaining, restoring and formally protecting at least [XXXX]% of the original extent of each habitat type in [Country]'. This threshold can usefully be based on (but more specific than) existing international, national or regional commitments to retain and protect biodiversity.
2. Decide on the basic ecological unit within which compensation requirements apply (like for like): As for the NNL/NG approach. Ecosystems/vegetation types and similar classes offer a basic but good place to start. In general, losses and compensation should be provided within the same type of unit according to the relevant ratios (see below).
3. Work out the compensation requirements that would apply to all development subject to the policy based on the following information:
 - A minimum % threshold for each type of ecological unit
 - The current intact extent of each type of ecological unit (i.e. % of original extent remaining), based on available data, such as a forest cover layer
 - The protection level of each type of ecological unit (i.e. % of original extent protected), using the most recent available data layer

Compensation ratios for each type of ecological unit can be based on how much of the remaining unprotected habitat would need to be retained and formally protected to ensure that each ecosystem remains above the minimum threshold or target, i.e. that the goal of conserving the desired percentage of each system is achieved. Risk and uncertainty of achieving the outcome should be integrated— e.g. by including safety multipliers that raise the basic compensation ratio.

4. Undertake a rapid assessment of ecosystem threat status (e.g. using the IUCN Ecosystem Redlist criteria as a guide). This is an optional step, but apart from serving as a useful communication and alert tool, the threat status of different ecosystems can inform rules on when 'trading up' exchanges that depart from the like for like principle may be appropriate (e.g. if compensation is provided in a more threatened ecosystem than the one residually impacted). Compensation ratios can also be linked to ecosystems in different threat status categories, given the quantitative criteria involved in assessing threat status. An illustrative example of thresholds and threat status categories, **which would need to be customised to the particular setting**, is as follows:
 - **Least concern:** > 70% or more of the original extent of a particular ecological unit remains intact, while up to 30% has been lost over the past 50 years.

- **Vulnerable:** between 50% and 70% of the original extent of a particular ecological unit remains intact.
 - **Endangered:** any ecological unit where < 50% and > 20% remains intact.
 - **Critically endangered** is any system of which < 20% remains.
5. Conduct a rapid assessment, using projected loss estimates to determine the feasibility and implications of applying the Managed Retention approach in the relevant jurisdiction.

Thresholds informing ecosystem threat status (adapted from IUCN Redlist Criterion A1) as well as an illustrative minimum retention threshold that could be used to set compensation ratios.



Thus, as an alternative to a No Net Loss or Net Gain approach to mitigation and compensation, a managed retention approach, at least as an initial step, may be appropriate to a country's current circumstances and can have the following positive features:

- Aligning mitigation and compensation policy with broader biodiversity conservation targets improves consistency amongst policy goals. It also allows for greater clarity of outcomes from compensation²².
- When well-implemented, it could lead to good conservation outcomes for biodiversity, better than the status quo, since it should improve avoidance and include the extra compensation step.
- Developers with impacts on biodiversity contribute to the desired conservation outcomes for the country concerned, thereby complementing the government's other essential actions towards achieving biodiversity commitments and targets (e.g. strategies involving Payments for Ecosystem Services, REDD+, Protected Areas expansion, environmental levies, etc.)
- A system based on a managed retention approach is generally easier to establish and run than a NNL or Net Gain system and thus requires lower capacity. E.g. it is not necessary to develop and update complicated and challenging dynamic reference scenarios, compensation requirements are simpler to work out, etc.
- Over time, the approach and system, based on managed retention, can be refined and improved and a possible transition to a more ambitious Net Gain system can be considered at a later stage.

²² This is especially compared with situations where NNL/NG policies that uses a dynamic reference scenario/ counterfactual.

Technical Note 12: Gap analyses on law & policy; capacity & experience; and information.

This Technical Note refers to gap analyses that can usefully be undertaken to determine the readiness of a country to establish and implement a system for NNL/NG of biodiversity (or an alternative goal). It focuses on three areas:

- Law and policy
- Capacity and experience
- Information (data and maps)

1. Law and policy – gap analysis

Implementation requirements for mitigation measures vary. The laws usually take the following forms:

- Law in the form of statute, decree or regulation (typically to require developments to undertake certain mitigation, establishing some design features of the system and enforcement)
- Contracts (typically for implementation)
- Easements/covenants/servitudes that run with the land (typically for implementation)

Legal processes can be specified by a relevant Act, regulation, through contracts or official guidelines. In some jurisdictions legal processes are established through common law. The main legal processes are:

- Process for **securing a permit** to undertake the proposed project (whether this is an Environmental Impact Assessment process, a planning application, or some other legal process) and how mitigation and offsets fit within it.
- Process after permission/EIA is approved for ensuring **mitigation (including offset) design is completed** and approved.
- Process for ensuring **mitigation (including offset) is implemented** according to the agreed design. This includes processes for monitoring, evaluation, adaptive management and enforcement.
- Process (where relevant) for designating and trading **biodiversity credits**.
- Process for interested parties to challenge the developer and/or government and **hold them accountable** if they believe laws have been broken or legal processes not followed correctly.
- Process for free prior and informed consent (FPIC) for development and mitigation (including offset) activities that affect or involve indigenous communities, local communities and customary owners.

Questions for the legal and policy gap analysis:

In order to assess the extent to which existing law in a particular country adequately addresses these key issues for mitigation impacts on biodiversity, the following overarching questions serve to address the matters raised above:

- What, if any, are the requirements in the country's law to follow the mitigation hierarchy, to plan for NNL/NG, including undertaking biodiversity offsets? Do these require or allow NNL/NG measures, are they neutral or silent on the issue, or do they inhibit or prevent NNL/NG? Are the requirements for avoiding impacts on biodiversity (especially on highly vulnerable and irreplaceable components of biodiversity) sufficiently clear and rigorous? Are alternatives analyses explicitly required? Are biodiversity offsets explicitly required to address residual impacts after avoidance, minimisation and on-site restoration?
- Are the policy elements required to operate a national system for NNL/NG established in law?
- Are the requirements and processes for free prior and informed consent (FPIC) in place?

- Does the law provide contracts suitable for reaching agreement with third parties for the supply of offsets?
- Does the law provide ways of securing land for offsets, including on a permanent basis?
- Does the law provide ways of protecting biodiversity values on offset land?
- Is there a process setting out how mitigation and offsets will be dealt with as part of a suitable development approval?
- Is there an approval process for proposed offsets?
- Are there legal procedures for monitoring, evaluating and enforcing mitigation and offset commitments?
- In situations where an offset market operates, are there legal processes for the designation, creation, trading and tracking of biodiversity credits?
- Are there procedures for interested parties to challenge the developer and/or government and hold them accountable if they believe laws have been broken or legal processes not followed correctly?
- Are there procedures for resolving local disputes over land use, boundaries, benefits and other issues relating to customary land and Incorporated Land Groups?

2. **Capacity and experience – gap analysis**

The development and implementation of NNL/NG policy spans a wide range of professional and technical skills.

Government employees need the skills and capacities to design, administer and enforce the NNL/NG system, bearing in mind the broad range of potential roles and responsibilities for government. Within NNL/NG policy, government has many potential roles: as policy-maker and regulator; as provider, curator and source of authoritative biodiversity data; as buyer and seller of offsets; as a broker helping developers needing offsets to find the individuals, communities and organizations that can supply them; as manager of the registry of credits; in setting standards for the various activities within the system (particularly assessment of mitigation measures, loss-gain calculations, biodiversity offset management plans, and generation of biodiversity credits by third parties); in ensuring the permanence of mitigation measures; and in monitoring and enforcement of NNL/NG policy and developers' and offset providers' commitments under this policy. Given this variety of roles, probity is vital, and government needs to identify and manage potential conflicts of interest between these roles. Finally, if policy is to encourage third-party individuals, communities and organizations to generate and supply offsets, government has certain functions in stimulating and regulating the market.

Other essential players in the system need adequate capacity, too. Developers and their consultants need to be able to apply the rules [COUNTRY] adopts, as well as considering international best practice. Financial institutions with project finance and safeguard policies on mitigation and NNL/NG need the skills to apply these, and rely upon consultants with the necessary expertise. Research institutes, universities, NGOs and civil society organizations (including communities) are engaged in NNL/NG in a number of different ways, from baseline science, design of mitigation measures, including offsets, implementation of offsets and generation of biodiversity credits, and monitoring and enforcement.

In many countries which do not yet have law or policy related to NNL/NG/biodiversity offsets, individual companies already have experience of these approaches in the context of planning particular projects. In some cases, this is driven by a voluntary business case perceived by companies. In other cases, the motivation for these corporate experiences is access to finance (e.g. to comply with IFC PS6). In order to have a good understanding of the capacity within a given country to plan for NNL/NG, it is also important to take stock of the extent of existing private sector experience in this area.

Questions for the capacity and experience gap analysis:

- Are there enough staff in the relevant government offices to regulate, administer, monitor and enforce mitigation requirements (avoid, minimise, restore, offset)?
- Are there are other organisations and individuals (e.g. in the NGO sector, private sector/ consultancies) in the country which have the capacity to support analysis of mitigation requirements, implementation and monitoring? Do they have the right knowledge and skills to handle the assessments involved in running a NNL/NG system?
- Are the principal actors who will have to comply with NNL/NG policy (companies and their consultants) able to do so, in terms of understanding, skills and knowledge?
- Have some developers already applied the mitigation hierarchy (including biodiversity offsets) in the country, especially when there has been an objective of NNL/NG? What has been their experience, in terms of progress, successes, failures, challenges and lessons learned?

3. Information – gap analysis

The design of law and policy on the mitigation hierarchy, including biodiversity offsets, and the implementation of NNL/Net Gain systems rely in part on sound biodiversity information and data and knowledge management systems. Most countries have at their disposal quite a volume of biodiversity data. These are often held in a large number of data sets of varying format (hard or soft-copy, etc.), scope and quality. In addition, the information may be held by government, NGOs, academic organizations and even companies, some of it will be recent and some old, and **only some of it will be fit for purpose**. Thus, undertaking a rapid review of currently available data that could provide the underpinnings of a Net Gain biodiversity policy and system, and conducting a gap analysis are an important first step towards formulating such a system. For instance, a certain depth and quality of biodiversity data is needed to support the following key (interlinked) activities:

- Determine the type, condition and conservation significance of biodiversity (i.e. deciding how best to represent biodiversity, or components of biodiversity – e.g. indicators, surrogates or proxies – and prioritise its importance)
- Conduct meaningful land and seascape-level assessment and planning (i.e. compiling and analysing spatially explicit information to underpin planning and decision-making on biodiversity in the landscape, including high-level application of the mitigation hierarchy, consideration of where development should take place, where it should be avoided altogether, defining limits to what can be offset, and identifying areas where conservation interventions and offsets could and should be located.)
- Enable proper assessment of impacts, including direct, indirect, and cumulative impacts caused by development projects
- Apply the mitigation hierarchy at various scales (e.g. landscape and site-level)
- Defining exchange rules in offsetting (i.e. the kind of biodiversity, conservation activities and locations that are considered a fair exchange for residual losses)
- Defining metrics (i.e. quantifying biodiversity losses and gains, including issues such as defining a currency, defining a frame of reference and baseline/ counterfactual against which to measure losses and gains, etc.)
- Defining what is considered additional or ‘over and above’ outcomes that would have happened anyway (i.e. frame of reference, baselines/counterfactuals: especially if offset activities might be considered within existing protected areas)
- Undertake monitoring, evaluation of biodiversity and land use changes (impacts, conservation outcomes, trajectories, etc.) and enforcement of mitigation measures.

Key questions and activities that require data

As part of these activities, several questions arise (as listed below). Answering these and undertaking the activities, many on an on-going basis, requires a range of supporting data.

In the case of land- and sea-scape level assessment and planning these questions include:

- What are currently the main classes of land cover and land use?
- How is biodiversity distributed in the landscape and where are different features located?
- How much biodiversity is currently formally protected and where?
- What biodiversity goals and targets guide a national or regional conservation vision (e.g. what, where and how much is planned to be protected over a specific timeframe)?
- Have conservation priorities been identified in the landscape and where are they?
- What is known about the likely trajectory and future location of the main land uses?
- Site selection: Where best to locate offsets - relative to development impacts and other features, activities, conservation opportunities and constraints in the landscape?

Key questions that arise on applying the mitigation hierarchy and defining limits to what can be offset (and for which supporting biodiversity data are required), include:

- Which biodiversity features are considered too significant and valuable to lose so that impacts on these must be avoided?
- What biodiversity is considered irreplaceable and which impacts are considered not 'offsetable'?
- How much effort to place in pursuing the avoidance, minimisation, restoration and offset steps of the hierarchy?

Key questions that arise when defining exchange rules (i.e. ensuring that biodiversity losses due to development and gains from offset actions are adequately quantified and can be balanced out to deliver 'like for like or better') include:

- What is considered comparable, or 'like for like', when it comes to the type of biodiversity components or features (e.g. ecosystems) lost and gained?
- What other factors are important to determine whether exchanges in biodiversity meet the 'like for like test' (e.g. timing, location and significance of losses and gains)?
- What is considered as 'better' or of higher priority (i.e. to test like for like or better)?

Key questions that arise when defining metrics for quantifying biodiversity losses and gains include:

- How to measure and quantify biodiversity so that losses (due to projects) and gains (due to mitigation measures, including offsets) can be assessed and calculated: What should be the basic unit of exchange for a specific type of biodiversity component (e.g. ecosystems, habitats, species)? For example, a commonly used unit of exchange or currency is an 'area x condition' currency which combines the extent and condition of affected biodiversity.
- Against what baselines, reference states and trajectories should losses and gains be assessed?
- What is regarded as additional, i.e. what activities and interventions count as a gain for biodiversity because they achieve conservation outcomes over and above what would have happened anyway (even without the offset)?

Monitoring, evaluation and enforcement are a critical part of the success of any NNL/Net Gain system. This requires processes, procedures and systems to be in place, as well as capacity to undertake the work. Furthermore, a variety of data are either necessary or useful in supporting these activities, and to help determine whether goals and objectives are being met and whether the intended outcomes are being

achieved. The questions that arise as part of this activity, for which supporting biodiversity data are required, include:

- What to measure and how to track whether the national policy is delivering on its commitments and its intended outcomes?
- What to measure and how to track whether individual projects' mitigation measures, including offsets, are delivering their objectives and basis upon which government will enforce the relevant obligations and agreements?

Data and information on which a gap analysis should focus

The data layers, data sets and information resources that are required for the activities listed above and to help answer the various questions posed include:

- Classification systems and lists of biodiversity features such as ecosystem types, vegetation types, species.
- The spatial distribution of and the extent or abundance of these biodiversity features.
- Systems that categorise biodiversity features according to different conditions or integrity levels.
- Conservation priority or significance rankings, based on the rarity, likelihood of persistence, threat status, and/or a combination of other factors.
- Use values of biodiversity and ecosystem services.
- Information on biodiversity status and reference states (e.g. % of ecosystem remaining intact relative to original extent).
- Information on biodiversity baselines, trends and trajectories (e.g. rates of biodiversity decline due to loss or degradation resulting from a range of drivers over time, rates of increase due to regeneration and restoration).
- Land cover and land use data: current situation, trends and predictions, plans (and exploratory scenarios if they have been developed).
- Land ownership, administration and land use rights data, including protected area designation, or downgrading, downsizing and degazettement.
- Conservation targets, goals and plans.

The existence of such datasets needs to be established through the gap analysis, which should also determine the following information for data that are available:

- Scale (extent, resolution)
- Date of capture/ production and source
- Methods used to produce the data
- Frequency of updates
- Availability of the data (accessibility, conditions of acquisition and use) and data holders
- Notes on the quality and reliability of the data, any known issues

Technical Note 13: Considering social and cultural aspects of Biodiversity Net Gain

The BBOP Principles (2009) and Standard (2012) define the goal of biodiversity offsets as ‘to achieve no net loss and preferably a net gain of biodiversity on the ground with respect to species composition, habitat structure, ecosystem function and *people’s use and cultural values associated with biodiversity*’.

To be successful, efforts to achieve biodiversity NG should therefore consider the impacts of the development, and any associated mitigation efforts, on the biodiversity-based livelihoods and amenity of indigenous peoples, local communities and other local stakeholders. Mitigation measures, including offsets, need to deliver the required conservation gains without making local people worse off, for example due to land and resource use restrictions created by biodiversity offsets. In some cases there is regulatory requirement to consider this; for example the obligation to compensate those economically displaced by a development often also applies to anyone economically displaced by a biodiversity offset.

Ensuring that affected people do not suffer from the presence of a project and mitigation measures requires a cost-benefit comparison between:

- the benefits of mitigation measures including biodiversity offsets; and
- the costs to local people of the residual impacts of the project related to biodiversity, and of mitigation measures including biodiversity offsets.

BBOP’s Cost Benefit Handbook (2009) provides guidance on how to use economic tools of valuation and cost-benefit analysis to address this challenge. The steps in the Handbook are designed to help offset planners do their best to ensure that:

- local people are no worse off through the presence of the project in terms of its impact on biodiversity related livelihoods;
- local people at the offset site are no worse off as result of the biodiversity offsets, as appropriate and
- equivalent benefits are built into the offset to compensate for any negative impacts they cause; and
- calculations of the conservation gain of the biodiversity offset activities are realistic in that the assumptions they make about local people’s likely involvement in the offsetting activities are based on good evidence.

The long-term success of projects and mitigation measures rely on social support meaning that the social component of Biodiversity Net Gain is vitally important. Various organisations are working on it.

Balfour Beatty, the University of Bangor, IIED, the University of Oxford and Wild Business are developing **good practice principles for Ensuring No Net Loss for people and biodiversity** as part of the United Kingdom Government’s Darwin-funded project “Achieving No Net Loss For Communities And Biodiversity In Uganda” (23-019)²³ and the ESRC Impact Accelerator Award (Developing and mainstreaming guiding principles for ensuring No Net Loss for people and biodiversity).

The project partners point to an increasing recognition in international policy that social impacts of development projects should not just be considered in economic terms (for example by using indicators such as household income), but in terms of people’s overall wellbeing. For developments seeking NNL (or NG) of biodiversity, the impacts experienced by people affected by losses and gains of biodiversity will affect their wellbeing in various ways. These include affecting material assets (e.g. access to products essential to the livelihoods of poor and vulnerable people), subjective aspects of wellbeing (including how free people feel to undertake culturally important activities), and relational aspects (e.g. opportunities to work with others to achieve goals).

²³ https://www.iccs.org.uk/sites/www.iccs.org.uk/files/inline-files/Offsets-project-information-flyer_FINAL.pdf

The project partners thus base their work on the view that all effects by development projects on ecosystem service provision at all levels (whether local, regional, national or international), and the associated impacts on people's wellbeing, should be addressed throughout the project lifecycle. Impacts at local levels are especially important to address. In this context, 'social impacts' from biodiversity NNL refers to effects on ecosystem service provision, and the resulting impact on wellbeing, experienced by people in the vicinity of a development project (i.e. at the local level). Wellbeing is defined as a positive physical, social and mental state.

For more information, see:

Griffiths et al., 2018 <https://onlinelibrary.wiley.com/doi/full/10.1111/cobi.13184>

Bidaud et al., 2017, <http://www.conservationandsociety.org/article.asp?issn=0972-4923;year=2017;volume=15;issue=1;spage=1;epage=13;aulast=Bidaud>

Bidaud et al 2018 <https://www.sciencedirect.com/science/article/pii/S0264837717316587>

Sonter et al 2018 <https://esajournals.onlinelibrary.wiley.com/doi/full/10.1002/fee.1781>

<http://p4ges.org/documents/Policy-draft-biodiversity-offsets.pdf>

References

Some references are set out in specific Technical Notes. This section covers other references made throughout the document.

BBOP (Business and Biodiversity Offsets Programme). 2018. Glossary. Business and Biodiversity Offsets Programme, Washington, DC, USA. Available for download at https://www.forest-trends.org/bbop_pubs/glossary_2018

Consumer Goods Forum. 2010. Deforestation Resolution. <https://www.theconsumergoodsforum.com/initiatives/environmental-sustainability/key-projects/deforestation/>

IFC (International Finance Corporation). 2012. Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources. International Finance Corporation, Washington, DC, USA. Available for download at: http://www.ifc.org/wps/wcm/connect/bff0a28049a790d6b835faa8c6a8312a/PS6_English_2012.pdf?MOD=AJPERES

Forum for the Future. Net Positive – a new way of doing business. <https://www.forumforthefuture.org/Handlers/Download.ashx?IDMF=be63777c-211c-471a-8229-dc70c45f0ad7>

IUCN Biodiversity Offset Policy https://portals.iucn.org/library/sites/library/files/resrecfiles/WCC_2016_RES_059_EN.pdf

IUCN, The Biodiversity Consultancy and IGF. 2017. Understanding Government Biodiversity Offset Policies in the Mining Sector. Available from: https://www.iucn.org/sites/dev/files/content/documents/understanding_government_biodiversity_offset_policies_in_the_mining_sector_november_2017.pdf

Madsen, B., Carroll, N., Kandy, D. & Bennett, G. 2011. State of Biodiversity Markets Report: Offset and Compensation Programs Worldwide. Forest Trends; Washington D.C., USA.

Maron, M., Ives, C.D., Kujala, H., Bull, J.W., Maseyk, F.J.F., Bekessy, S. et al. 2016. Taming a wicked problem: resolving controversies in biodiversity offsetting. *BioScience*, in press, doi: 10.1093/biosci/biw038
Rio Tinto. 2012. Staged approach to biodiversity action planning: a guidance note. Available for download at http://old.stage.riotintodev.com/documents/Biodiversity_action_planning-guidance_note.pdf

ten Kate, K. and Crowe, M.L.A. 2014. Biodiversity Offsets: Policy options for Governments. An input paper for the IUCN Technical Study Group on Biodiversity Offsets. IUCN, Gland, Switzerland. <https://portals.iucn.org/library/node/44776>

The Biodiversity Consultancy. 2016. Industry Briefing Note: Government policies on biodiversity offsets. Cambridge, UK. <http://www.thebiodiversityconsultancy.com/wp-content/uploads/2013/07/Government-policy-1.pdf>

WWF. Undated. Zero Net Deforestation by 2020 - A WWF Briefing Paper. Available for download at http://awsassets.panda.org/downloads/wwf_2020_zero_net_deforest_brief.pdf



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