

Project Overview:

This document sets out a preliminary compilation of terms contributed by various members of the EU NNL WG used in the documents of the WG. However it does not necessarily reflect definitions used by all members of the WG in their respective activities. It was developed as a tool to facilitate discussions in the WG, not as final recommendations to the Commission.

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Summary

This glossary is an input to the European Commission's No Net Loss working Group. The glossary looks at the different European and definitions of seven key terms relating to no net loss. It also briefly outlines the meaning of a longer list of other relevant terms. The remainder of this section summarises key points from the six key terms.

1. Mitigation hierarchy

Biodiversity offset/compensation schemes usually follow a three step mitigation hierarchy of:

- Avoid or prevent negative impacts on the environment in general and biodiversity in particular;
- Minimise and rehabilitate on-site effects of development if impacts cannot be avoided; and
- Offset/compensation measures that are undertaken as a last resort (on or off-site) for the residual adverse impacts.

Nearly all definitions of the mitigation hierarchy include the three basic steps of **avoidance**, **minimisation** and then **offsets/compensation**. Although this is applied as a general principle, the terminology varies considerably from one country to another and some definitions break the MH into more steps – with both BBOP and the International Finance Corporation including a step titled '**restoration/rehabilitation**' before offsets and distinguishing between **offsets** and **compensation** as a last resort.

A key principle is that offsets cannot provide a justification for proceeding with projects for which the residual impacts on biodiversity are unacceptable (e.g., loss of half the world's population of a protected species). This means that the avoidance options have to be considered seriously in harmful cases..

2. A major area of contention is that while the mitigation hierarchy is applied as a theoretical principle, some doubts remain about practical implementation in some cases. This is particularly the case for the avoidance and minimisation steps. Biodiversity offsets have to be seen as a "last resort", only to be applied after all appropriate measures to avoid and minimise adverse impacts have been taken. Determining how far to pursue each step in the hierarchy before moving on is therefore a critical decision process for practitioners. The way to address this issue could differ in function of the stakes of the impacted biodiversity.

Additionality

BBOP defines the terms additionality as "*A property of a biodiversity offset, where the conservation outcomes it delivers are demonstrably new and additional and would not have resulted without the offset*" (status: non regulatory)).

The difficult question is to determine what and how this "new and additional" criteria is measured against. Therefore the notion of additionality is strongly linked with the concept of baseline.

There is no formal regulatory definition of additionality and this results in differences in what is considered as additional and what is not. In the scope of the NNL initiative, we propose the definition of McKenney and Kiesecker (2010)¹: additionality refers to the need for a compensation measure **to provide a new contribution to conservation, additional to any existing values**, i.e. the conservation outcomes it delivers would not have occurred without it. There is a need to provide

¹ McKenney B.A. and Joseph M. Kiesecker, Policy Development for Biodiversity Offsets: A Review of Offset Frameworks, Environmental Management (2010) 45:165–176

guidance regarding how to choose the baseline (reference toward which the additionality is assessed) and how to demonstrate additionality.

In practice two aspects are often distinguished:

- The ecological aspect: the compensation measure should be of ecological nature and should provide an ecological improvement at the compensation site.
- The aspect regarding additionality compared with commitments. There are major differences in practices between countries regarding which commitments should be considered. Some definitions only mention public commitments, other also private ones. In practice “commitments” can be understood in a broad sense (existing state and future planned actions), or in a more restrictive way, as land protection under current regulation. Also “what measures are considered as additional to a commitment” is, in practice, defined in different ways in different countries.

Regarding these two aspects of additionality, one proposal in order to avoid misunderstandings is to precise “ecological additionality” or “additionality compared with commitments”.

3. Equivalence

There is no unique, shared or legally based definition of equivalence. In the scientific field of ecology, the term “equivalence” refers to the possible substitutability of species (within a biotic community). In the field of compensation, “equivalence” is generally understood to refer to or to assess the relationship between the losses at impacted site and the gains at the compensation site.

In the scope of the NNL initiative, we propose to adopt following definition:

An offset project is considered equivalent if it is designed and sized in order to achieve ecological gains which are at least equal to the loss at the impacted site. This definition mainly focuses on ecological aspects. In cases where wider socioeconomic dimensions (beyond ecological aspects) are of particular relevance, they should be taken into account in the assessment of loss and gains. Nevertheless, one should be aware of the difficulty of defining metrics integrating socioeconomic, cultural or others aspects. This remains usually far beyond current state of the art.

We suggest that, in the scope of the NNL initiative, the notion of equivalence should not include per se a like-for-like criteria. Indeed, the focus of the initiative will probably be on “ordinary biodiversity” (outside Natura 2000 and for species/habitat not covered by the EU legislation). Therefore like-for-like is not needed in a systematic way. This implies nevertheless a huge need of development regarding methods and criteria to properly determine what is equivalent. The key point is to define metrics to most fully characterise injured and replacement resources. One action of the NNL initiative could be to support (1) research and development work in order to progress rapidly toward sound and robust equivalence assessment methods (2) training of stakeholders to promote shared practices.

4. Ratio/multipliers

BBOP defines an offset “ratio” as the area occupied by an offset divided by the area affected by a project’s impact.

In the scope of the No Net Loss initiative, we propose to define the “offset ratio” more precisely as the area occupied by an offset divided by the area affected by the footprint of the project (area converted permanently and/or temporary by the project).

This estimation of the offset area should of course take into account the difference of severity of temporary vs. permanent impacts.

The offset area is often larger than the area impacted (i.e. offset ratio >1), since the offset gains per unit area are often lower than the impact site losses per unit area (perhaps due to time-lag issues).

Offset ratios are often non-regulatory and determined on a case-by-case basis.

Use of a multiplier represents a decision made by an offset planner to increase the area of an offset by a certain factor, with the aim of improving the chances of achieving no net loss. However, the terms **ratio** and **multiplier** are often used interchangeably (BBOP).

Different methodologies include:

- **Comparison ratio** - factor used to compare the qualified area on the project site with the qualified area on the offset site.
- **Risk Multiplier** - factor used to increase/adjust the offset area in order to take account of some risks (e.g. uncertainty of ecological actions) or penalties (e.g. distance, time lag).
- **Evaluated Ratio** - factor combining the comparison ratio with the risk multiplier.

5. Compensation/Offset

BBOP defines Biodiversity offsets as *“measurable conservation outcomes resulting from actions designed to compensate for significant residual adverse biodiversity impacts arising from project development and persisting after appropriate prevention and mitigation measures have been implemented. The goal of biodiversity offsets is to achieve no net loss, or preferably a net gain, of biodiversity on the ground with respect to species composition, habitat structure and ecosystem services, including livelihood aspects”*.

While in some jurisdictions **compensation** and **offset** are synonyms, BBOP draws a distinction between the two terms:

- An **offset programme** explicitly aims to achieve **no net loss (NNL)** and preferably a **net gain**.
- **Compensation** involves measures to recompense, make good or pay damages for loss of biodiversity caused by a project. However some of these measures may fall short of NNL. This could be the case for direct restoration options, but also for indirect measures such as financial payments.

Following the mitigation hierarchy, offsets and/or compensation should only be pursued after efforts have been made to avoid and minimize biodiversity loss arising from a proposed development.

6. Bio/conservation/habitat/mitigation banking

Habitat banking is *“a market where the credits from actions with beneficial biodiversity outcomes can be purchased to offset the debit from environmental damage. Credits can be produced in advance of, and without ex-ante links to, the debits they compensate for, and stored over time”* (eftec, IEEP et al. 2010)²ⁱ. Credits in the context of the discussions of the NNLI WG may include habitats, species and/or ecosystem services.

Bio/conservation/habitat/mitigation banking are synonyms in most jurisdictions, although in the USA mitigation banking refers to wetland restoration while conservation banking is species-specific.

² eftec, IEEP et.al (2010) The use of market-based instruments for biodiversity protection –The case of habitat banking – Technical Report. <http://ec.europa.eu/environment/enveco/index.htm>

Biobanking is the name of the offset credits markets in New South Wales, Australia and should not be confused with biological banks.

In the scope of the NNL initiative, we propose Habitat or Conservation Banking as the preferred terms. The general purpose of such banking is offsetting residual adverse impacts. It is therefore mainly an instrument to implement compensation requirements.

Remark: In some specific cases habitat bank could also be used to provide habitats that acts as reduction measures. Indeed, in some activity sectors, there are cases for which a specific project provides "extra" habitat sufficiently close to the site impacted by another project. These "extra" habitats can then act to reduce the impact of this other project. These could be examples of habitat creation that act as reduction/minimization, rather than compensation. Conceivably, such "extra" habitat could also come from a habitat bank. Depending on the characteristics of the biodiversity affected, the linkage between impact site and the created habitat etc., etc., the possibility should exist to permit habitat banking to provide reduction/minimization measures - not only compensation measures.

The US mitigation banking system, although named "mitigation", is a banking system which provides compensation measures. More over this system is very specifically designed for the "water environment". In order to avoid misunderstandings, we propose to avoid the use of the US terminology in the EU context although we can find some similarities regarding the very principles of banking.

Biobanking can be confused with biobanks (e.g. of seeds) and compensation banking can create further issues with the definition around compensation vs. offsets.

7. Metrics

Proposal for the definition of the term "metrics" in the scope of the NNL initiative:

A set of unitary measurements of biodiversity lost, gained or exchanged. This varies from very basic measures such as area analysis, to sophisticated quantitative indices of multiple biodiversity components which may be variously weighted. These metrics are used in order to compare losses at the damaged site and gains at the compensation site and provide decision support to establish equivalence.

Discussion of Key Terms

The objective of the analysis of these terms is to give an overview of the different problems which could be linked with their use and recommend the way they could be used for discussion within the NNLi WG, and for discussions amongst stakeholders which are not part of the NNLi group. The analysis is based on the following elements:

- Comparisons of available definitions: different national ones, and those in BBOP's glossary, and consideration of where they arise from (e.g. terms with regulatory meaning or those describing practices).
- Analysis of the degree of common understanding/consistency, analogy and differences with other terms.

Mitigation hierarchy (MH)

Available definitions

Biodiversity offset / compensation schemes usually follow a three step **mitigation hierarchy**. Adherence to the mitigation hierarchy implies that one should in a first instance seek to **avoid** negative impacts on the environment in general and biodiversity in particular. Secondly, the unavoidable impacts should be addressed through **minimisation/reduction** and rehabilitation measures and only as a “**last resort**” should **compensation** measures (or biodiversity offsets) be established for the **residual negative impacts**.

A key principle is that offsets cannot provide a justification for proceeding with projects for which the residual impacts on biodiversity are unacceptable. This means that the **avoidance** options have to be considered seriously in harmful cases.

Nearly all definitions of the mitigation hierarchy include the three basic steps of avoidance, minimisation and then compensation. Although this is applied as a general principle, the terminology varies considerably from one country to another and several definitions (e.g. BBOP, IFC Performance Standards) break the MH into more steps – with both BBOP and IFC including a step titled ‘**restoration/rehabilitation**’ before offsets and distinguishing between **offsets** and **compensation** as a last resort.

It is also clear that the same term sometimes has a different meaning, e.g. “mitigation” which may be used as a synonym for compensation as well as for minimisation/reduction.

BBOP glossary:

- a. Avoidance: measures taken to avoid creating impacts from the outset, such as careful spatial or temporal placement of elements of infrastructure, in order to completely avoid impacts on certain components of biodiversity.
- b. Minimisation: 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. Rehabilitation / restoration: measures taken to rehabilitate degraded ecosystems or restore cleared ecosystems following exposure to impacts that cannot be completely avoided and / or minimised.
- d. Offset: measures taken to compensate for any residual significant, adverse impacts that cannot be avoided, minimised and / or rehabilitated or restored, in order to achieve no net loss or a net gain of biodiversity. Offsets can take the form of positive management interventions such as restoration of degraded habitat, arrested degradation or averted risk, protecting areas where there is imminent or projected loss of biodiversity.

International Finance Corporation (IFC) Performance Standards:

The mitigation hierarchy: 1. Avoid, 2. Reduce, moderate, minimise, 3. Rescue (relocation, translocation), 4. Repair, reinstate, restore, 5. Offset, 6. Compensate

State of Biodiversity Markets:

Mitigation Hierarchy – avoidance, minimisation, rehabilitation / restoration (sometimes termed mitigation), offset.

National levels

United Kingdom

The National Planning Policy Framework of 2012 defines the national framework of planning policy for England with which administrative authorities issuing building permits must comply. It establishes a mitigation hierarchy for impacts on biodiversity which requires avoiding the destruction of biodiversity, reducing its impact where applicable, and, as a last option, compensating the loss of biodiversity. Offsetting is not mandatory.

Germany

The Eingriffsregelung (Impact Mitigation Regulation - IMR) requires the application of a mitigation hierarchy, following different steps for the evaluation of impacts and the elaboration of counterbalancing measures, resembling a cascade. These range from avoidance to mitigation and compensation and in some case compensation payment. This law is mandatory and precautionary, aiming to ensure “no net loss” by avoiding any damage, and restoration and replacement compensation for residual unavoidable impacts.

The IMR continuous assessment process follows a mitigation hierarchy. It consists of separate integrated decision steps, oriented towards the principle of full compensation: all significant and/or permanent impairments caused by project impacts must be fully compensated by appropriate measures, and possibly a compensation payment. Under the provisions of Art. 15 of the Federal Nature Conservation Law, the obligations of the intervening party range from (1) avoidance through (2) compensation to (3) exemptions.

Avoidance

The duty of avoidance is established in Art 15 (1): The intervening party shall be obligated to refrain from any avoidable impairment of nature and landscape. The increased flexibility of IMR implementation does not impair the absolute priority of avoidance and minimisation. This means that given the option between avoidance and minimisation of the impacts on the one hand and compensation on the other, the project proponent must choose avoidance and minimisation of impacts.

Compensation

For the remaining unavoidable impairments, appropriate compensation measures must be applied. The law distinguishes between two types of compensation; these are referred to as “restoration compensation” and “replacement compensation”: “The intervening party shall be obligated to primarily endeavour to offset any unavoidable impairment through measures of nature conservation and landscape management [restoration compensation], or to offset them in some other way [replacement compensation]. Any impairment shall be considered to have been compensated for as soon as the impaired functions of the ecosystem have been restored and the natural scenery has been restored or re-designed (landscape) in a manner consistent with the landscape concerned. Any impairment shall be considered to have been offset in some other way as soon as the impaired functions of the ecosystem have been substituted in an equivalent manner or the natural scenery has been re-designed in a manner that is consistent with the landscape.”

According to the law, restoration compensation involves a direct spatial and functional connection to the lost components of nature and landscape (“in-kind” and “on-site”). Thus, the goal of

restoration compensation measures is to restore the conditions of the affected natural landscape unit to the state prior to the impact, ensuring the equal ecological functioning and values, with no loss of major components of the visual composition of the landscape.

If restoration compensation cannot assure full compensation, additional replacement compensation measures are to be implemented ("out-of-kind" and "off-site"). These do not necessarily have to restore the same functions, and may have only a loose spatial and functional relationship to the impact area (Louis 2004: 716).

In general, restoration compensation is preferable to replacement compensation. However, with the amendment of the Federal Nature Conservation Act, this preference and the strict spatial, functional and temporal relationship between impact and compensation have been loosened. Thus, in some cases replacement measures may take priority, if this generates a greater overall benefit for nature and landscape (so-called "trading up").

France

Regulatory level: France recently adopted a "decree" on EIA³, which will help making avoidance, reduction and compensation measures for environment more effective; those measures have to be described in the permit of the project and their monitoring is compulsory. This decree also makes explicit that impacts on biological corridors ("trame verte et bleue") have to be avoided/reduced/compensated.

Mitigation hierarchy: "Séquence (ou tryptique) Eviter/Réduire/compenser": the mitigation hierarchy is defined as (1) Avoidance, (2) Minimisation and (3) Compensation. Difference with the BBOP definition: there are only 3 steps, and not 4: "rehabilitation/restoration" is not explicitly named in this mitigation hierarchy, but is usually included in the reduction step or can also be undertaken off-site and is then part of the compensation step.

Mitigation: The term "mitigation" is not used in France. The expression "Séquence (ou tryptique) Eviter/Réduire/Compenser" is used or "mitigation hierarchy". Mitigation in the sense of reduction is called "Réduction".

Avoidance: In French "Evitement", same definition as BBOP: an avoidance measure is a measure which modifies a project or a public planification document in order to remove a negative impact that would occur.

Minimisation/Reduction: In French "Réduction": measures are defined after avoidance, in order to reduce negative impacts (permanent or temporary, during construction or normal exploitation).

Compensation: "Compensation" is used in France to qualify measures applied after avoidance and reduction measures, on residual impacts on environment in general. According to the French new doctrine these measures should be designed in order to achieve no net loss through equivalence and additionality. Nevertheless, there are no official methods in France to assess loss and gains, so compensation can involve measures that fall short of achieving no net loss.

Poland

Compensation: Defined in Art. 3 of Environmental Protection Law - 'set of activities, including in

³ Decree n° 2011-2019, 29 December 2011, <http://legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000025054134&categorieLien=id>

particular construction works, earthworks, soil reclamation, reforestation, forestation or creation of vegetation, leading to the restoration of the natural balance or creating of vegetation, leading to the restoration of the natural balance in the area, compensation for damage done to the environment through the implementation of the project and preservation of the landscape'.

Analysis of degree of common understanding/consistency, analogy and differences with other terms

Nearly all definitions of the mitigation hierarchy include the three basic steps of avoidance, minimisation and then compensation. Although this is applied as a general principle, the terminology varies considerably from one country to another. Some definitions of the MH divide the sequence in a different way and introduce explicitly additional steps (as rehabilitation/restoration). Nevertheless, the basic idea of “avoidance, minimisation and then compensation” is always included and the terms always refer to the order in which impacts should be considered. Several definitions (e.g. BBOP, IFC Performance Standards) break the MH into more steps – with both BBOP and IFC including a step titled ‘restoration/rehabilitation’ before offsets and distinguishing between offsets and compensation as a last resort.

It is also clear that the same term sometimes has a different meaning, e.g. “mitigation” which may be used as a synonym for compensation as well as for minimisation or reduction. Sometime mitigation is used to design the whole MH.

There is another fundamental problem: the mitigation hierarchy is not always clearly applied. While the steps avoidance, minimisation/reduction (and/or restoration/rehabilitation) and compensation are usually formally established, these do not necessarily follow on from one another but exist in parallel; it may therefore be difficult to distinguish between these steps.

Another problem lies in the fact that even though the mitigation hierarchy is applied as a theoretical principle, some doubts remain about practical implementation in some cases.. This is particularly the case for the avoidance and minimisation steps. It should be clear that biodiversity offsets have to be seen as a “last resort”, only to be applied after all appropriate measures to avoid and minimise negative impacts have been taken.

Another important aspect of the mitigation hierarchy is compensation payments. The German *Eingriffsregelung* (IMR) continuous assessment process follows a mitigation hierarchy oriented towards the principle of full compensation: all significant and/or permanent impairments caused by project impacts must be fully compensated by appropriate measures, and possibly, only as a last resort, by compensation payment. In other words, monetary compensation may only be allowed if physical (real) compensation is impossible.

Proposal on how to use the term within the NNLi WG

- Do not use “mitigation” to refer to a particular step of the MH. This introduces confusion between the hierarchy and the step
- There are no difference between minimisation and mitigation (as a step of the hierarchy), so use minimisation or reduction (synonyms)
- Restoration and Rehabilitation: (1) the differences between these terms are very tight and depend on the context. Proposal: use Restoration/Rehabilitation (2) these activities can be conducted on site (they are then considered as reduction measures) or off-site (they are

then considered as compensation measures)

Additionality

- **Available definitions BBOP Glossary:** “A property of a biodiversity offset, where the conservation outcomes it delivers are demonstrably new and additional and would not have resulted without the offset” (status: non regulatory)
- **French new « Doctrine » regarding the mitigation hierarchy (Fiche 14 on Additionality):** an additional compensation measure delivers a demonstrated surplus compared to the initial state of the compensation site and to existing public and private commitments. This definition is the result of a consensus of opinion of stakeholders involved in the writing of the new « Doctrine » which is not a regulatory but rather a guidance document. The French regulation (Art. R.122-14 II du code de l’environnement) only states that compensation measures should permit to globally conserve, and if possible improve, the environmental quality. It gives no regulatory definition of additionality.

German definition:

The German regulation for nature protection (Eingriffsregelung) does not give a formal definition of additionality but states that a compensation measure has to provide long lasting ecological surplus. Measures which already result from other legal requirements or which are public funded cannot be considered as compensation measures. A simple ‘protection/conservation’ of already valuable existing habitats is not a compensation/offset seen from the German legal nature conservation perspective.

UK definition:

The document “Guiding principles for biodiversity offsetting” of DEFRA (July 2011)⁴ states that a compensation measure should be “*providing additionality; not being used to deliver something that would have happened anyway*”. This is an official English Government definition as part of guidance to locally-managed voluntary offsets pilots.

Definition at EU level:

The nature directives of the EU do not formally define additionality. The guidance document “Managing Natura 2000 sites, the provisions of Article 6 of the ‘Habitats’ Directive 92/43/EEC” states that “*measures required for the ‘normal’ implementation of the ‘Habitats’ or ‘Birds’ directives cannot be considered compensatory for a damaging project [...] Compensatory measures should be additional to proper implementation*”. Current practices show that for Natura 2000, compensatory measures can consist of re-creating habitat, or in exceptional cases proposing a new site (McKenney and Kiesecker, 2010)⁵.

Analysis of degree of common understanding/consistency, analogy and differences with other terms

There are no regulatory or formal shared definitions of additionality in the field of biodiversity compensation.

The concept has mainly been elaborated in the scope of international and domestic climate legislation

⁴ <http://archive.defra.gov.uk/environment/biodiversity/offsetting/documents/110714offsetting-guiding-principles.pdf>

⁵ McKenney B.A. and Joseph M. Kiesecker, Policy Development for Biodiversity Offsets: A Review of Offset Frameworks, Environmental Management (2010) 45:165–176

and investments. Nevertheless *“the current language employed to define additionality and baseline in greenhouse gas emissions offset policy is imprecise”* (Gillenwater, 2012)⁶. For example, *“The UNFCCC⁷ and the Kyoto Protocol use additionality in difference contexts, but neither of the two treaties bother to define the term. The UNFCCC requires additionality of financial support for developing countries; the Kyoto Protocol adds the demand of additionality of emission reductions for their eligibility to offset emissions that fall under the target of developed country parties. In both cases the requirement is vague and hard to operationalize”* (Streck)⁸. Gillenwater (2012) lists more than 20 variations of terminology used to describe the concept of additionality in climate policy literature! Thus *“despite years of debate within the environmental policy community, there is no commonly held precise understanding of what additionality means or how to best implement it”* (ibid).

Regarding this delicate debate, the following should only be considered as a collection of rough elements of definitions. A precise and shared definition cannot be expected here.

The common point of all definitions is that they all refer to the need for a compensation measure **to provide a new contribution to conservation, additional to any existing values** (McKenney and Kiesecker, 2010), i.e. the conservation outcomes it delivers would not have occurred without it.

In the practice, two aspects of additionality are often distinguished:

1. The ecological aspect: the compensation measure should be of ecological nature (vs. for example educational measures or payments not directly attributed to ecological actions) and should provide an ecological improvement at the compensation site.
2. The aspect regarding additionality compared with commitments.
 - There are major differences in practices between countries regarding which commitments should be considered. Some definitions only mention public commitments, other also private ones. In the practice “commitments” is understood or in a broad sense (existing state and future planned actions) or, in a more restrictive way, as land protection under current regulation.
 - Also “what is additional” to a commitment can, in the practice, be defined in different ways. When a preservation/conservation program already exist on a site, in some case following actions can be considered as additional: implementing measures not planned initially in the program but which improve it, implementing the program faster than initially planned in the case the speeding up has actual ecological benefits, changing management practices in the case this leads to actual ecological benefits.

Related issues:

- The notion of additionality is strongly linked with the concept of **baseline** (Gillenwater, 2012). Indeed, compensation outcome can be defined as an *“extra good” that is equivalent (in magnitude, approximate timing, and recipient population) to the original good*” (ibid). One question is: what is this “extra” measured against? Defining accurately additionality implies thus to choose and assess a baseline scenario. This is delicate because this baseline can be the current state of the compensation site or an assessed *“unobserved baseline, which represents a*

⁶ Gillenwater M., What is additionality? Part 1: A long standing problem. ghg management institute, Discussion paper (2012)

⁷ United Nations Framework Convention on Climate Change

⁸ Streck C., The Concept of Additionality under the UNFCCC and the Kyoto Protocol: Implications for Environmental Integrity and Equity, [http://www.ucl.ac.uk/laws/environment/docs/hong-kong/The%20Concept%20of%20Additionality%20\(Charlotte%20Streck\).pdf](http://www.ucl.ac.uk/laws/environment/docs/hong-kong/The%20Concept%20of%20Additionality%20(Charlotte%20Streck).pdf)

scenario under identical conditions except for the absence [of the project]" (ibid).

- Some definitions include the fact that additionality has to be **demonstrated**, i.e. the project developers has to answer the question: what will the compensation measure achieve in terms of improvements/gain on top of any conservation actions already happening or planned at the compensation site? Nevertheless, in the field of biodiversity conservation, there are today no clear criteria to demonstrate additionality (Bennett, 2010)⁹. *"As experience in carbon markets has demonstrated, developing and implementing additionality criteria is complicated, since predicting what would have happened in the future is not simple"* (ibid). In the case of market based instruments (like habitat banking), one could expect that potential tests for additionality will have to be designed very carefully. Some authors suggest that this is not necessary: *"Alternatively, no additionality criteria may be required (except that basic criteria that credits cannot be generated from land that is protected under current regulation)"* (eftec, 2010)¹⁰.

Proposal on how to use the term within the NNLI WG

Preliminary remark: Regarding the definition of additionality, as underlined above, finding a shared and practical definition is beyond the possibility of this glossary. In fact the issue is less the very definition of additionality than to choose what is considered as being additional and against what reference this is additional. As stated by Bennett (2010) *"Choosing an approach to assess additionality is a decision that inevitably involves a balancing of economic costs, social equity, environmental integrity, and political realities"*. This is clearly something which could be done at member state level. The NNLI could be the occasion to issue guidance to help member states when setting additionality criteria.

For general use, we propose the definition of McKenney and Kiesecker (2010): additionality refers to the need for a compensation measure **to provide a new contribution to conservation, additional to any existing values**, i.e. the conservation outcomes it delivers would not have occurred without it.

The "operational principles" subgroup could provide guidance regarding how to choose the baseline (reference toward which the additionality is assessed) and how to demonstrate additionality.

Regarding the two aspects of additionality, one proposal in order to avoid misunderstandings is to precise "ecological additionality" or "additionality compared with commitments".

In the scope of the NNLI WG, when speaking from "additionality" without precision, "ecological additionality" is always included. Indeed, provided that a compensation measure respects the principle of ecological equivalence (with ecological gains on the compensation site compared to a based line) ecological additionality is respected and is thus implicitly inherent to compensation measure.

⁹ Bennett K., Additionality: the next step for ecosystem services markets, Duke Environmental Law & Policy forum 20: 417-438 (2010)

¹⁰ eftec, IEEP et.al (2010) The use of market-based instruments for biodiversity protection –The case of habitat banking – Technical Report. <http://ec.europa.eu/environment/enveco/index.htm>

Equivalence

Available definitions BBOP Glossary (not a regulatory definition): In ecology, the term **ecological equivalence** generally refers to species that occupy similar niches in different geographical regions. In the context of biodiversity offsets, the term is synonymous with the concept of 'like for like' and refers to areas with highly comparable biodiversity components. This similarity can be observed in terms of species diversity, functional diversity and composition, ecological integrity or condition, landscape context (e.g., connectivity, landscape position, adjacent land uses or condition, patch size, etc.), and ecosystem services (including people's use and cultural values). Related definitions:

- **Like-for-like:** Conservation (through the biodiversity offset) of the same type of biodiversity as that affected by the project. Sometimes referred to as in-kind. Several biodiversity offset policies are based on a principle either of 'like-for-like' or of 'like-for-like or better'.
- **Like-for-like or better:** A common approach to biodiversity offsets is to require conservation (through the biodiversity offset) of the same type of biodiversity as that affected by the project. This is known 'like-for-like'. This is sometimes modified to 'like-for-like or better', in which the offset conserves components of biodiversity that are a higher conservation priority (for example because they are more irreplaceable and vulnerable) than those affected by the development project for which the offset is envisaged. This is also known as 'trading up'
- **Trading up:** Conserving through an offset components of biodiversity that are a higher conservation priority (for example because they are more irreplaceable and vulnerable) than those affected by the development project for which the offset is envisaged.

French new « Doctrine » regarding the mitigation hierarchy (Fiche 15 on Equivalence): The new French doctrine defines "equivalence" in a larger sense than "ecological equivalence" as a set of criteria, methods and participatory processes which aim at comparing ecological losses (residual impacts of a project) with the gain delivered by compensation measures in order to design and size the compensation measures. Four sets of criteria should be considered to assess equivalence: ecological criteria, geographical/functional criteria, criteria related to time scale, and societal criteria.

- In the practice, there is currently no recognised and shared methodology available for such an integrated assessment of equivalence
- This definition is the result of a consensus of opinion of stakeholders involved in the writing of the new « Doctrine » which is not a regulatory but rather a guidance document.
- The French regulation (Art. R.122-14 II du code de l'environnement) only states that compensation measures should permit to globally conserve, and if possible improve, the environmental quality. The notion of "environmental quality" and related assessment criteria are defined for each particular environmental issue (favorable conservation status for Natura 2000 and protected species, good ecological and chemical status for water bodies, good functionalities for ecological networks,...). There is thus no formal regulatory definition of ecological equivalence.

German definition:

The definition refers to so called 'functional equivalence' which is synonym with 'in-kind' or 'like-for-

like'. The same type of habitat and/or target species should be addressed first if we design biodiversity offset measures. Keeping in mind that full functional equivalence is unachievable (particularly, for some specific habitats like peat bog). However, due to some legal changes in the past (amendment of the Federal Nature Conservation Act) it is easier nowadays to override this strict hierarchy of (1) in kind and like for like and (2) out of kind/not like for like. As a result, achieving functional equivalence in Germany is still a relevant issue in practice, however, it is no longer that mandatory as it used to be in the past.

UK definition:

The English pilot's guidance documents¹¹ do not use the term 'equivalence'. They do state that "One of the guiding principles for developing our approach to offsetting is that it should result in an improvement in the extent or condition of the ecological network"

Definition at EU level:

- The nature directives of the EU do not formally define equivalence. The guidance document "Managing Natura 2000 sites, the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC" states that compensation should correspond "*precisely to the negative effects on the species or habitat concerned*", "*have to ensure the maintenance of the contribution of a site to the conservation at a favorable status of one or several natural habitats 'within the bio-geographical region concerned'*" and "*ensure overall coherence of Natura 2000.*" This implies that compensation should be like-for-like and that the implicit criterion for equivalence is that compensation ensures favorable status and overall coherence of the Natura 2000 Network. No guidance is given on how to assess and compare the gains and losses.
- In the Environmental Liability Directive (2004/35/CE) equivalence is not defined as such but explicit reference is made to equivalence approaches in Annexe II:
 - a. Article 1.2.2. "*When determining the scale of complementary and compensatory remedial measures, the use of resource-to-resource or service-to-service equivalence approaches shall be considered first. Under these approaches, actions that provide natural resources and/or services of the same type, quality and quantity as those damaged shall be considered first. Where this is not possible, then alternative natural resources and/or services shall be provided. For example, a reduction in quality could be offset by an increase in the quantity of remedial measures.*"
 - b. Article 1.2.3. "*If it is not possible to use the first choice resource-to-resource or service-to-service equivalence approaches, then alternative valuation techniques shall be used....*"

In the scientific literature:

As stated in the BBOP definition, in the scientific field of ecology, the term "equivalence" refers to the possible substitutability of species (within a biotic community) which is an underlying feature for

¹¹ <http://www.defra.gov.uk/publications/files/pb13745-bio-technical-paper.pdf>.

biodiversity within an ecosystem.

In the field of compensation, “equivalence” is usually understood to refer to or to assess the relationship between the losses at impacted site and the gains at the compensation site. Nevertheless, even in this particular field, there is no unique and shared definition of equivalence (Quétier, 2012¹²). Moreover, the wording “equivalence” sometimes refers to the loss/gain relationship, but also sometimes to the methodology to assess this relationship (as for example DERM, 2011¹³). Numerous methodologies were developed to assess ecological equivalence in biodiversity offset schemes and were reviewed by Quétier 2011¹⁴. In some of these methods equivalence is understood as: losses and gains should be the same type, quality, and from comparable value (example DERM 2011). Other methods refer to equivalence in a more general sense as the fact that compensation measures are sized in way to provide the same level of biodiversity (expressed in a variety of components and metrics) than the quantified losses.

Analysis of degree of common understanding/consistency, analogy and differences with other terms

Despite the numerous definitions listed above, there is no unique, shared or legally based definition of equivalence. We can distinguish four main acceptances of the wording:

1. The classic ecological acceptance referring to substitutability of species.
2. An acceptance referring to in-kind (like-for-like) compensation (the BBOP definition).
3. A more general acceptance referring to what could be called an “equivalence analysis”, i.e. the assessment of compensation measures in order to ensure that loss and gains are somewhat comparable.
4. A few definitions go beyond the ecological aspects and include a range of additional criteria regarding social, cultural or others aspects.

Proposal on how to use the term within the NNLI WG

In the scope of the NNL initiative, we propose to adopt a definition which refers mainly to the third acceptance listed above:

An offset project is considered equivalent if it is designed and sized in order to achieve ecological gains which are at least equal to the loss at the impacted site. This definition mainly focuses on ecological aspects. In cases where wider socioeconomic dimensions beyond ecological aspects are of relevance, they should be taken into account in the assessment of loss and gains. Nevertheless, one should be aware of the difficulty of defining metrics integrating socioeconomic, cultural or others aspects. This remains usually far beyond current state of the art.

We suggest that, in the scope of the NNL initiative, the notion of equivalence should not include per se a like-for-like criteria. Indeed, the focus of the initiative will probably be on “ordinary biodiversity” (outside Natura 2000 and for species/habitat not covered by the EU legislation). Therefore like-for-like is not needed in a systematic way. This implies nevertheless a huge need of development regarding methods and criteria to properly determine what is equivalent. The key point is to define metrics to most fully characterise injured and replacement resources. One action of the NNL initiative could be

¹² Quétier F., B. Quenouille, E. Schwoertzig, S. Gaucherand, S. Lavorel et P. Thiévent, Les enjeux de l'équivalence écologique pour la conception et le dimensionnement des mesures compensatoires d'impacts sur la biodiversité et les milieux naturels ; Sciences Eaux et Territoires, la revue d'Irstea, Article Hors-Série, 2012

¹³ DERM (Department of Environmental and Resource Management), Queensland Government, Ecological Equivalence Methodology Guideline, 2011

¹⁴ Quétier F. and S. Laval, Assessing ecological equivalence in biodiversity offset schemes: Key issues and solutions, Biological Conservation 144, 2991-2999, 2011.

to support (1) research and development work in order to progress rapidly toward sound and robust equivalence assessment methods (2) training of stakeholders to promote shared practices.

Ratio/ multipliers

Available definitions International level

BBOP glossary : “Offset ratio” (status: non regulatory)

“The offset ‘ratio’ is the area occupied by an offset divided by the area affected by a project’s impact. The offset area is often larger than the area impacted (i.e. offset ratio >1), since the offset gains per unit area are often lower than the impact site losses per unit area. Use of a multiplier represents a decision made by an offset planner to increase the area of an offset by a certain factor, with the aim of improving the chances of achieving no net loss. However, the terms ratio and multiplier are often used interchangeably.”

EU level

Natura 2000 – Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC (status: non regulatory)

“The extent required for the compensatory measures to be effective has a direct relationship to the quantitative and qualitative aspects inherent to the elements of integrity (i.e. including structure and functionality and their role in the overall coherence of the Natura 2000 network) likely to be impaired and to the estimated effectiveness of the measures.

Consequently, compensation ratios are best set on a case-by-case basis and must be initially determined in the light of the information managed during Article 6(3) assessment and ensuring the minimum requirements to meet ecological functionality. The ratios may then be redefined according to the results observed when monitoring the effectiveness, and the final decision on the proportion of compensation must be justified.

There is wide acknowledgement that ratios should be generally well above 1:1. Thus, compensation ratios of 1:1 or below should only be considered when it is demonstrated that with such an extent, the measures will be 100% effective in reinstating structure and functionality within a short period of time (e.g. without compromising the preservation of the habitats or the populations of key species likely to be affected by the plan or project).”

National levels

France

Ratios are not defined by law. However, some texts or framework documents set out some minima:

- The forest code (article L. 311-4) states that in case of clearing, the offset area corresponds to the impacted area or to the impacted area multiplied by a factor between 2 and 5. This factor is defined according to the ecological or social role of the woods that are going to be cleared.
- Some Water Management and Development Schemes set out some minima in case of a residual impact on wetlands. These minima are applied when it is not possible to restore or recreate an equivalent wetland in terms of functionality and biodiversity.

The French doctrine relating to the “avoid, reduce and compensate” sequence for impacts on the natural environment (status: non regulatory) aims at streamlining the use of ratios in France: “[...] the ratios or adjustment coefficients are not used in a systematic manner and do not constitute input data.

If they are used for dimensioning a compensatory measure, they must indeed be the result of an analytical process that aims to achieve the desired objectives and integrate the following:

- Proportionality of the compensation in relation to the intensity of the impacts;
- The operating conditions of areas liable to be hosting the measures;
- Risks associated with the uncertainty concerning the effectiveness of the measures;
- Time lag or spatial difference between the impacts of the project and the effects of the measures.”

The French doctrine also mentions that a high ratio is no guarantee for a relevant offset and implies reflecting on the feasibility of the offset.

Translation of the term in other languages:

In French: “ratio”, “ratio compensatoire”, “coefficient d’ajustement”, “ratio évalué”.

In German: “Kompensationsfaktor”.

Analysis of degree of common understanding/consistency, analogy and differences with other terms

The term “ratio” is used for different meanings, which are rarely explicit. The following typology can be proposed.

“Comparison ratio” (BBOP glossary)

A factor used to compare the qualified area on the project site with the qualified area on the offset site.

E.g.: 1 ha of impacted wetland (loss) has a value of 4 (on a scale of 5); one ha of restored wetland (gain) has a value of 2 (on a scale of 5); the comparison factor is $4/2 = 2$; this comparison factor is applied to the impacted area in order to determine the offset area; if the impacted area is 2,5 ha, the offset area is 5 ha.

“Risk multiplier” (BBOP glossary, French national doctrine, UK pilot methodology)

A factor used to increase/adjust the offset area in order to take account some risks (e.g. uncertainty of ecological actions) or penalties (e.g. distance, time lag).

E.g.: it has been defined that an offset is to be implemented on an area of 5 ha (see previous example); the offset consists of restoring a complex wetland; in order to take account of the risk of uncertainty associated with this restoration, a factor of 1.5 is applied; the offset will then be implemented on an area of 7.5 ha.

“Evaluated ratio” (Natura 2000 guidance, French national doctrine)

A factor combining the comparison ratio with the risk multiplier.

E.g.: if we take the previous 2 examples, the evaluated ratio is $2 \times 1.5 = 3$.

Note that such an “evaluated ratio” is to be distinguished from “area ratios” that are often used in practice to design the offset area, without a previous analysis of the qualified areas on the project site and on the offset site.

Proposal on how to use the term within the NNLi WG

Overall, we can distinguish between two types of ratios:

- “ratios” *resulting* from an analysis of qualified areas on the project site and on the offset site (comparison ratio, evaluated ratio);
- “ratios” not resulting from an analysis of qualified areas on the project site and on the offset site, either to fully design the offset or to take risks into account in the last step of the offset design (risk multipliers).

One solution to avoid misunderstanding is to specify each time which of the two aspects is meant.

Compensation/Offset

Available definitions

Generally, **compensation** is a recompense for some loss or service, and is something which constitutes an equivalent to make good the lack or variation of something else. It can involve something (such as money) given or received as payment or reparation (as for a service or loss or injury). Specifically, in terms of biodiversity, compensation involves measures to recompense, make good or pay damages for loss of biodiversity caused by a project. In some languages 'compensation' is synonymous with 'offset', but in BBOP, compensation is contrasted with a biodiversity offset.

Compensation can involve reparation that falls short of achieving no net loss, for a variety of reasons, including that the conservation actions were not planned to achieve no net loss; that the residual losses of biodiversity caused by the project and gains achievable by the offset are not quantified; that no mechanism for long term implementation has been established; that it is impossible to offset the impacts (for instance, because they are too severe or pre-impact data are lacking, so it is impossible to know what was lost as a result of the project); or that the compensation is through payment for training, capacity building, research or other outcomes that will not result in measurable conservation outcomes on the ground.

France

Compensation is used in France to qualify measures applied after avoidance and reduction measures, on residual impacts on environment in general. According to the French new doctrine these measures should be designed in order to achieve no net loss through equivalence and additionality. Nevertheless, there are no official methods in France to assess loss and gains, so compensation can involve measures that fall short of achieving no net loss.

Germany

For the remaining unavoidable impairments, appropriate compensation measures must be applied. The law distinguishes between two types of compensation; these are referred to as "restoration compensation" and "replacement compensation": "The intervening party shall be obligated to primarily endeavour to offset any unavoidable impairment through measures of nature conservation and landscape management [restoration compensation], or to offset them in some other way [replacement compensation]. Any impairment shall be considered to have been compensated for as soon as the impaired functions of the ecosystem have been restored and the natural scenery has been restored or re-designed (landscape) in a manner consistent with the landscape concerned. Any impairment shall be considered to have been offset in some other way as soon as the impaired functions of the ecosystem have been substituted in an equivalent manner or the natural scenery has been re-designed in a manner that is consistent with the landscape."

According to the law, restoration compensation involves a direct spatial and functional connection to the lost components of nature and landscape ("in-kind" and "on-site"). Thus, the goal of restoration compensation measures is to restore the conditions of the affected natural landscape unit to the state prior to the impact, ensuring the equal ecological functioning and values, with no loss of major components of the visual composition of the landscape.

If restoration compensation cannot assure full compensation, additional replacement compensation measures are to be implemented ("out-of-kind" and "off-site"). These do not necessarily have to restore the same functions, and may have only a loose spatial and functional relationship to the impact area (Louis 2004: 716).

In general, restoration compensation is preferable to replacement compensation. However, with the amendment of the Federal Nature Conservation Act, this preference and the strict spatial, functional and temporal relationship between impact and compensation have been loosened. Thus, in some

cases replacement measures may take priority, if this generates a greater overall benefit for nature and landscape (so-called “trading up”).

By contrast BBOP defines **Biodiversity offsets** as “measurable conservation outcomes resulting from actions designed to compensate for significant residual adverse biodiversity impacts arising from project development after appropriate prevention and mitigation measures have been taken. The goal of biodiversity offsets is to achieve no net loss and preferably a net gain of biodiversity on the ground with respect to species composition, habitat structure and ecosystem function and people’s use and cultural values associated with biodiversity”.

Analysis of degree of common understanding/consistency, analogy and differences with other terms

- Differences in BBOP but synonym in some countries;
- Offset in the BBOP sense: a compensation activity for which systematic measure of gains and loss is used to ensure NNL or net gain. In this sense Offset is a type, a subset, of compensation;
- Compensation is often used as a “generic” and very broad term including a range of activities/mechanisms including indirect measures such as public awareness/training/transfer payments;
- Be careful compensation is not to be reduced to the “compensatory measures” as defined in the EU legislation under the Habitat directive; and
- In Germany compensation activities are distinguished in a very precise way: from compensation based on functional equivalence in the vicinity of the impacted site (which is preferably in kind) to out-of-kind compensation and market based instruments.

Proposal on how to use the term within the NNLI WG

- BBOP’s definition that draws a distinction between more general compensation that could include indirect measures such as awareness campaigns and financial payments, and offset mechanisms that have explicit NNL or net gain goals would seem appropriate

Bio/Conservation/habitat/mitigation banking

Available definitions

Habitat Banking

Habitat banking can be succinctly defined then as “a market where the credits from actions with beneficial biodiversity outcomes can be purchased to offset the debit from environmental damage. Credits can be produced in advance of, and without ex-ante links to, the debits they compensate for, and stored over time”. Biodiversity credits include both habitats and species (eftec, IEP et al., 2010).

US definitions

Mitigation Banking - Compensatory Mitigation Banking is used to describe the restoration, establishment, enhancement, or in certain circumstances preservation of wetlands, streams or other aquatic resources for the purpose of offsetting unavoidable adverse impacts. Mitigation Banking is driven by compliance to the Clean Water Act (S404) and the principle of ‘no net loss.’ After following the mitigation hierarchy, applicants filing for permits to drain, fill, or dredge a wetland (or stream) may offset their impact (Source: State of Biodiversity Markets¹⁵).

Conservation Banking (species) – describes US regulatory provisions that require any project that may impact on endangered species to follow the mitigation hierarchy and offset their residual impacts by developing their own offset, paying into an in-lieu fee fund, or buying a credit from a conservation bank. Unlike the wetland mitigation system, species offsets do not have a stated ‘no net loss’ principle, but rather a species recovery goal (Source: State of Biodiversity Markets).

Analysis of degree of common understanding/consistency, analogy and differences with other terms

- Despite slight nuances in their usage in the US, it would appear that in most jurisdictions the terms conservation banking and habitat banking are used interchangeably.
- “Biobanking” is also used in some parts of Australia to mean habitat banking (not to be confused with stores of biological samples).
- It should also be noted that the US usage of ‘mitigation banking’ is actually more akin to a compensatory offset rather than mitigation per se, as it refers to off-site measures that are not part of the project itself. Therefore the term has a similar meaning to compensation/habitat/bio banking.

Proposal on how to use the term within the NNLi WG

In the scope of the NNL initiative, we propose Habitat or Conservation Banking as the preferred terms. The general purpose of such banking is offsetting residual adverse impacts. It is therefore mainly an instrument to implement compensation requirements.

Remark: In some specific cases habitat bank could also be used to provide habitats that acts as reduction measures. Indeed, in some activity sectors, there are cases for which a specific project provides "extra" habitat sufficiently close to the site impacted by another project. These "extra" habitats can then act to reduce the impact of this other project. These could be examples of habitat

¹⁵ Madsen, Becca, Nathaniel Carroll, Daniel Kandy, and Genevieve Bennett, 2011 Update: State of Biodiversity Markets. Washington, DC: Forest Trends, 2011. Available at: http://www.ecosystemmarketplace.com/reports/2011_update_sbdm.

creation that act as reduction/minimization, rather than compensation. Conceivably, such "extra" habitat could also come from a habitat bank. Depending on the characteristics of the biodiversity affected, the linkage between impact site and the created habitat etc., etc., the possibility should exist to permit habitat banking to provide reduction/minimization measures - not only compensation measures.

The US mitigation banking system, although named "mitigation", is a banking system which provides compensation measures. More over this system is very specifically designed for the "water" environment". In order to avoid misunderstandings, we propose to avoid the use of the US terminology in the EU context although we can find some similarities regarding the very principles of banking.

Biobanking can be confused with biobanks (e.g. of seeds) and compensation banking can create further issues with the definition around compensation vs. offsets.

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Metrics

Available definitions

In the **common sense**, the term “metrics” refers globally to the sense of measuring or more practically to a set of measurements that quantify results.

The terms “metrics” is broadly used **in business** to design parameters or measures of quantitative assessment used for measurement, comparison or to track performance or production. A metric is thus used for monitoring to conditions specific to particular environments.

In the field of **biodiversity**, the terms refers to measurement, assessment and valuation and is directly linked with the central question “how do we measure biodiversity?”.

- Some metrics focus on **rare species and high quality natural communities**. Such metrics relate to species-of-greatest-conservation-need, threatened and endangered species, harvestable species (e.g., upland game, waterfowl, fur bearers, big game), total species, specific taxa...). Classical metrics examples are: Species richness (the number of species in a landscape), the Shannon or Simpson Indexes (both based on the proportion of individuals or biomass of species in a landscape),...
- The measure of biodiversity becomes difficult for the **so-called “ordinary” biodiversity**. Should then the measurement be based on common species, communities, ecological processes or ecosystem services? A range of structural and functional indicators exists. Some metrics are based on land cover (or landscape) data set (e.g., Land Use and Land Transformation Metric), some on Life Cycle Impact Assessment (e.g., Potentially Disappeared Fraction). Some biodiversity metrics reflect ecosystem services (e.g., abundance and diversity of game species), whereas others reflect indirect and difficult to quantify relationships to services (e.g., relevance of species diversity to ecosystem resilience, cultural value of native species). There are also attempts to develop biodiversity metrics in the economic field in order to assess the links between biodiversity and organizations (e.g., the Normative Biodiversity Index).

In the field of **compensation, BBOP** define “metrics” as “*A set of measurements that quantifies results*”. BBOP defines also a range of related terms:

- **Currency:** “*The concepts of currency, offset ratios and multipliers are often conflated in the literature. Currencies (or metrics) are the **unitary measures of biodiversity lost, gained or exchanged. This varies from very basic measures such as area, to sophisticated quantitative indices of multiple biodiversity components which may be variously weighted.**”*
- **Proxy measures:** “*Biodiversity metrics are often described as ‘surrogate’ or ‘proxy’ measures just because it is impossible to (a) inventory and (b) assess the state of all*

biodiversity present. Even at the plot scale, it is not technically possible to fully count all life forms present. Nor is it possible to know with certainty the true value of a state or condition metric. It is therefore necessary to rely on either on samples or on selected indicators of the biodiversity present as proxies to represent the biodiversity present and its condition or state.”

- **State metrics:** *“The state of biodiversity components, assessed by comparing the observed biodiversity with some notion of what it would be in the absence of abnormal threats. The state metric is most simply expressed as a fraction or percentage reflecting the intactness or condition of the biodiversity component. For a species, this might be the % sites holding a species (from presence observation data); % of natural abundance (from basic counts); % former habitat area now remaining (area occupied). At higher levels of organisation (i.e. community, ecosystem) state is reflected by measures of ‘condition’. These may be species-occupancy based (number actually present expressed as a percentage of the number that could be present), pressure based (number and intensity of threats) or based on measures of structure and function (intactness of key attributes).”*
- **Surrogate measures:** *“Some biodiversity metrics are described as ‘surrogate’ or ‘proxy’ measures because it is impossible to assess the state of all biodiversity for an area. It is therefore necessary to rely on selected surrogate measures to represent the state of biodiversity for an area. Thus state metrics and condition metrics are usually surrogates for the information on biodiversity that is really required.”*
- **Habitat hectares:** *“Units of measurement that take into account the area affected and the quality or condition of the biodiversity impacted (determined by the quantities of a number of chosen attributes related to the structure, composition and function of that habitat). The habitat hectares metric was originally developed in Victoria, Australia to focus on habitat structure, particularly native vegetation, and thus to provide proxies for composition and function. Some BBOP partners have adapted the approach to cover both flora and fauna, and to include some aspects of composition and function as benchmark attributes.”*

A number of different metrics for biodiversity offsets are described in the BBOP Offset Design Handbook (available at www.forest-trends.org/biodiversityoffsetprogram/guidelines/odh.pdf).

In the EU, there are, to our knowledge, no regulatory and formal definitions of the term “metrics” at national levels.

- **In France**, the regulation (art. L.411-1 et 2 du CE) states that when a specific species is impacted, the equivalence should be based on the habitat of this species which does not only refer to a vegetation type but include the whole conditions of development of the species. But the metric as such is not defined. The new “doctrine” (not a regulatory but rather a guidance document), does not define nor impose a particular metric. The metrics to be used depend on what is at stake (each component of the natural environment should be considered

separately). For each component the environmental quality should be measured before and after the impact (on the damaged site) and before and after compensation (on the compensation site). In order to compare losses and gains, the same indicators and units should be used when assessing these losses and gains for a particular component.

- **In Germany**, the different “Biotoptypwertverfahren” developed in the different states define a range of parameters to classify and assess the quality level of each particular biotope type (habitat type). These parameters (like ‘endangered/rare biotope type in the particular biogeographic region’, ‘restorability’ or ‘intensity of usage’ etc.) relate mainly to functional characteristics of the considered biotope types and can be considered as a set of metrics. In some cases you can also find so called compensation factors; thus, a certain kind of biotope (habitat) has to be compensated with 1:1; 1:2 or 1:3 and even more relation in size.
- In the UK, DEFRA adapted the “habitat hectare” metric initially developed in Victoria, Australia, to the UK context in order to have a common methodology for assessing the losses and gains for the on-going offset experimentations. This simplified methodology relates on the combination of different parameters to qualify the ecological status. It covers both flora and fauna, and includes some aspects of composition and function.

Analysis of degree of common understanding/consistency, analogy and differences with other terms

In the field of compensation, there are no mandatory metrics in the different EU member states except in some cases in Germany¹⁷.

The term “metrics” is sometimes mistaken with the terms “components (of biodiversity) although “metrics” should be used to refer to the measure of “components”.

The term “metric” is often used as a synonym of “indicators” although “metric” is more to be seen as set of measurements of as the “unit of the measurements”.

The underlying issue of all definitions remains that *“Biodiversity in its entirety is impossible to measure, so the process of offset design involves decisions about suitable ‘metrics’ or ‘currencies’ ”* (BBOP Offset Design Handbook). The BBOP Offset Design Handbook gives a good overview of the main points to consider regarding “metrics” in the field of compensation:

- *“...There are many possible approaches to designing, selecting and applying metrics appropriate for a given situation... There is no single, best way to measure loss ...*
- *...The choice of metrics often involves selecting extent to which the selected measures are genuinely representative of biodiversity overall may be difficult to demonstrate...*
- *... A common practice is the need to select ‘surrogates’ or ‘proxies’ which can be quantified and which can be considered representative of ‘overall’ biodiversity... The use of surrogates is a practical approach. It cannot do justice to all components of biodiversity, but has the benefit of being workable...*
- *...Habitat is a useful concept for loss / gain calculations, because it lends itself to identification of areas of land and uses these as a PROXY for ‘carrying capacity’ with respect to individual or multiple species. Most offset methods consider the areas of land available to*

¹⁷ Federal road building has some mandatory metrics in Germany. However there is no overall mandatory metric in the Federal Nature Conservation Act.

key species, species populations or communities / assemblages and also the capacity of these areas to support them in a viable condition (generally referred to as 'habitat quality'). In this case, measures of area are generally combined with some measure of quality, health or condition of the habitat...

- ...There are also situations where measures of habitat area and quality are not a good proxy for losses at the species level, and it is necessary to carry out more detailed population assessments. There are several approaches currently under development which are intended to deal more effectively with the viability of species populations and their persistence in space and time. Species-specific assessments may be advisable for key species, particularly where these are highly threatened or where significant residual adverse impacts are not directly linked to amount, structure or configuration of habitat, but are expressed more directly at population level (for example through disturbance or roadkill)..."

Proposal on how to use the term within the NNLi WG

The following proposed definition, seems suitable for use in the scope of the NNL initiative:

Metrics: A set of unitary measures of biodiversity lost, gained or exchanged. This varies from very basic measures such as area, to sophisticated quantitative indices of multiple biodiversity components which may be variously weighted. This set of measures is used in order to compare losses at the damaged site and gains at the compensation site and provide decision support to establish equivalence.

This definition is inspired from different elements contained in the BBOP Offset Design Handbook and integers following considerations by Quétier¹⁸,

- "...Metrics aim to provide decision support, not assess scientifically the ecological state or functioning of a site or target biodiversity. Criteria can be combined using rule-based model or using mathematical models, but aim to provide an estimate of the importance or value that can be compared in a before – after assessment.
- ...Metrics can be more or less complex. Choosing which methods to use will depend on existing knowledge, as developers are seldom required to go beyond state...
- ...Different metrics will have to be used for different target components of biodiversity and ecosystems: carrying capacity or habitat quality for species, the state of natural habitats or ecosystems, level of function or ecosystem services, etc...
- ...This means that decomposing an impact into losses affecting a wide range of specific components of biodiversity and ecosystems will lead to the joint use of multiple metrics, which will raise costs considerably. Grouping components into broader categories (e.g. species sharing similar habitat requirements), with their associated metrics (e.g. the characteristics of the shared habitat), will make assessing equivalence more straightforward..."

¹⁸ Quétier, F., Technical and scientific challenges raised by the development of habitat banking, Contribution to the workshop on Biodiversity offsets and Habitat banking, DG Env, 5th July 2012

Additional terms

This list of other terms can be given simple definition in English. We can invite the other NNL working sub-groups to add further terms or highlight those they think need clearer definition.

<u>Suggested Term</u>	<u>BBOP or alternative definition</u>	<u>Comments</u>
Authorisation Demand	Not in BBOP glossary The same as 'planning permission' in English.	
Biobanking	Not in BBOP glossary <i>BioBanking</i> is a market-based scheme that provides a streamlined biodiversity assessment process for development, a rigorous and credible offsetting scheme as well as an opportunity for rural landowners to generate income by managing land for conservation. BioBanking enables 'biodiversity credits' to be generated by landowners who commit to enhance and protect biodiversity values on their land through a biobanking agreement. These credits can then be sold, generating funds for the management of the site. Credits can be used to counterbalance (or offset) the impacts on biodiversity values that are likely to occur as a result of development. The credits can also be sold to those seeking to invest in conservation outcomes, including philanthropic organisations and government. (Source: New South Wales Government, Australia, http://www.environment.nsw.gov.au/biobanking/) Very similar to habitat banking, but may refer to a biodiversity metric that is not habitat (areas) based?	
Biocenose	<i>BBOP definition of Biotope:</i> The combination of abiotic conditions and an associated community of species. The consistent relationship between the biotic and abiotic elements which determines when and where particular species occur together in repeatable and recognisable combinations. In other words, habitat shared by many species is called a biotope.	<u>Biocenose is a synonym for biocenosis, and more commonly biotope in English.</u>

<u>Suggested Term</u>	<u>BBOP or alternative definition</u>	<u>Comments</u>
		BBOP defines biotope.
Bio-geographical or biogeographical regions	<p>Not in BBOP glossary</p> <p><i>Bio-geographical regions</i> are useful geographical reference units for describing habitat types and species which live under similar conditions in different countries (EEA). There are eleven different terrestrial and freshwater bio-geographical regions considered by the EEA: Arctic region; Boreal region; Continental region; Atlantic region; Macaronesian region; Mediterranean region; Alpine region; Pannonian region; Steppic region; Black Sea region; Anatolian region</p> <p>(Source: EEA, http://www.eea.europa.eu/publications/report_2002_0524_154909/#)</p>	
Credits (points)	<p><i>A unit of measure representing the environmental commodity that is able to be traded (this can be functional or measure of area), based on the environmental activity.</i></p> <p><i>One scheme may have varying classifications of credits e.g. The Biobanking scheme in New South Wales, Australia has distinct credits for ecosystems and species.</i></p> <p>(Source: Madsen, Becca; Carroll, Nathaniel; Moore Brands, Kelly; 2010. State of Biodiversity Markets Report: Offset and Compensation Programs Worldwide, http://www.ecosystemmarketplace.com/documents/acrobat/sbdmr.pdf)</p>	
Competent (or permitting?) authority (analogy with plan making authority in BBOP)	Terms referring to the public institution which is in charge - sometimes a synonym for the environmental authority, some times for the permitting authority.	
Conservation status	Threat status (of a species or community type) is a simple but highly integrated indicator of vulnerability. It contains information about past loss (of numbers and / or habitat), the number and intensity of threats, and current prospects as indicated by recent population growth or decline. Any one of these metrics could be	

<u>Suggested Term</u>	<u>BBOP or alternative definition</u>	<u>Comments</u>
	used to measure vulnerability. One much used example of a threat status classification system is the IUCN Red List of Threatened Species. (see habitat directive) (Source: BBOP Glossary)	
Ecological continuity	<u>Is usually referring to spatial continuity</u>	
Ecological network		
Environmental authority		
General Biodiversity	Biological diversity (biodiversity) means the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems. (Source: UN Convention on Biological Diversity) In France, is usually referring to “ordinary” biodiversity in opposition to “remarkable” biodiversity (protected and/or very and/or valuable rare species or habitats).	
Imperative reasons of overriding public interest	It is reasonable to consider that the "imperative reasons of overriding public interest, including those of social and economic nature" refer to situations where plans or projects envisaged prove to be indispensable: <ul style="list-style-type: none"> • within the framework of actions or policies aiming to protect fundamental values for the citizens' life (health, safety, environment); • within the framework of fundamental policies for the State and the Society; • within the framework of carrying out activities of economic or social nature, fulfilling specific obligations of public service. (Source: http://ec.europa.eu/environment/nature/natura2000/management/docs/art6/guidance_art6_4_en.pdf)	
Initial state		
Lease transfer		

<u>Suggested Term</u>	<u>BBOP or alternative definition</u>	<u>Comments</u>
Minimisation/reduction	<p>The 2nd step of the mitigation heirachy that involves 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</p> <p>(Source: BBOP Glossary)</p>	
Natura 2000	<p><i>Natura 2000 is the centrepiece of EU nature & biodiversity policy.</i> It is an EU wide network of nature protection areas established under the 1992 Habitats Directive. The aim of the network is to assure the long-term survival of Europe's most valuable and threatened species and habitats. It is comprised of Special Areas of Conservation (SAC) designated by Member States under the Habitats Directive, and also incorporates Special Protection Areas (SPAs) which they designate under the 1979 Birds Directive. Natura 2000 is not a system of strict nature reserves where all human activities are excluded. Whereas the network will certainly include nature reserves most of the land is likely to continue to be privately owned and the emphasis will be on ensuring that future management is sustainable, both ecologically and economically. The establishment of this network of protected areas also fulfils a Community obligation under the UN Convention on Biological Diversity.</p> <p>(Source: European Commission, http://ec.europa.eu/environment/nature/natura2000/index_en.htm)</p>	
Permit/permitting		
Planning (or programme) documents		
Principle of proportionality	<p>Similarly to the principle of subsidiarity, the principle of proportionality regulates the exercise of powers by the European Union. It seeks to set actions taken by the institutions of the Union within specified bounds. Under this rule, the involvement of the institutions must be limited to what is necessary to achieve the objectives of the Treaties. In other words, the content and form of the action must be in keeping with the aim pursued.</p> <p>The principle of proportionality is laid down in Article 5 of the Treaty on European Union. The criteria for</p>	

<u>Suggested Term</u>	<u>BBOP or alternative definition</u>	<u>Comments</u>
	<p>applying it is set out in the Protocol (No 2) on the application of the principles of subsidiarity and proportionality annexed to the Treaties.</p> <p>(Source: EU,http://europa.eu/legislation_summaries/glossary/proportionality_en.htm)</p>	
Public consultation		
Remarkable biodiversity	Species Diversity: The variety of different species within genera, families, orders, classes and phyla represented and relative abundance of each within an ecological community, assemblage or ecosystem (BBOP).	
Significant impact		
Species		
Species of Community interest (see habitat directive)	<p>The maintenance or restoration of “favourable conservation status” (FCS) is the overall objective for all habitat types and species of Community interest. Species of interest are listed or may be listed in Annex II, IV and V of the Habitats Directive. (Source: EU, http://circa.europa.eu/Public/irc/env/species_protection/library?!=/commission_guidance/final-completepdf/EN_1.0_&a=d)</p>	
Study area		
Territory		
Time lag	<p>In delivering offsets there may be a mismatch in the timing of impact and offset, i.e. the difference in time between the negative impact on biodiversity and the offset reaching the required quality or level of maturity, which results in loss of biodiversity for a period of time. (Source: DEFRA, 2011, http://archive.defra.gov.uk/environment/biodiversity/offsetting/documents/110714offsetting-technical-metric.pdf)</p>	

<u>Suggested Term</u>	<u>BBOP or alternative definition</u>	<u>Comments</u>
Urban planning documents		

Suggestions on the translations requested by James Weaver, needs to be-checked by French Speaker:

impacts majeurs (ou impacts significatifs) = *major impacts*,

enquête consultation publique = *public inquiry/consultation*,

espèces prioritaires = *priority species*,

études d'opportunité = *feasibility studies*,

étude préalable au débat public = *scoping study*,

gestion conservatoire = *conservation management*,

maîtrise foncière ou d'usage = *having the control of land management (through land owning or through other specific agreements)*

mesures d'accompagnement = *measures additional to those required for compensation (for example : educational measures, research actions...)*

rapport environnemental = *environmental/sustainability report*,

schéma régional de cohérence écologique = *regional biodiversity management plan*,

séquence éviter, réduire, compenser = *mitigation heirarchy (Avoid-minimise-compensate)*

service instructeur = *public institution in charge of reviewing project proposal and sometimes permitting*
