# BIODIVERSITY INDICATORS FOR SITE-BASED IMPACTS

## AN AGGREGATED APPROACH FOR ASSESSING CORPORATE BIODIVERSITY PERFORMANCE

Methodology V3.2

Updated by UNEP-WCMC, Conservation International and
Fauna & Flora International following pilots and a technical workshop.

23 March 2020

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## Citation

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# Executive summary

Since the Energy and Biodiversity Initiative and International Council on Mining and Metals provided guidance to industry on site-based biodiversity indicators in 2003 and 2006 respectively, little progress has been made in our ability to measure corporate biodiversity performance. This document, developed with the support of IPIECA and the Proteus Partnership, sets out a methodology for aggregating biodiversity impact and performance data at a site level to provide indicators of biodiversity management performance at corporate level. It has been developed to link to, and be complementary with, existing efforts to identify corporate indicators, in consultation with industry.

The methodology recognises that there are existing requirements placed on companies to disclose performance including those stipulated in national laws and regulations as well as the standards of financial lending institutions' and does not aim to be a substitute for these. Instead, it is an approach designed to provide key information to decision makers at site and corporate levels in order to improve a company's performance in relation to its impact on biodiversity.

This methodology has been piloted by energy and mining companies (IPIECA[1] members and Proteus[2] partners) to determine the feasibility of developing aggregated indicators of corporate biodiversity performance. A three-stage process is outlined (Figure 1):

- First stage: **screening of the company's portfolio of operations to identify sites with potentially high biodiversity significance**[3]. This includes step 1: screen to identify high significance sites based on global datasets, combined with step 2: validation of the results by site managers with locally available datasets;
- Second stage: **tailoring of site-level biodiversity indicators using the state-pressure-response (SPR) framework** (a widely accepted organising framework for site-based biodiversity management and monitoring), informed by the stage above and based on site-level data and documentation for high significance sites collected as part of an environmental impact assessment. This includes step 3: identify site-level metrics against the SPR framework, combined with step 4: calculate scores for the site dashboard; and
- Third stage[4]: **aggregation of scores for SPR** from site level up to business unit, division and corporate level.

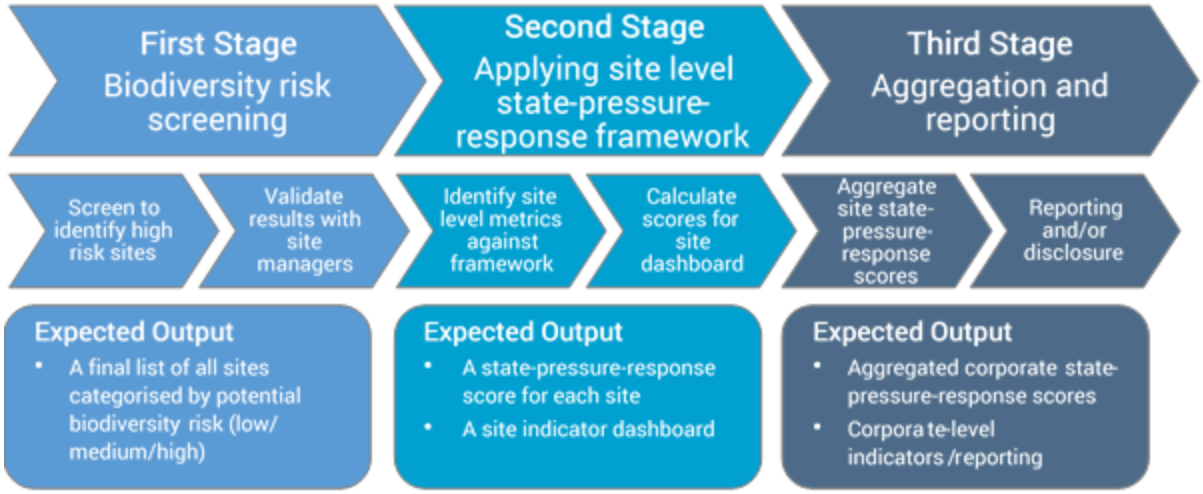
[1] The global oil and gas association for environmental and social issues.

[2] A collaboration between leading extractives companies and UNEP-WCMC to provide companies with the biodiversity information needed for better informed decisions and to support the improvement of key global biodiversity resources.

[3] The extent to which a defined area potentially contains features that give rise to high biodiversity values based on global data on critical habitat (in accordance with IFC Performance Standard 6), protected areas and globally threatened species.

[4] This stage has not yet been piloted with companies. The outline for this stage is described below and will be further developed through piloting in 2020.

*Figure 1: Process for site prioritization and tailoring of biodiversity indicators*




Piloting has focused on Stages 1 and 2 of the methodology at sites selected by the piloting companies from the energy and mining sector with the support of their non-governmental organisation partners. Sites selected cover seven geographic locations, including pre-operation, operational sites and non-operational sites, across renewables, traditional energy and mining operations. Piloting has resulted in substantial changes to the methodology, as described below in version 3.2; however, further testing will also be needed to develop guidance for the third stage on aggregation and to ensure the methodology can support application across a company's portfolio.

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# Introduction

## Background

The importance of effective biodiversity management performance within businesses is widely recognised and acknowledged for the energy and mining sector in various products and outputs from IPIECA, the Energy and Biodiversity Initiative, the Cross-Sector Biodiversity Initiative (CSBI), the International Council on Mining and Metals, the UN Global Compact and others[5]. Measuring and reporting appropriate biodiversity performance indicators helps companies to track and adaptively manage performance, as well as share results with stakeholders including financiers. It is an integral component of continuously improving company performance. This methodology is a key output from a three-year collaborative project - 'Biodiversity Indicators for Site-based Impacts' - led by the UN Environment Programme World Conservation Monitoring Centre (UNEP-WCMC), Conservation International and Fauna & Flora International, which aims to set out a methodology for aggregating biodiversity impact and performance data from the site level to provide indicators of biodiversity performance at a corporate level that meet the needs of businesses (and their key stakeholders) and that are scientifically credible, transparent and understood by multiple audiences.

This methodology has been developed in consultation with IPIECA, the Proteus Partnership and an external Advisory Group. Version 3.2 of the methodology incorporates the results of piloting with seven energy and mining companies. A further iteration of the methodology will be produced later in 2020 following piloting of the third stage on aggregation to incorporate guidance and to ensure the methodology can support application across a company's portfolio.

### Box 1: Definitions

**Biodiversity Management Performance:** an overall assessment of biodiversity and the company's impact (positive or negative) at site, incorporating state, pressure and response.

**Measure:** a standard unit used to express size, amount or degree (BIP 2011).

**Metric:** a system or standard of measurement (BIP 2011).

**Score:** High, Medium or Low categorization underpinned by quantitative thresholds and data.

**Indicator:** quantitative or qualitative factor or variable that provides a simple and reliable means to measure performance (OECD/DAC 2002).

**Biodiversity Significance:** the extent to which a defined area contains features that give rise to high biodiversity values that could be responsive to a company's activities based on global data on critical habitat, in accordance with International Finance Corporation (IFC) Performance Standard 6, protected areas and globally threatened species (IFC 2012).

**Data Confidence Level:** an assessment of the degree to which the data used is likely to provide an accurate representation of the situation.

## Focus of this methodology

The primary users of this methodology are anticipated to be corporate and site-level environmental experts within businesses to monitor risks or benefits associated with impact on biodiversity and management response. While this methodology was designed with the energy and mining sector in mind, it is applicable for any sector in which companies have significant site-level impacts upon biodiversity (e.g. agriculture). By setting out a clear methodology for indicator identification, this will be a first step in addressing the need to standardise how biodiversity performance is measured and reported across businesses. See Annex 1 for more details on the relationship between this methodology and other similar initiatives.

[5] IPIECA: http://www.ipieca.org/; the Cross Sector Biodiversity Initiative: http://www.csbi.org.uk/; International Council on Mining and Metals: https://www.icmm.com/en-gb; UN Global Compact: https://www.unglobalcompact.org/

# What are indicators?

For the purpose of this work, an indicator is defined as "*a quantitative or qualitative factor or variable that provides a simple and reliable means to measure performance*" (OECD/DAC 2002). To provide a full picture of performance, indicators will need to function well in the evaluation of both impacts or benefits to biodiversity and in discerning the effectiveness of implementation to benefit or to revert impacts to biodiversity (see Box 1).

# Needs identified

Businesses have a broad range of needs for indicators. A first step in identifying appropriate indicators is to identify the management objectives and targets (BIP 2011). Consultation with IPIECA members, Proteus partners and indicator experts identified the following indicator needs for the energy and mining sector in order of priority (UNEP-WCMC 2017)

1. to establish corporate baselines and monitor performance related to specific targets;
2. to understand and demonstrate corporate-level positive contribution to biodiversity conservation;
3. to provide a simple, standardised approach to monitor the effectiveness of biodiversity risk management actions across variable sites within a company;
4. to communicate progress to key internal and external stakeholders, such asgovernments, non-governmental organisations (NGOs), voluntary initiatives and financiers;
5. to identify biodiversity risks across a portfolio to enable prioritisation of management efforts;
6. to measure and monitor impacts and biodiversity management, includingBiodiversity Action Plan (BAP) or Environmental Management System outcomes at a site level for continuous improvement.

# Approach

To meet these needs, the proposed approach  combines high-level screening of all sites within a portfolio, with an in-depth assessment for sites with a high biodiversity significance as a first step in broader application of an indicator which can then be aggregated to corporate level. This would require the following:

- a **high-level screening** to enable prioritisation of sites across the company in accordance with potential biodiversity significance (*Outcome: dashboard of sites within a portfolio, displaying the number and proportion of high/medium/low significance sites*);
- a common **site-level framework** for organising and scoring site-level metrics into indicators for sites which were identified as being high significance from the assessment above (*Outcome: suite of indicators within a framework for organising and aggregating site-level data*);
- an **aggregation process** to group site-level indicators in order to report at business unit or corporate level (*Outcome: aggregated site-level habitat and species indicators*).

These indicators would map to key decisions/needs as set out in Table 1 below.

*Table 1: Methodology outputs and associated needs met based on the needs identified above.*

| Output | Needs met |
|---|---|
| High/medium/low significance sites in portfolio | • Establish corporate baselines and monitor performance related to specific targets (1)<br>• Understand and demonstrate corporate-level positive contribution to biodiversity (2)<br>• Communicate performance to key internal and external stakeholders (4)<br>• Identify potential biodiversity risks across a portfolio to enable prioritisation of management efforts (5) |
| Suite of site-level indicators | • Establish corporate baselines and monitor performance related to specific targets (1)<br>• Understand and demonstrate corporate-level positive contribution to biodiversity (2)<br>• Simple, standardised approach to monitor the effectiveness of biodiversity risk management actions (3)<br>• Communicate performance to key internal and external stakeholders (4)<br>• Measure and monitor impacts and biodiversity management outcomes at site level (6) |
| Aggregated site-level indicators | • Establish corporate baselines and monitor performance related to specific targets (1)<br>• Communicate performance to key internal and external stakeholders (4)<br>• Identify potential biodiversity risks across a portfolio to enable prioritisation of management efforts (5) |

# Methodology

This section sets out the principles, process and overarching framework for tailoring site-level indicators to assess corporate biodiversity performance. It also provides detailed guidance on implementation.

## Principles

The principles outlined in Figure 2 below are to be followed in this methodology. They are based on existing guidance including the IPIECA/IOGP Biodiversity and Ecosystem Services (BES) Fundamentals, the Biodiversity Indicators Partnership', the Global Reporting Initiative (GRI) 304: Biodiversity Standards, Natural Capital Protocol, WRI & WBCSD Greenhouse Gas Protocol, and the IPIECA/IOGP/API oil and gas industry guidance on voluntary sustainability reporting[6].

*Figure 2: Principles to guide identification and reporting of biodiversity indicators*

| | |
|---|---|
| 1. Relevant | • must reflect the biodiversity impacts of the company and differentiate these from impacts within the wider landscape, in order to meet decision making needs of users and stakeholders |
| 2. Complete | • focus on material impacts but consider all impacts to identify these |
| 3. Comprehensible | • simple and conceptually clear as to how the measure relates to the purpose |
| 4. Consistent | • allows for meaningful comparison of impacts and mitigation activities over time |
| 5. Credible | • use technically robust and verifiable information, data and methods responsive over the appropriate timeframe |
| 6. Transparent | • methodology and data should be documented with assumptions and limitations |

These principles are described in more detail in Annex 2 to this methodology.

In applying the principles, there is an inherent trade-off between:

- the completeness of the indicator (how much of the biodiversity value is captured)
- the validity of the indicator (how accurately it measures biodiversity value)
- the feasibility of the indicator (how easily it can be applied)

Within this methodology, efforts have been made to prioritize feasibility and validity over completeness. As a result, it is not designed to capture 100% of biodiversity impact, but instead provide a readily applicable and accurate indicator of a company's performance in relation to key biodiversity elements.

[6] These documents are included in the reference list at the end of this document.

# Policy, objectives and commitments

This methodology recognizes that there are existing requirements placed on companies to disclose performance in response to information requests from rating agencies or standards, such as the GRI, to meet approval conditions, which could belinked to the Environmental Impact Assessment (EIA) process and associated Environmental Management Plans(EMPs); to demonstrate compliance with national laws and policies; and demonstrate contribution to global goals, such as the Sustainable Development Goals (SDGs) and Aichi targets, and to meet voluntary corporate commitments.

The methodology focuses on indicators that meet a management information need and that are used to drive performance improvements internally rather than external reporting. However, such indicators should be developed in consideration with corporate policies and objectives that will ultimately define the appropriate indicators to report on. Companies making a commitment not to operate in World Heritage Sites, for example, will need to disclose an indicator relevant to that issue if reporting in accordance with GRI's indicators. Similarly, for companies committing to the application of the mitigation hierarchy or no net loss/net positive impact, an indicator reflecting the use of the mitigation hierarchy in decision making would be beneficial. Ensuring that the site-level framework captures indicators and associated data on these elements of biodiversity performance will ensure that company indicators also reflect societal commitments on biodiversity.

# Process

This document focuses specifically on a framework for indicators of corporate biodiversity performance. It is important to note that this process is not intended to be a replacement for regulatory processes. It is, however, expected that significant work will already have been completed by companies for these processes - to identify biodiversity risks and opportunities, management actions and monitoring activities. This methodology aims to leverage the information obtained during those processes and build upon them in order to identify focal biodiversity features that are linked to impact or positive action, responsive to management actions and also threatened[7] or important at the site.

The methodology has three stages:

- First stage: **screening of the company's portfolio of operations to identify sites with potentially high biodiversity significance[8],** based on globally available datasets combined with site validation to identify high significance sites for management prioritisation;
- Second stage: **defining of site-level biodiversity indicators using the state-pressure-response (SPR) framework**, based on globally and locally available datasets combined with site validation informed by the stage above and ideally based on site-level monitoring for high significance sites; and
- Third stage: **aggregation of scores for SPR** at site level up to business unit, division and corporate level to provide insight into performance on the ground.

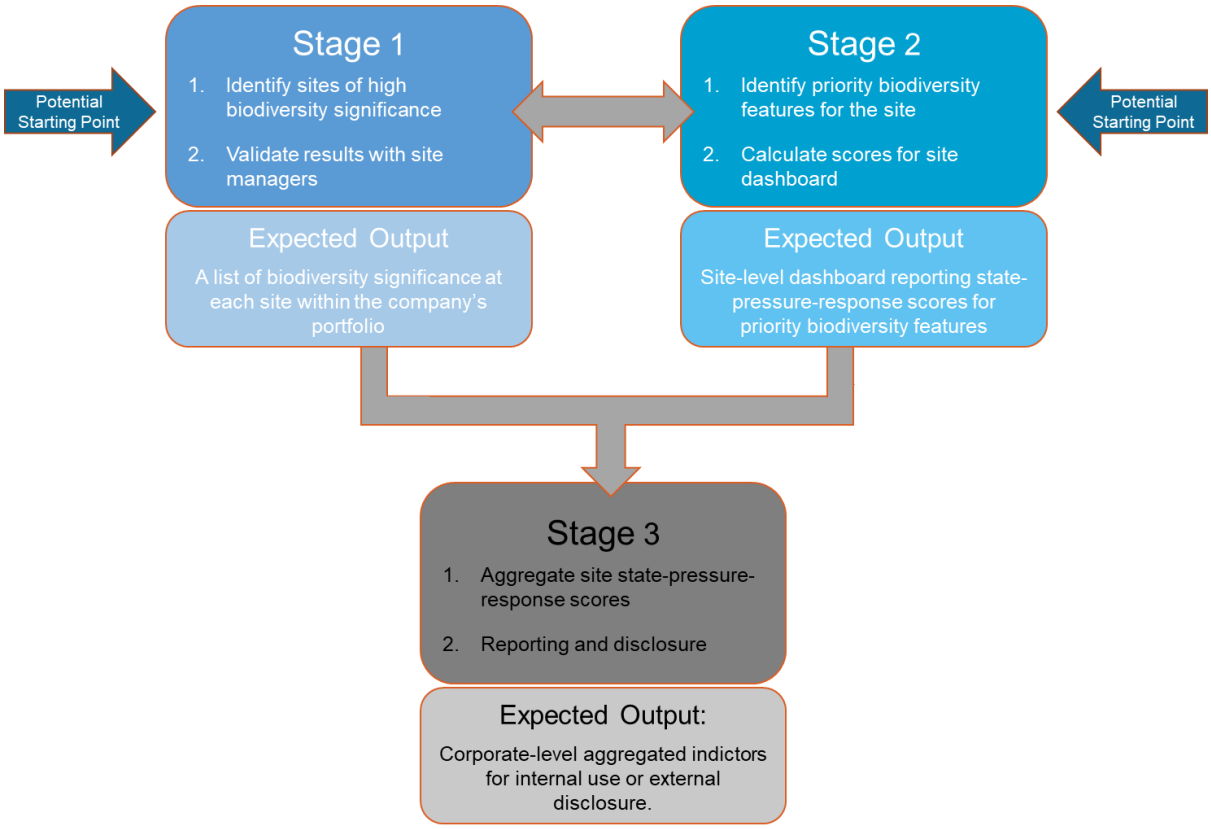
Depending on circumstances, a company may decide to implement the methodology across its portfolio at once, in which case the three stages can be followed systematically. However, a company may choose to implement the methodology in phases across its portfolio, starting with key sites that are identified as priorities for implementation of the site-level framework. In these cases, Stages 1 and

[7] As defined by either the IUCN Red List of Threatened Species, or an appropriate national red list of threatened species.

[8] Biodiversity significance provides an indicator of the potential risk associated with operating at the site (or opportunity when considering social investment sites). Risks can be considered from two perspectives, the risk to biodiversity associated with the potential impacts of the sites – termed 'biodiversity sensitivity' in this guidance. Alternatively, it may refer to the risk to the business in terms of license to operate, reputational, operational and financing risk. The focus of this methodology is the former.

2 will be applied alongside each other at that site, and sites will be added incrementally to the output of Stage 1 rather than all at once. These will then both feed into Stage 3 where indicators are aggregated for reporting at corporate level (see Figure 3).

*Figure 3: Process for applying the methodology*

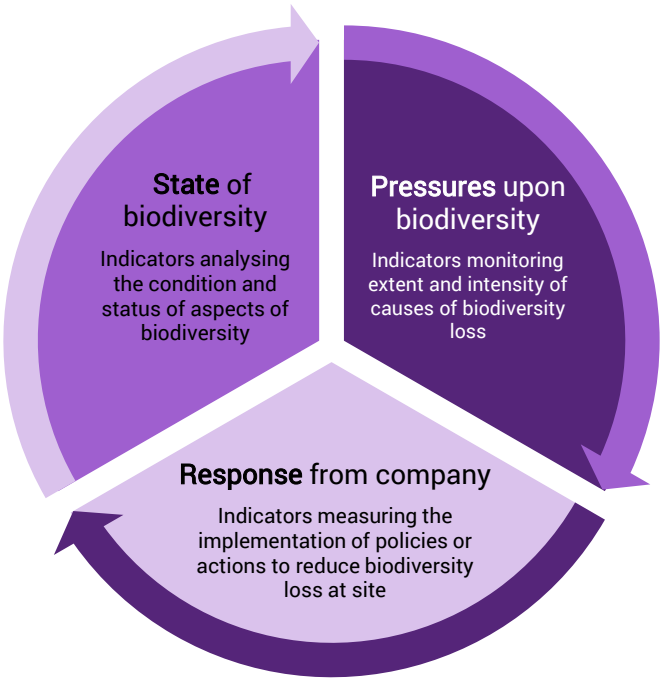



The SPR framework on which the last two stages of the process are based is described in Figure 4.

It forms a useful organising framework for biodiversity indicators at site level (Sparks *et al.* 2011) and has the advantage of being well used by governments at a policy level to track attainment of policy targets. It can also be used by the conservation community and the private sector. The framework allows for conversion and aggregation of conceptual models to be developed, which bring related but independent (and otherwise non-comparable) metrics together in a meaningful way.

The **state** of biodiversity is an indicator of the condition and status of biodiversity, **pressures** are indicators of the extent and causes of biodiversity loss. **Response** is an indicator of the management actions undertaken to reduce pressures upon biodiversity, thereby improving the state of biodiversity. This is described in more detail in the second stage of the methodology.

*Figure 4: SPR framework (Sparks et al. 2011)*




# First Stage: Biodiversity significance screening

This section sets out a methodology to prioritize operating sites for monitoring and reporting performance based on overlap with areas of high biodiversity significance. These are broadly defined as areas which contain biodiversity features of high value and vulnerability, irrespective of on-the-ground impact by operations.

The first stage follows a two-step approach:

Step 1: Screen to identify high significance sites, by identifying operating sites which overlap with areas of high biodiversity significance (as defined below), using global-scale geospatial data (available through the Integrated Biodiversity Assessment Tool (IBAT) and the Critical Habitat Screening Layer). The assessment is based on three criteria, which relate to globally threatened species, critical habitat and protected areas.

Step 2: Validate screening results with site managers, considering locally available datasets and contextual information stored in site-level documentation, which is not readily available through global-scale geospatial data (e.g. community dependencies on ecosystem services).

The indicator derived from this analysis is the number and proportion of high, medium and low significance sites in the company's portfolio of operations. High significance sites will be considered as a priority for the SPR monitoring framework detailed in the second stage of this methodology. Those sites classified as having medium or low biodiversity significance will not be considered as a priority for applying the SPR framework but should have systems in place to monitor any possible changes to biodiversity significance over time.

This screening provides a high-level assessment of exposure to biodiversity significance across the company. Biodiversity significance may lead to business risks if sites result in on-the-ground impacts on biodiversity and that impact is not managed. Business risks include the reputational, financial and operational risks resulting from a failure to manage biodiversity impacts (such as loss of licence to operate through non-compliance with national environment laws and EIA approval conditions, and lack of access to finance through non-compliance with the IFC Performance Standard 6 ( PS6). Table 2 below shows the primary use of this indicator and its relevance to meet the requirements of existing guidance.

*Table 2: Indicators that could be derived from this process, primary use and relevance to existing guidance*

| Indicator | Primary use | Relevance to existing guidance |
|---|---|---|
| **Biodiversity significance at sites within a portfolio.**<br>Displayed by the number and proportion of high/medium/low significance sites. | Internal reporting for business units or divisions<br>Corporate level external disclosures<br>Identification of priority sites for monitoring and significance evaluation | GRI Standard 304-2 (GRI 2018)<br>IPIECA/API/IOGP's oil and gas industry guidance on voluntary sustainability reporting (IPIECA *et al.* 2015)<br>SDGs 14 &15 (UN SD 2015)<br>IPIECA/IOGP BES Fundamentals (IPIECA & IOGP 2016)<br>IFC Performance Standard 6 (IFC 2012) |

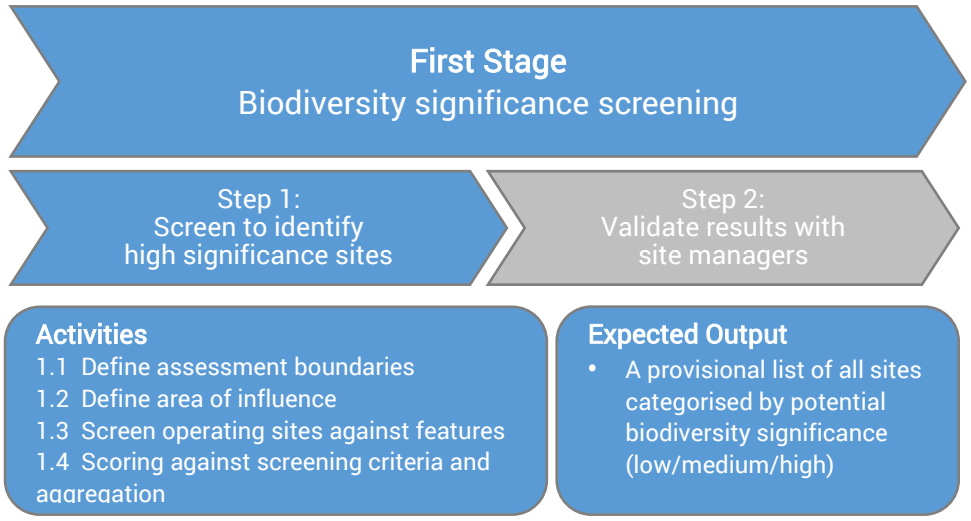
# Preparation

Prior to starting Step 1, of the following preparatory actions are required:

- Identify an appropriate team to apply the methodology with clearly defined roles. The process should be internally driven where possible and include corporate and site-level managers. External stakeholders with existing relationships are also likely to be involved (e.g. NGO partners or environmental consultants).
- The objective of the assessment should be clearly defined. This should include the business applications that you wish to assess (in line with the EU Business @ Biodiversity (B@B) Platform Update Report 2, 2019) and the voluntary commitments to be tracked (e.g. not to operate in World Heritage sites, or net positive impact on biodiversity).
- Identify current capacity and data requirements needed to conduct the assessment.
- Ensure that all relevant internal and external stakeholders are aware of the assessment and are kept updated on progress and results at pre-defined milestones.

# Step 1: Screen to identify high significance sites

*Figure 5: Process for applying Step 1 during the first stage of the methodology*




This screening will provide a company with a snapshot of the degree of overlap of sites, with biodiversity features. Step 1 will result in a provisional list of operating sites categorised by low, medium or high significance. Four activities are proposed in this step:

## *1.1 Define assessment boundaries*

A company's portfolio of operations is generally made up of a mixture of sites at different stages of the operation lifecycle, different management responsibilities and different levels of ownership. As a first step it is important to determine which sites to include in the screening process. A number of factors will need to be considered in determining the boundaries of the assessment:

- Stage of operations: whether planned projects, and projects in closure and decommissioning stages are to be included;
- Status of operations: whether inactive or on-hold projects are to be included;
- Type of operations: whether certain activities are to be excluded and the rationale;
- Responsibility: whether joint ventures and minority share projects are included.

The activity would determine whether the analysis, for example, includes only upstream (exploration) activities or also incorporates downstream (refining, marketing, distribution) and midstream (transportation, wholesale marketing) activities which are likely to have a lower potential impact on biodiversity by the nature of the operations, or perhaps whether the focus is greater on some forms of mineral extraction over others. Where clear rationale for exclusion cannot be provided, inclusion of a site or operation type should be the default stance.

## *1.2 Define area of influence*

The area of influence of an operating site is often larger than the actual footprint of the site. A site's total area of influence includes areas in which biodiversity is subject to direct and indirect impacts (see Figure 6) that may be positive or negative depending on the site activity (e.g. operating vs non-operating site). Cumulative impacts should also be considered where a company's area of influence overlaps with those of other companies. A comprehensive approach to outlining a project's area of influence is recommended within several good practices guidelines, including IFC PS6 and the CSBI

Good Practices for the Collection of Biodiversity Baseline Data (Gullison *et al.* 2015, CSBI 2015). Additionally, some lenders or corporate standards, may also require a project to consider the impacts of its supply chains on biodiversity.

This methodology recommends the screening of sites based on their direct[9] and indirect[10] impacts, excluding cumulative impacts. In doing so, the approach limits the area of influence to impacts which are under the sole management responsibility of the company. While cumulative impacts may result in significant threats and pressures to biodiversity, the responsibility for their prevention and management is shared among various actors (IFC 2013). It is not recommended that supply chains are considered within this assessment, but these could be considered with the application of an appropriate, complementary approach, such as those outlined within the EU B@B Platform Update Report 2, 2019. The recommended approach outlined here aligns with the assessment scope of the GRI standard on biodiversity (GRI 2016). The estimation of the area of influence may require consideration of, for example:

- The physical footprint of the operating site (i.e. the area in which the company is actively working);
- Area of direct influence (i.e. area affected by project activities and facilities that are owned and managed by the company);
- Area of indirect influence (i.e. the area affected by positive or negative impacts that, although are not a direct impact of the project, would not have occurred in the absence of the project) and the physical footprint of non-project activities in the surrounding area that are caused or stimulated by the project.
- Area of interest (i.e. the wider area affected by both cumulative and perceived impacts in which the company may not necessarily have control).

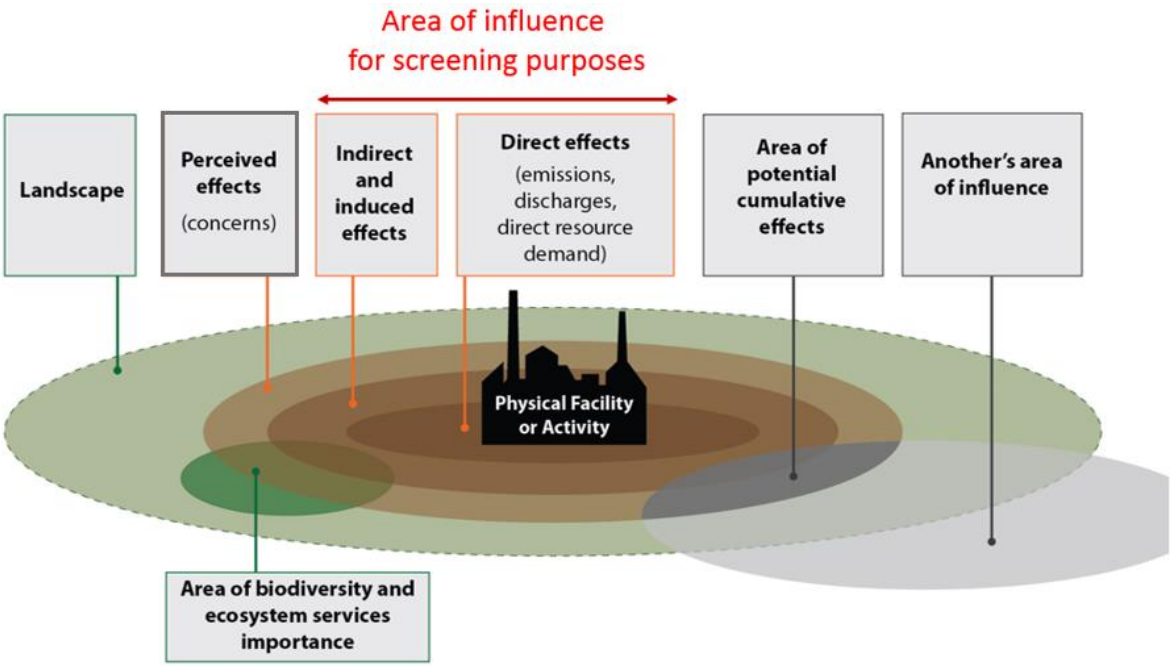
The area of direct and indirect influence may range in size from a few square kilometres (km) to several tens of square km. Where available, detailed spatial data outlining the area of direct and indirect influence of each operating site should be used. Applying a standard circular 50 km distance around the spatial boundary for the operating site is suggested in line with the buffer suggested for use with the IUCN Red List of Threatened Speciesdata. This enables an appropriate and precautionary initial assessment to be conducted using globally available datasets during the first stage. During the second stage of the methodology, the most appropriate area of influence for a site based on site-level documents will be identified. An assessment will then review the appropriateness of the standard buffer, which may involve increasing or decreasing the area of influence

This methodology recognizes that a wide variety of factors (e.g. the type of operational activities conducted and the environment in which they take place) may influence the area of direct and indirect impact of a site. If, during the second stage there is an absence of unequivocal guidance from the scientific community and current good practices to define the areas of influence, then a single standard 50 km buffer is recommended. This process should always look to improve the accuracy of the area of influence calculation.

[9] Direct impacts are defined as impacts by companies from on-site activities (e.g. habitat loss at drilling sites).

[10] Indirect impacts are defined as those that are not caused by the companies' activities but would not have occurred had the project not been present (e.g. increased deforestation as a result of local population increases due to potential for job creation).

*Figure 6: Area of influence recommended for consideration at the screening stage (Adapted from IPIECA 2016)*




In establishing the area of influence, it will be important to understand how multiple players in the landscape may be impacting biodiversity, including where the area of influence incorporates the physical footprint of non-project facilities. This will enable consideration of how the company might make a positive contribution to biodiversity. See Annex 3 for further details on defining an area of influence.

## *1.3 Screen operating sites against biodiversity features*

A geospatial analysis should be completed in order to evaluate operating sites against three criteria, relating to biodiversity values associated with the occurrence of globally threatened species, protected areas and critical habitats..

Approximate results can be obtained by generating a report based on the site coordinates through a subscription to the IBAT. A buffer should be applied to the site that encompasses the site's area of influence, where this has not been robustly established, a buffer of 50 km should be used to produce a proximity report with site-specific biodiversity features.

*Table 3: Overview of screening criteria and possible data sources for approximate global-scale screening*

| Criterion | Description | Data source |
|---|---|---|
| Criterion 1: Globally threatened species | Criterion evaluating the number of threatened species ranges overlapping an operating site, taking into account the size of the ranges. Operating sites are scored based on overlap with threatened species, derived from the IUCN Red List species ranges and weighted by status: Critically Endangered x3; Endangered x2; Vulnerable x1[11]. The summary table for IUCN Red List species produced as part of the IBAT proximity report can be used to calculate the weighted scores. | IUCN Red List species ranges. Available through IBAT. |
| Criterion 2: Critical habitat | Criterion evaluating the overlap of operating sites with areas which likely or potentially classify as critical habitat, as defined by the IFC PS6 (IFC 2012). IFC PS6 defines critical habitat as areas of high biodiversity value, based on a set of five criteria:<br>• Habitats of significant importance to Critically Endangered and/or Endangered species;<br>• Habitat of significant importance to endemic and/or restricted-range species;<br>• Habitat supporting globally significant concentrations of migratory species and/or congregatory species;<br>• Highly threatened and/or unique ecosystems; and<br>• Areas associated with key evolutionary processes. | Critical Habitat Screening Layer Available through UNEP-WCMC.<br>Or<br>Site-level Critical Habitat Assessment |
| Criterion 3: Protected areas | Criterion evaluating the overlap of operating sites with national-level protected areas and protected areas designated under regional or international conventions or agreements.<br>Protected areas aim to conserve biodiversity by protecting species, habitats and other biodiversity features within their boundaries. Protected areas are one of the cornerstones of biodiversity conservation as outlined by the Convention on Biological Diversity (CBD). The authoritative definition of protected areas has been formulated by the IUCN (Dudley 2008). | Polygon-based - World Database Protected Areas (IUCN and UNEP-WCMC). |

These criteria have been defined with the objective to:

- Include biodiversity values recognized in leading best practices within the energy and mining sector for biodiversity management, in particular the IFC PS6, focusing on critical and Natural Habitat – which requires a net gain or no net loss outcome for biodiversity;
- Make use of global-scale geospatial data available via IBAT, the most widely used online tool for corporate screening related to biodiversity.

The assessment does not address ecosystem services or consider the potential risk associated with lack of local capacity to understand and manage biodiversity, enforcement of regulations or lack of data as these cannot readily be assessed through use of global datasets. It should also be noted that not all datasets are globally complete and there is overlap between some of the datasets leading to overemphasis of some features (see Annex 4); however, they represent the best available data sources for global-scale screening at this time.

The proposed approach may be substituted by other prioritisation methodologies or data sources including more accurate, site specific information that may be identified during Step 2. A good screening approach should, as a minimum, consistently assess the biodiversity values covered in

[11] Weighting has been conducted to increase the contribution of Critically Endangered and Endangered species. This is comparable to that of IUCN's STAR methodology which weights species (although this is done 1 to 4 due to the inclusion of Near Threatened species in the STAR assessment).

Table 3 across the whole portfolio. These include threatened species, habitats (which are threatened or of particular importance to species) and protected areas. An alternative screening approach may be of relevance for companies which:

- Have developed advanced and peer-reviewed internal prioritisation methodologies using other, more accurate data sources;
- Operate at the sub-global scale and have access to detailed regional, national or site-level data on biodiversity values occurring at operating sites (if this is the case then it should form the basis of validation during Step 2);
- Do not have a subscription to IBAT[12].

## *1.4 Scoring against screening criteria and aggregation*

Table 4 outlines the approach for scoring operating sites based on the results of the geospatial analysis. Operating sites are scored as *Low*, *Medium* or *High* against each criterion, depending on whether areas of high biodiversity significance are overlapping with the physical footprint of the site or whether they are located within the area of direct and indirect influence.

*Table 4: Scoring of operating sites against screening criteria*

| Analysis against screening criterion | Score | | |
|---|---|---|---|
| | Low | Medium | High |
| Criterion 1: **What is the weighted number of threatened species overlapped by the area of influence?**[13] | <19 | 19-50 | >50 |
| Criterion 2: **Does the operating site and its area of influence overlap with areas identified as likely or potential critical habitat?** | No overlap | The area of direct and indirect influence overlaps with potential or likely critical habitat | The physical footprint (i.e. point location) of the operating site overlaps with potential or likely critical habitat |
| Criterion 3: **Does the operating site and its area of influence overlap with one or several protected areas, designated at the national, regional or international level**? | No overlap | The area of direct and indirect influence overlaps with protected area(s) | The physical footprint (i.e. point location) of the operating site overlaps with protected area(s) |

[12] Commercial access to the reporting functions hosted within IBAT, which is based on global-scale datasets, is available upon subscription or on a pay-as-you-go basis.

[13]Threatened species thresholds have been calculated using three evenly distributed categories and based on an assessment of 1,000 randomly distributed points within IBAT. Sites within Antarctica and in Areas Beyond National Jurisdiction were excluded due to their noticeable influence upon results, likely data gaps and the scarcity of projects within these areas.

The aggregated score of each operating site is equal to the highest score achieved under any of the three criteria (refer to Table 5 for a hypothetical example). This deals with the issue of overlap between the criteria;for example, a World Heritage Site would flag both Criterion 2 and 3. The significance level (high/medium/low) of a site is determined by the presence of the highest significance feature.

*Table 5: Example of scoring against screening indicators, justification and contextual information relevant to site managers*

| | Globally threatened species | Critical habitat | Protected area | Potential site significance based on global data |
|---|---|---|---|---|
| Score | High | Medium | Medium | High |
| Example Site Conditions | Weighted number of threatened species is 62. | Area of influence overlaps with likely and potential critical habitat, excluding the physical footprint of the site. | Area of influence overlaps with several protected areas. | Highest value selected in line with precautionary principle. |
| Contextual Information | High significance is primarily attributed due to high number of threatened species. The geospatial analysis additionally shows that a Ramsar site and a national-level protected area (IUCN category 1a) occurs within 50 km. Critical habitat in the area of influence is triggered due to the presence of a Key Biodiversity Area and an Alliance for Zero Extinction site within the area of influence. | | | |

The analysis results in the categorisation of operating sites within the company portfolio into three categories of site significance. Sites identified as having a high significance will form the initial focus of effort with regards to SPR in the second stage of the methodology. Over time this approach could be rolled out across medium and low significance sites as well.

The categorisation of sites (see example in Table 6) is taken forward for validation with site managers.

*Table 6: Example categorisation of operating sites within a company portfolio into high, medium or low significance. The aggregated significance score of each operating site is equal to the highest score achieved under any of the three criteria. (All potential combinations of values are shown, irrespective of criterion.)*

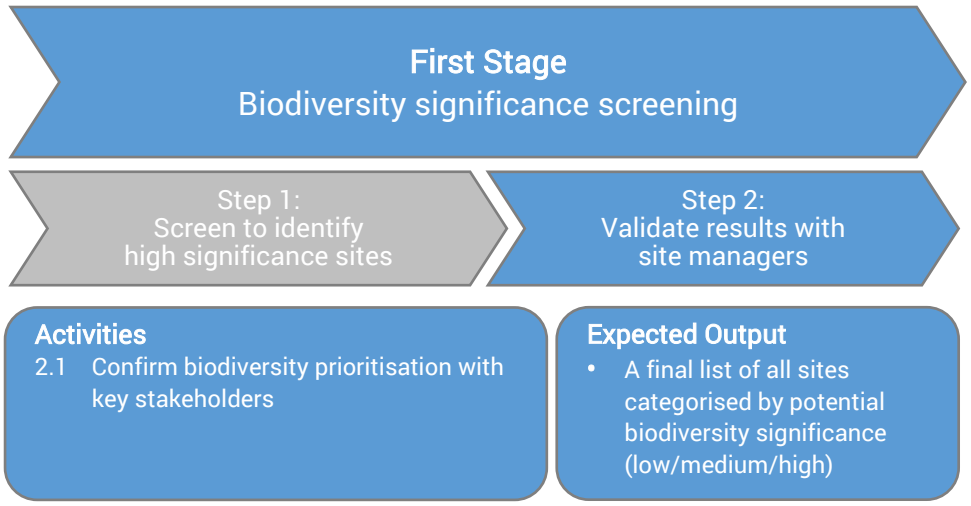
| | Globally threatened species | Critical habitat | Protected area | Potential site significance based on global data |
|---|---|---|---|---|
| Site 1 | High | High | High | High |
| Site 2 | High | High | Medium | High |
| Site 3 | High | Medium | Medium | High |
| Site 4 | High | High | Low | High |
| Site 5 | High | Medium | Low | High |
| Site 6 | High | Low | Low | High |
| Site 7 | Medium | Medium | Medium | Medium |
| Site 8 | Medium | Medium | Low | Medium |
| Site 9 | Low | Low | Low | Low |

It is recommended that site managers are provided with additional contextual information gathered during the geospatial analysis in order to better assess the relevance of features to the operations of the site and its likely impacts. Use of the data sources in Table 3 will provide the following contextual information:

- The designation of protected areas overlapped by the physical footprint or area of influence of the operating site; and
- Biodiversity values which triggered potential or likely critical habitat (e.g. overlap with a Key Biodiversity Area or sensitive coastal habitats).

# Step 2: Validate results with site managers

*Figure 7: Process for applying Step 2 during the first stage of the methodology*




The preliminary prioritization of a company's sites is based on global datasets. While these datasets are frequently updated as new information is obtained, they are subject to limitations (see Annex 4) when used to make management decisions.

Results from Step 1 are subject to errors of commission and omission. For example, high significance sites may have been identified based on biodiversity features which do not occur on the ground. Conversely, biodiversity features may not have been recorded within global-scale data, but are known to and managed by site managers. For these reasons, validation of the categorization of sites as *high*, *medium* or *low* significance is required with environmental officers and site managers. Engaging company's internal stakeholders will further enhance uptake of results.

## *2.1 Confirm biodiversity prioritisation with key stakeholders*

The results of the screening should be reviewed against the results of site environmental and social impact assessments, Critical Habitat assessmnets, BAPs or other site management plans that relate to national laws and regulations to confirm the biodiversity significance score. If contextual information provided during the screening stage has identified biodiversity features that are not supported by site-level documents, this should be investigated, and the screening results adjusted. Equally, where site information identifies features not apparent from global datasets, the site significance should be amended.

Annex 5 provides a questionnaire for site-level managers. It addresses values which have not been addressed at the preliminary stage due to the absence of global-scale data. This review should also

include whether there are any additional biodiversity features that are not captured by the global screening but that comprise species and features of stakeholder concern, key biodiversity stocks or ecosystem services. The CSBI provides useful guidance on how to engage stakeholders and external experts to confirm biodiversity values (Gullison *et al*. 2015).

Based on the questionnaire and discussions with site managers, the results of Step 1 should be adjusted, and sites given a final classification of high, medium or low potential significance. The resulting list of sites will form the scope for detailed reporting that will be taken forward into the second stage of the methodology.

# Second Stage: Site-level indicator framework

This section sets out the methodology to identify focal biodiversity features, pressures and responses, select metrics, and combine these to present meaningful site-level indicators.

The second stage follows a two-step process:

Step 3: Identify site-level metrics against the SPR framework which links the focal biodiversity features and the pressures on those features with the existing responses at the site level.

Step 4: Calculate scores for a site dashboard which brings the relevant metrics together to form indicators of site-level performance and displays them in a way which is relevant to inform management decisions. It also forms an important first step towards creating indicators of site-level performance which can be meaningfully aggregated to a high level (business unit, division or corporate).

The site-level indicator framework will be initially applied to sites that have been identified as having high biodiversity significance as a result of the first stage assessment above or through an existing prioritization applied by the company. Over time this approach could be rolled out across all sites within the company's portfolio. Table 7 outlines the indicators that could arise from this process.

*Table 7: Indicators that could be derived from this process, primary use and relevance to existing guidance*

| Output | Primary use | Relevance to existing guidance |
|---|---|---|
| 1. Site State indicators | By site managers to identify the status of focal biodiversity features within the project area of influence. | IFC PS6 (IFC 2012)<br>BES Fundamentals (IPIECA/IOGP 2016) |
| 2. Site Pressure indicators | By site managers to identify where the project has the largest pressures on biodiversity. | |
| 3. Site Response indicators | By site managers to identify and track progress towards mitigating project pressures on biodiversity. | |

# Preparation

In preparation for the second stage, you should identify additional stakeholders whose input would be required. These subject matter experts are likely to include consultants that have been involved at the site, as well as recognized experts including academics with specific knowledge about key species or habitats. Subject matter experts should also be consulted on the implications of any voluntary corporate commitments that have been made that would be relevant to the site (e.g. a commitment not to operate in World Heritage Site or a commitment to avoid risk of direct impacts to ecosystems which could result in the extinction of an IUCN Red List Threatened Species), as well as any specific regulatory requirements applicable to the site. At this stage, data and information of relevance to the assessment should be obtained. This would likely include, but not be limited to, the documents outlined in Box 2 below.

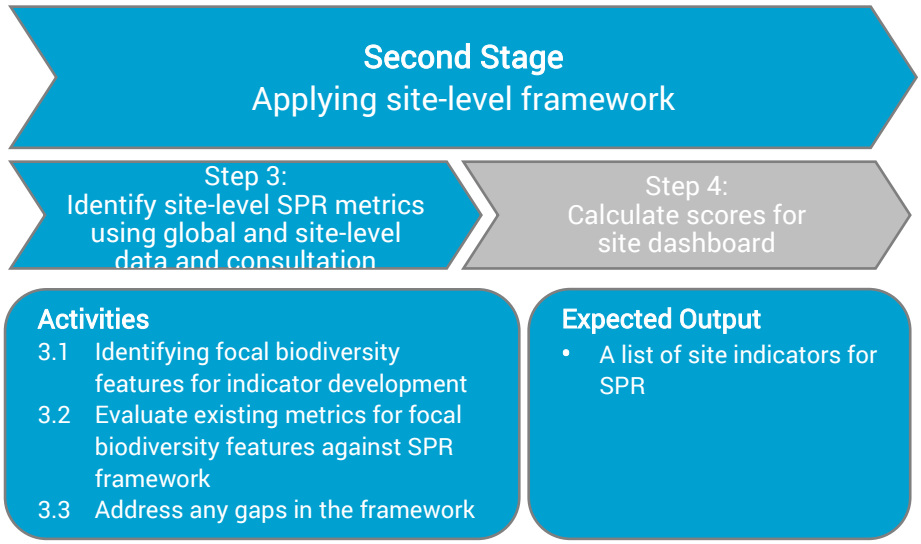
### Box 2: Site-level documentation

The following documents were identified as providing important site-level information for the methodology:

1. EIA or Initial Environmental Examination;
2. Biodiversity Baselines Studies;
3. BAPs;
4. Biodiversity Management Plans;
5. Critical habitat surveys and assessments;
6. Offset plans;
7. List or map of sensitive biodiversity features;
8. Review of ecosystem services;
9. Operational maps or plans;
10. Details on National Red List Species;

# Step 3: Identify site-level metrics against SPR framework

*Figure 8: Process for applying Step 3 during the second stage of the methodology*



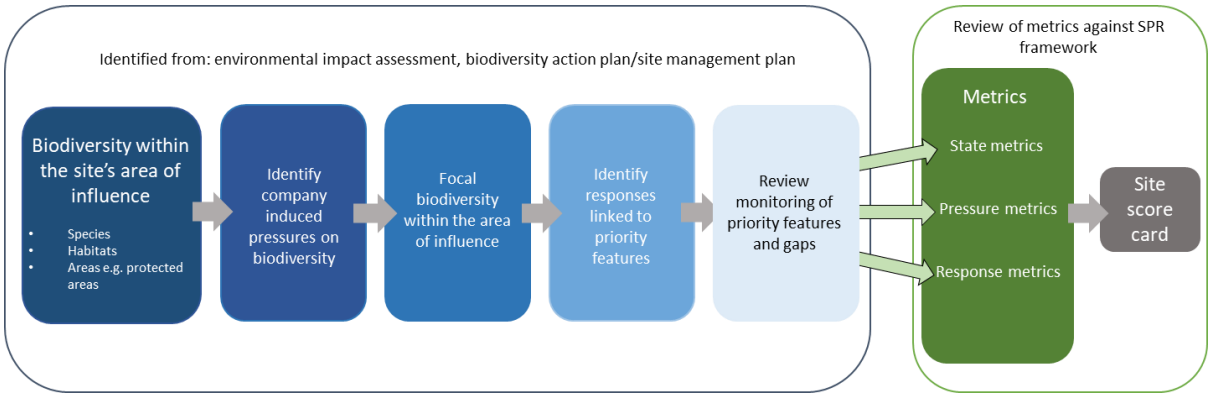
Where the first stage draws from global datasets, this stage requires site-level data. Building on the results of the first stage screening, it uses biodiversity data gathered as part of the EIA process and subsequent EMPs or BAPs, including baseline data collection and ongoing monitoring to generate a high-resolution assessment of the potential site-level pressures on biodiversity features, biodiversity status and company responses. These are then placed within the SPR framework (described again in Box 3 below).

This framework lays the groundwork for good practices, enabling the identification of pressures[14] that not only come from the company operating in the landscape, but also pressures that may already be occurring independent of company activities or that might be exacerbated by the presence of new economic development, infrastructure, influx of people, etc. By considering both company and externally generated pressures, it enables companies to monitor and manage not only their direct impacts, but also their positive contribution to biodiversity conservation in the landscape by demonstrating how actions have improved or slowed the decline of biodiversity within the landscape.

It should be acknowledged that the SPR framework has some limitations, such as challenges in establishing causal links between state, pressure and response for some biodiversity features (see Annex 5). These limitations are, however, outweighed by the simplicity of the framework.

Figure 9 below shows how biodiversity assessments conducted through the EIA, biodiversity action and site management planning processes give rise to metrics that can inform a site score card or dashboard.

*Figure 9: Applying the SPR approach within the application of the methodology*




Given that approaches for EIA and site biodiversity management are well established, this methodology focuses on the right-hand element of the diagram above to examine existing metrics against the requirements of the SPR framework. This determines potential linkages and gaps to be filled that could then be drawn into a site indicator dashboard.

Central to the application of this approach is:

1. identification of the pressures attributable wholly or partially to the company's activities;
2. accurate identification, based on EMPs and BAPs, of focal biodiversity features affected by these pressures; and
3. identification of management responses associated with these pressures and their implementation status.

[14] Note that pressures within this methodology are aligned with impact drivers as defined within the Natural Capital Protocol.

## Box 3: The SPR Framework

The framework has three components:

- State: indicators analysing the condition and status of aspects of biodiversity that should be derived from the site baseline and ongoing monitoring programmes;
- Pressures: indicators monitoring the extent and intensity of the causes of biodiversity loss that could be derived from the EIA and BAP; and
- Responses: indicators measuring the implementation of policies or actions to prevent or reduce biodiversity loss that could be derived from the site environmental/biodiversity management system.

Table 8 provides examples of SPR metrics. Response (management actions) is often the easiest to measure but gives little insight into true performance. State indicators are closely linked to whether or not objectives have been achieved and should be part of any BAP; however, even significant impacts may take a long time to become measurable. Furthermore, they may be subject to external influences beyond the control of the company.

*Table 8: Examples of SPR metrics*

| State | Pressure | Response |
|---|---|---|
| • Habitat extent<br>• Habitat condition<br>• Tree cover<br>• Local Biodiversity Intactness Index<br>• Mean Species Abundance<br>• Live coral cover<br>• Species occurrence<br>• Species abundance<br>• Percentage of the global species population at site<br>• Wildlife Picture Index | • Physical footprint<br>• Spatial extent of operations<br>• Presence of roads<br>• Extent of habitat loss<br>• Water abstraction<br>• Non-greenhouse gas (GHG) pollution to air (e.g. NOx)<br>• GHG emissions<br>• Waste generation<br>• Noise | • Avoidance of impacts in space or time<br>• Minimisation of impacts<br>• Habitat rehabilitation or restoration<br>• Presence and implementation of management plants for species populations and habitats<br>• Management of invasive species<br>• Reduction of emissions or waste<br>• Reduction of water abstraction<br>• Education, awareness raising, training, capacity building<br>• Alternative livelihood development<br>• Financial expenditure on conservation and management |

Pressures are simpler to measure – many of them being a part of established environmental management systems such as ISO14001 – and often respond more rapidly when responses are adopted. However, pressure can be weakly linked with the condition of biodiversity. Hence, an effective monitoring programme is a pragmatic mix of response metrics to track whether mitigation actions ('responses') have in fact been implemented, pressure metrics to give a timely indication of whether mitigation actions are having an effect, and state metrics to track the condition of focal biodiversity features for which it is important to demonstrate that mitigation actions are having the intended outcomes. Monitoring all three elements allows effective and adaptive management of biodiversity impacts (See Case Studies for examples of how this is implemented in practice).

It is likely that multiple pressures will be identified at the site, potentially acting on one or more of the focal biodiversity features. Pressures on biodiversity may be derived from sources other than the company. Guidance is available on alternative analysis and impact identification in 'Good Practices for Biodiversity Inclusion into Impact Assessment and Management Planning' (Gullison *et al.* 2015). The company should identify its direct and indirect impacts, as well as those of stakeholders in the landscape or area of influence. This will enable identification of probable cause and effect, but more importantly identify a suite of actions and issues it can respond to and contribute to either on its own or, preferably, in collaboration or partnership with other stakeholders in the landscape to make a net positive contribution to biodiversity conservation.

It will be important to include consideration not only of the impacted area under the company's influence, but holdings within the company's ownership/responsibility on which no impacts may be experienced as this may capture further positive contributions to biodiversity conservation (e.g. through protection from habitat/species loss driven by external pressures).

Environmental monitoring at sites may cover a range of other issues which, while important, are not related to the specific pressures on identified focal biodiversity features. These metrics should not be incorporated into this reporting process.

Given the extent of reliance on the quality of the site impact assessment and management plan, it is recommended that an assessment of the potential maturity of biodiversity management within the site is undertaken. Box 4 provides some questions for site managers to ask to determine whether existing biodiversity management activities could be used as the basis of indicator creation.

If the answer to any of the questions in Box 4 is no, further work may be required to fully understand the site's impacts on biodiversity. The framework laid out in the second stage provides the opportunity to address these questions and better align site-level indicators with wider regulatory requirements to avoid unnecessary duplication of monitoring effort.

### Box 4: Can existing biodiversity management activities be used as a basis for tailoring indicators?

Questions to ask include:

- **Area of influence:** has an existing assessment of the area of influence included direct and indirect impacts (see Gullison *et al.* 2015)?
- **Baseline assessments:** have baseline assessments been undertaken following best practices internal or external guidance (see Gullison *et al.* 2015)?
- **Biodiversity action planning:** has a biodiversity action planning process been undertaken which adheres to the mitigation hierarchy with clearly defined impacts, mitigation measures, targets and metrics?
- **Monitoring and measurement:** are monitoring programmes in place? Do they follow the SPR framework?

A full list of questions for site managers can be found in Annex 5

## *3.1 Identifying focal biodiversity features for indicators*

The screening carried out in the first stage provides a starting point for the identification of focal biodiversity features which should be the focus of the indicators. Focal biodiversity features are likely to be species or habitats which are of particular importance at the site level based on either global, national or local criteria. Focal biodiversity features should incorporate those which are likely to be impacted by the company's activities, are feasibly monitored, and those that are considered particularly significant as a result of their protection status and the relative contribution of the population or area concerned to the overall viability of that species or habitat. These features may have been identified as focal features through the impact assessment, the environmental management system process, or other site-level assessments.

Based on the principles laid out in Figure 2, a set of six criteria have been defined to screen potential features, covering the vulnerability of the feature to company-induced pressures[15], the suitability of the feature to provide indicators, and the significance of the feature (see Figure 10). They are:

1. Present at site;
2. Impacted by company-induced pressures;
3. Feasibly monitored;
4. Responsive to change;
5. Representative of the effect on wider biodiversity; and
6. Threatened or important.

The objective of this process it to select a focal biodiversity feature for each of the company-induced pressures present at site[16]. To achieve this, the screening criteria should be used to separate features into the following categories:

A. Features meeting all criteria

B. Features that meet the first 4 criteria, but do not meet criteria 5 and/or 6

C. Features that do not meet one or more of the first four criteria

Focal biodiversity features should then be selected for each pressure from features within category A. If the required number of focal biodiversity features cannot be identified from category A, then a review of category B should be conducted to identify the most suitable feature.

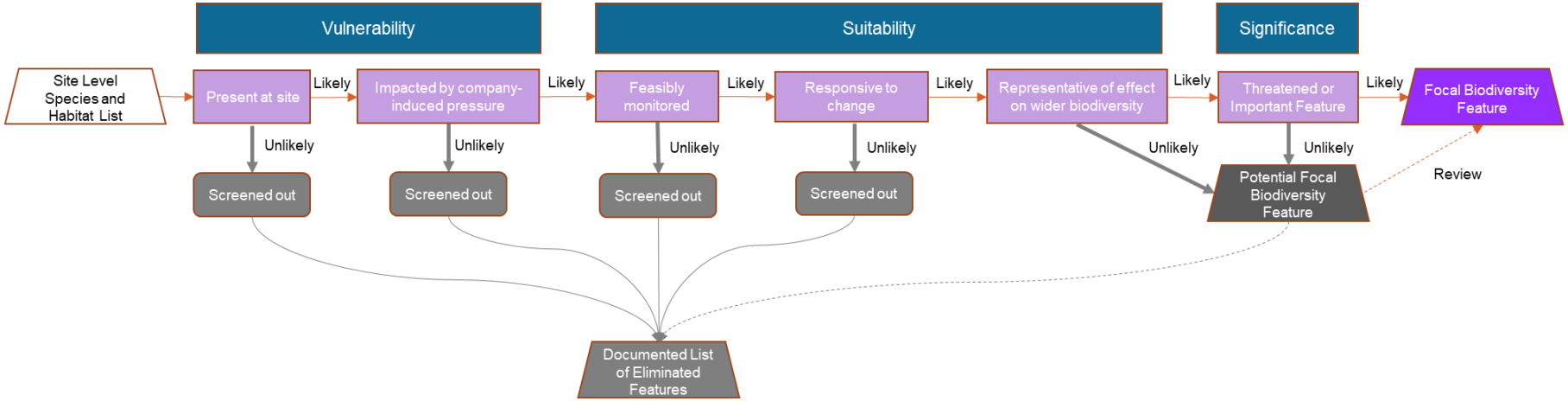
Features in category C should be eliminated from consideration, but maintained in a documented list identifying the reason for their elimination in order to ensure the selection process is clear and transparent.

This process is designed to identify features that can be monitored in order to provide an indicative assessment of how a company is performing at site with regards to biodiversity. It is not designed to replace regulatory monitoring requirements.

[15] In the case of social investment/positive impact sites, consideration should instead be given to features that are impacted by pressures existing in the environment, particularly those that a company has identified as wanting to invest in alleviating

[16] Where a company-induced pressure is predicted to have different impacts upon different features then more than one focal features should be selected to represent the different impacts predicted.

*Figure 10: Screening process for identifying focal biodiversity features that are vulnerable to company-induced pressures, suitable as indicators and significant*




**Review of Potential Focal Biodiversity Features:** Where suitable features meeting all criteria cannot be found for each company-induced pressure, a review of the Potential Focal Biodiversity Features should be conducted. This will allow features that do not meet the 'Representative of effect on wider biodiversity" or 'Threatened or Important Feature' to be upgraded to Focal Biodiversity Features provided they meet all other criteria in order to fill gaps with the best possible feature.

**Documented List of Eliminated Features:** This list provides a transparent audit trail for the focal biodiversity feature selection. The list should be reviewed in line with monitoring frequency of focal biodiversity features in order to identify when changes to site conditions lead to features meeting greater or fewer criteria.

Details of each criteria are outlined below:

### 1. Present at site

For species, an initial list of potential features can be drawn from IBAT. Species identified that do not occur in the realm (marine, terrestrial or freshwater) where project impacts are likely to occur should then be disregarded. This should be carried out as defined within the IUCN Red List, information, which is provided in the redlist.csv file through IBAT. Species that do not appear within the IBAT list but are known from site-level documentation (see Box 2) can then be added to the list.

For habitats, site-level documents should be used to identify habitats that occur within the site's area of influence. Habitat maps such as those provided by Nature Map Explorer may be used to assist with this identification.

### 2. Impacted by company-induced pressures

A review of site-level documentation (Box 2) should provide a list of key pressures predicted as a result of the company's activities at site and species and/or habitats likely to be impacted by the company's activities.

The IUCN Red List Threat Classification Scheme can act as a screening tool that highlights species likely to be significantly impacted by company-induced pressures, with the caveat that some taxa (e.g. birds) have a more complete threat categorisation than others (e.g. reptiles). The scheme outlines 11 threats (with further sub-categories of threats). The classifications included will vary depending on the type of operation conducted at the site but is likely to include at least some of the following:

- Threat 1.2 – Commercial & Industrial Areas
- Threat 3.1 – Oil & Gas Drilling
- Threat 3.2 – Mining & Quarrying
- Threat 3.3 – Renewable Energy
- Threat 4.1 – Roads & Railroads
- Threat 4.2 – Utility & Service Lines
- Threat 7.2.9 – Small Dams
- Threat 7.2.7 – Abstraction of Ground Water (commercial use)
- Threat 7.2.8 – Abstraction of Ground Water (unknown use)
- Threat 7.2.10 – Large Dams
- Threat 7.2.11 – Dams (size unknown)
- Threat 7.3 – Other Ecosystem Modifications
- Threat 8.1 – Invasive Non-native/Alien Species/Diseases
- Threat 9.2.1 – Oil Spills
- Threat 9.2.2 – Seepage from Mining
- Threat 9.6.3 – Noise Pollution

In addition to this, species and habitats outlined within site-level documentation as likely to be impacted by company activities should be included. For habitats this is likely to include habitat types that are the subject of direct habitat loss, as well as fragmentation and disturbance.

### 3. Feasibly monitored

A key aspect of any focal biodiversity feature is that it is possible to monitor regularly.

For species, this will involve considerations as to whether the species ecology and population size within the area of influence are conducive to its detection. Consideration should also be given to the likely impact that company-induced pressures may have, in order to ensure that monitoring captures the effects accurately (see Box 5).

## Box 5: Example considerations for monitoring

**Population:** The Ivory-billed woodpecker (*Campephilus principalis*) is forest-dependent and predicted to be impacted by habitat loss as a result of a company's activities. However, it occurs at very low density throughout its range, meaning that encounters with the species are rare. It is therefore unlikely to be a good focal biodiversity feature as monitoring may detect it infrequently even prior to the impact of company-induced pressures.

**Ecology**: The Malayan treehole frog (*Metaphrynella pollicaris*) is likely to be impacted by a company's activities at site. However, the species spends the majority of its lifecycle within treeholes and is difficult to detect. It is therefore not likely that this species would make a good focal biodiversity feature as monitoring is likely to be prohibitively intensive.

**Effect of company-induced pressure:** The Northern fulmar (*Fulmarus glacialis*) is a seabird that breeds in the Northern Atlantic. Disturbance caused by a company's activities are likely to impact its breeding success. The species breeds on exposed cliffs, laying eggs on the rock, rather than in burrows like a number of other impacted species. It is likely that it would therefore make a good focal biodiversity feature based on this criterion as the number of nests and breeding success can easily be monitored.

For habitats, it is important to consider how the habitat is likely to be impacted and how that can be monitored. Where loss of habitat is the likely impact, satellite imagery can easily monitor habitat extent at regular intervals. However, where company-induced pressures cause degradation and disturbance, extent will not provide suitable monitoring information. In such cases the ability to monitor other aspects of the habitat should be considered (e.g. species richness).

### 4. Responsive to change

Consideration should be given to how a feature is likely to respond to changes related to company activities.

For species, features with long lifecycles may not be suitable as focal biodiversity features since there may be a significant time lag between the introduction of a company-induced pressure and a noticeable change in the state of the feature. Similarly, species whose populations display a large degree of inherent fluctuation in abundance may not be suitable as the fluctuation may mask long-term trends. This does not however preclude the inclusion of such species where company-induced pressures fall significantly upon them.

For habitats, responsiveness to change is likely to be more of a consideration in relation to improvement in state as a result of a company's mitigation response. For example, habitats such as tropical forest may take a long time to be restored or offset. In these cases, it may be necessary to select a metric that can capture gradual progress towards restoration (e.g. 'hectares under restoration' as opposed to 'hectares of restored forest').

### 5. Representative of the effect on wider biodiversity

Consideration should be given to how the pressure affects the feature compared to how it affects other potential features. Focal biodiversity features should provide a representation of the effect of a pressure on biodiversity more widely. While it is unlikely that declines in the state of one feature will accurately reflect the decline of others, it is possible to gain an indication of the general trends of these other features. Included in this consideration should be impacts on overall ecological function (e.g. loss of pollinators or restriction of migration). By selecting features that can provide this insight, indicators are able to provide a more complete assessment of the company-induced pressures and mitigation responses.

For species, a forest-dependent mammal species could be a good focal biodiversity feature in relation to a company-induced pressure of hunting and snaring, as a decline in its population is likely to mirror the trend in other forest-dependent species that are affected by the pressure.

For habitats, a mangrove may be a good focal biodiversity feature in relation to habitat loss as it will reflect trends in a wide range of species that make use of the mangrove as well as effects on the wider ecosystem including associated coral and seagrass habitats.

6. Threatened or important feature

The most significant consequences of a company's potential impact at a site are likely to be associated with threatened or important features. In order to be able to monitor these potential impacts more accurately, features should be prioritized for selection if they meet one or more of the following criteria:

- Critically Endangered, Endangered and Vulnerable species either globally or nationally;
- Additional species considered priorities based on experts and stakeholders, including local communities (e.g. endemic or culturally sensitive species);
- Habitat identified as critical habitat according to IFC PS6 based on:
    - Support of Critically Endangered or Endangered species;
    - Support of endemic or range-restricted species;
    - Support for migratory/congregatory species;
    - Unique ecosystems; and
    - Support for key evolutionary processes[17]
- Habitat identified as Natural Habitat, in particular areas which have:
    - importance for connectivity;
    - wide-ranging species such as sea turtles or vultures, which are often seasonal;
    - viable assemblages of key species; and
    - breeding colonies or overwintering sites
- Protected or priority habitats under national or regional assessments; and
- Additional features relating to voluntary commitments (e.g. World Heritage Sites).

It should however be noted that this prioritization based on Threatened or important status should occur only once other criteria for vulnerability and suitability have been met. Features deemed vulnerable and suitable, that do not meet this criterion should be maintained as potential focal biodiversity features and returned to if sufficient focal biodiversity features cannot be found that meet all criteria

## *3.2 Evaluate existing metrics related to focal biodiversity features against SPR framework*

The selection of suitable metrics to assess how biodiversity is, or is likely to be, impacted by a particular activity is context dependent. Although the basis of these metrics should be site-level impact assessment and management plans, additional consideration should be given to elements of biodiversity that are identified by key stakeholders (e.g. local communities, indigenous peoples or environmental groups) as particularly important to conserve.

Determining linked indicators will be required to identify where a response will result in a decline in pressure and an improvement in state (or maintenance of current state). Creating an exhaustive list of SPR-linked metrics is beyond the scope of this work; however, we set out examples below in Figure 11.

[17] Defined as: "Structural attributes of a region, such as its topography, geology, soil, temperature and vegetation and combinations of these variables can influence the evolutionary processes that give rise to regional configurations of species and ecological properties"

Each focal biodiversity feature may be subject to multiple pressures and have multiple management responses. Some pressures may also be present that are not attributable to the company. These will need to be understood and their implications for the analysis considered. This will be important to consider as there is the potential for a company to work towards reducing attributable pressures on a focal biodiversity feature and yet still see a decline in its state if there are significant other pressures within the landscape. Although such pressures may not be the 'responsibility' of the company, they offer the potential for positive contribution to biodiversity, something that is part of many company's corporate commitments. Once the focal biodiversity features, pressures on those features and linked responses are identified, these should be recorded.

Table 9 below shows how this could be done. This approach could also identify which specific responses or management actions are related to each of the focal biodiversity features. This ensures traceability within the SPR framework and provides the justification for seeking metrics in each instance. An audit trail should be maintained for each decision made during this process to ensure the selection of focal biodiversity features and the pressures upon them is clear and transparent.

For each of the metrics, appropriate performance levels or specific objectives will need to be set. However, before setting performance levels, some consolidation of data is likely to be required. It is probable that a common pressure will impact on multiple features. In the example in Figure 11, metrics need to be gathered for each pressure and response relevant to the focal biodiversity features.

*Figure 11: Example of linked SPR metrics*

| Biodiversity feature | State | Pressure | Response |
|---|---|---|---|
| Siberian spruce grouse (protected by local legislation) | Abundance of grouse species (population numbers) | Construction related disturbance (area of habitat disturbed) | Minimise disturbance through time and space (area of habitat disturbed) |
| Siberian spruce grouse (protected by local legislation) | Abundance of grouse species (population numbers) | No. of individuals hunted by workers | Protect species against hunting (No. of worker training/ education programmes) |
| Siberian spruce grouse (protected by local legislation) | Area and condition of habitat remaining | Habitat loss (area of habitat disturbed) | Primary forest protection and forest restoration activities (ha protected or restored) |
| Dark coniferous forest | Status of dependent species e.g. long-billed murrelet (no of individuals) | Fragmentation & habitat modification from construction (ha forest lost) | Primary forest protection and forest restoration activities (ha protected or restored) |
| Tracts of peatland and swamps supporting characteristic vegetation communities | Percentage of peatland remaining | Fragmentation & habitat modification from construction (area of habitat disturbed) | Avoidance of peatland destruction and engineer education on importance of peatlands (ha avoided, no. of training sessions) |

*Table 9: Theoretical process for understanding pressures on biodiversity features and potential management responses. Ticks show the interactions between pressures and focal features, and responses and focal features.*

| Focal biodiversity feature | | Pressure | | | | | Response | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Land Use Change | | | Pollution | | | | | |
| | | Land clearance | Roadkill | Water use | Noise | Air emissions | Invasive species control | Shut-down periods | Abstraction control | Sensitive area fencing |
| Habitat | Forest | ✓ | | | | | | | | ✓ |
| Habitat | Grassland | ✓ | | ✓ | | ✓ | ✓ | ✓ | | ✓ |
| Habitat | Freshwater | | | ✓ | | | ✓ | | ✓ | |
| Species | Lappet-faced vulture | ✓ | ✓ | | ✓ | | | ✓ | | |
| Species | Chimpanzee | ✓ | ✓ | | ✓ | | | ✓ | | |

There should also be an indication of the quality of the information used to make the assessment ranging from site level to global data. As the data used to assess state, pressure and response will relate directly to the focal biodiversity feature, these will qualify as Tier 5, direct measurement of biodiversity state (no impact factors used), as presented by the Aligning Biodiversity Measures for Business Initiative and the EU B@B Platform's Assessment of Biodiversity Measurement Approaches for Businesses and Financial Institutions.

*Figure 12: Data accuracy tiering as presented in "Update 2 Report: Assessment of Biodiversity Measurement Approaches for Businesses and Financial Institutions"*

| Real or modelled | Data accuracy scale | Description | Example for characterisation factors |
|---|---|---|---|
| Modelled | 1 | Simple linear approach. Level 1 characterisation factors are international defaults. | *Average agricultural yield of wheat across the world.* |
| | 2 | Region (country)-specific linear factors or more refined empirical estimation methodologies. | *Average agricultural yield of wheat in Brazil.* |
| | 3 | Impact factors derived from the use of relationships (equations) linking the impact source (for instance a land use change) to biodiversity impacts, with inputs requiring a translation into the appropriate typology. | *Impact factors for **data in formats requiring transformation** to feed into dynamic bio-geophysical simulation models using multi-year time series and context-specific parameterization (such as GLOBIO).* |
| | 4 | Impact factors derived from the use of direct relationships (equations) to biodiversity. | *Impact factors for **data that can directly** feed into dynamic bio-geophysical simulation models using multi-year time series and context-specific parameterization (such as GLOBIO).* |
| Real | 5 | Direct measurements of biodiversity state (no impact factor used)[42]. | |

Tier 5 can then be further differentiated into confidence levels as below in Figure 13 to indicate the quality of information in the overall dashboard developed in the second stage.

*Figure 13: Data confidence levels for applying the methodology*

**Level 3** — Site-level datasets

- E.g. site-level species monitoring,
- Project's critical habitat assessment.

**Level 2** — Regional datasets or out of date data

- E.g. national or regional population surveys,
- National or local land cover maps, satellite images >10 years old.

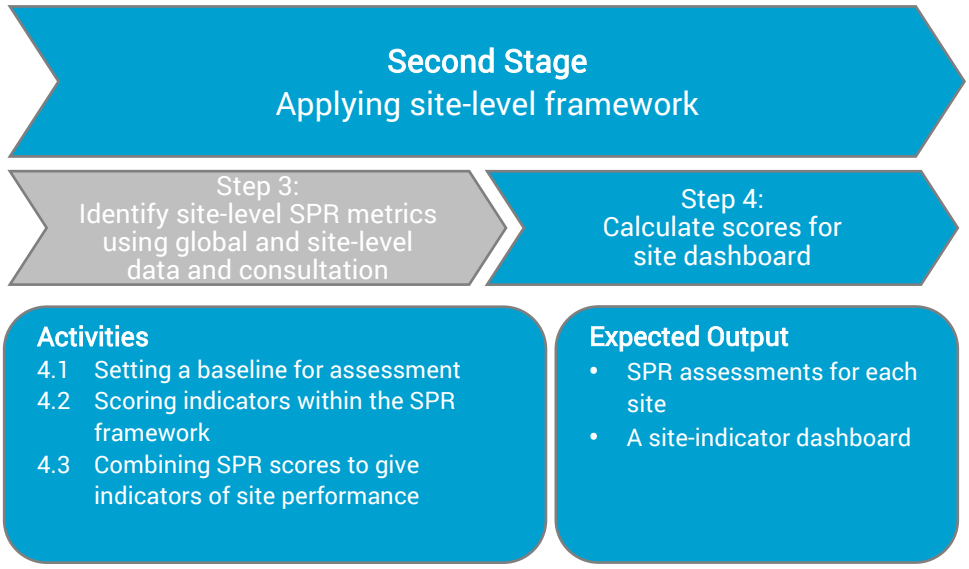
**Level 1** — Global datasets

- E.g. IUCN Red List area of habitat,
- Global Forest Watch Hansen dataset.

In circumstances where sites are identified as high biodiversity significance, efforts should be made to ensure that the data used is Level 3, and where this is not possible these gaps should be prioritized for future monitoring efforts. Work is underway to agree to this form of data quality assessment across a range of measurement approaches. This methodology will contribute to and reflect the outcome of those discussions.

# Step 4: Calculate scores for site dashboard

*Figure 14: Process for applying Step 4 during the second stage of the methodology*



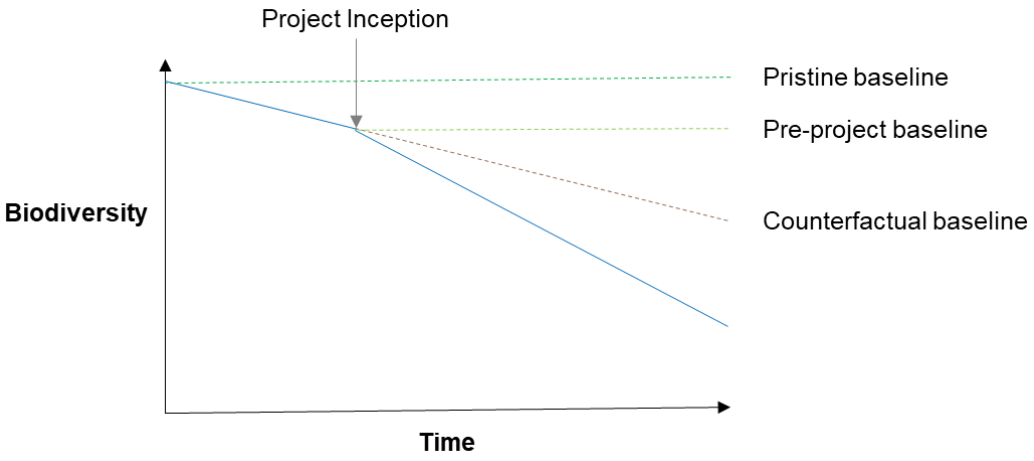

In order to inform management decisions and feed into monitoring and evaluation, metrics gathered at a site level within the SPR framework need to be translated into indicators which inform action. In this step metrics are placed within a dashboard to identify potential performance 'red flags' for further action. The site dashboard will feed into the corporate aggregation process in the third stage of the methodology.

## 4.1 Setting a baseline for assessment

It is important to define a consistent baseline for the state of focal biodiversity features against which assessments can be made (see Figure 15). There are multiple potential approaches to this, including:

- Pristine baseline: impacts are measured in accordance with the quantity and quality of biodiversity in its natural state. In practice this is often hard to establish across multiple sites and may result in companies having to address impacts caused by others;
- Pre-project conditions: the baseline is taken from the state of biodiversity immediately prior to when the company's activities began. Impacts this year are compared to impacts over previous years, the first year of measurement forms the baseline (immediately pre-project). This approach is simple and mirrors the approach adopted by BirdLife International in Important Bird and Biodiversity Areas monitoring, but fails to take into account pressures and actions outside the site; and
- Counterfactual scenario: impacts are described relative to a plausible alternative state that would occur if the project/company operation did not exist (for example by monitoring impacts on habitat outside of the project's area of influence in order to estimate the likely trend within the area of influence if the project was not carried out). However, defining such a state may be challenging, time-consuming and require extensive stakeholder consultation.

*Figure 15: Potential baselines for measurement. The actual decline in biodiversity over time (solid line) can be compared to a historic pristine condition, the condition immediately before the project's inception, or a predicted state of biodiversity in the absence of the project.*




It is recommended that, in line with EIA legislation[18], the baseline for state should be set based on the state of biodiversity at the point in time immediately prior to project development as outlined in the 'Pre-project conditions' above. By selecting this pre-project baseline a company can set targets to ensure that mitigation is sufficient to leave focal biodiversity features at 100% of baseline state and achieve no net loss, or net gain by targeting >100% of the baseline state where this reflects their voluntary commitments. For existing sites that have been in operation for a significant period of time, data may not be available for pre-project conditions. Under these circumstances, data from the first year available should be used and this should be clearly indicated within the documentation.

In some scenarios, companies may also choose to consider a no-project or counterfactual scenario to clarify the impacts of the company versus impacts from entities in the wider landscape. Use of counterfactuals could help inform where positive contributions can best be achieved and monitored

[18] European Union (2017) Environmental Impact Assessment of Projects Guidance on the preparation of the Environmental Impact Assessment Report.

(on-site or in the broader landscape) over and above management of direct on-site impacts. A counterfactual may be estimated based on control sites.

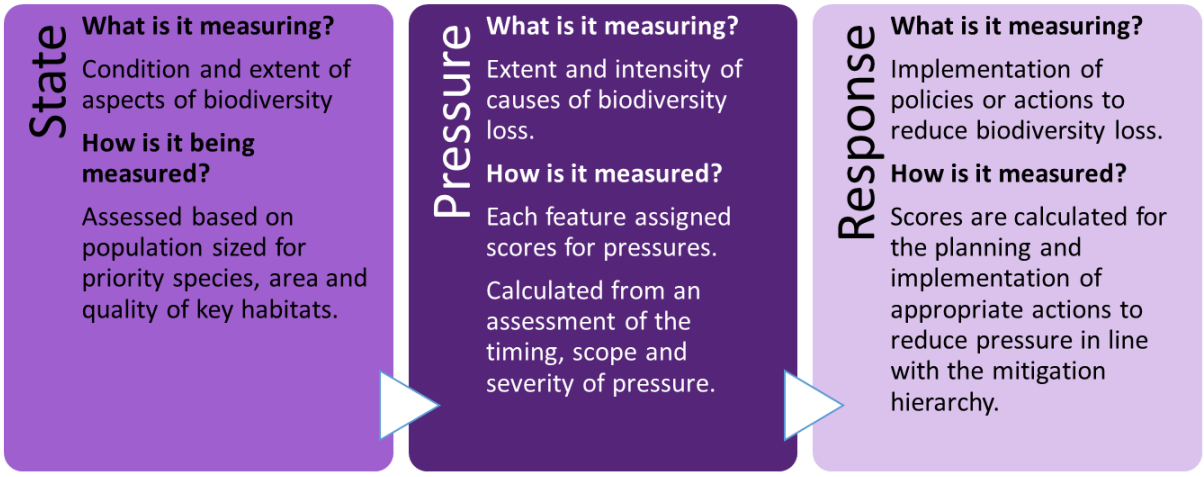
Where baseline data is not available for a focal biodiversity feature, monitoring should be initiated and subsequent assessment should use this date for initiation of monitoring as the baseline.

## *4.2 Scoring indicators within the SPR framework*

While SPR creates a consistent framework within which indicators can be gathered, the precise metrics used and the subject they address will continue to vary from site to site. For example, suitable pressure metrics at one site may include noise and water abstraction, whereas at another it may include air emissions and roadkill.

It is therefore necessary for an aggregation approach to be developed which allows site-level information to be reported up to the corporate level. Based on the BirdLife International Important Bird Areas Monitoring framework[19], the following scoring process is suggested to enable aggregation and comparison of scores across sites. Designed for non-technical users to evaluate management effectiveness of Important Bird Areas, key elements of the approach are described below with detail provided in the following sections (Figure 16).

*Figure 16: Methodology for measuring SPR, adapted from 'Monitoring Important Bird Areas: a global framework' (BirdLife International 2006)*




Each focal feature is considered in turn and scores are calculated for state, pressure or response. These agreed scores can then be used to track progress towards biodiversity goals. Such goals could be framed in terms of an improvement in management actions and improvement in state or decrease in level of pressure through the mitigation hierarchy. They enable categorisation of performance into 'red', 'amber' or 'green,' allowing the metric to be interpreted as an indicator. The detailed methodology for calculating state, pressure and response is given below. Scores for state, pressure and response cannot be directly amalgamated to give a combined score as state, pressure and response are measuring very different aspects related to biodiversity. Aggregation of indicators should follow the process outlined in the third stage of the methodology.

[19] http://datazone.birdlife.org/userfiles/file/IBAs/MonitoringPDFs/IBA_Monitoring_Framework.pdf

### 4.2.1 Calculating a site score for state

State is assessed based on population sizes for one or more species identified as focal biodiversity features within the area of influence through biodiversity action planning or through assessing the area of focal habitat remaining. The metric used is the percentage of the potential population or habitat remaining in comparison to a pre-project baseline (likely to have formed part of the EIA survey).

$$\text{Population remaining} = \frac{\text{Current population}}{\text{Baseline population}} \times 100\%$$

This calculation is adopted to set no net loss compared to the baseline as the default target. In some circumstances, a company may through regulatory or voluntary commitments be targeting net gain. In these cases, the baseline population should be substituted for target population using *baseline population + net gain target*. For example, if the net gain target is to increase the population by 5% and the baseline population was 300 individuals, the baseline population would be substituted for the net gain target population of 315 individuals within the calculation.

To simplify the approach, it does not consider the relative population inside and outside the area of influence to give a measure of significance of any decline or increase in global terms. It is assumed that this assessment of significance is captured through the threatened/important criteria for identifying focal biodiversity features.

Where population data is unavailable, area and quality of habitat on which the species depends can be used as a proxy for population size. However, this should not be adopted as a proxy if the major pressure on the species is from hunting or extraction as it would not provide an accurate representation of ongoing decline.

Where a habitat is the focal biodiversity feature, the area and quality of the habitat within the area of influence can be used instead as set out below:

$$\text{Area remaining} = \frac{\text{Current area}}{\text{Baseline area}} \times 100\%$$

However, this calculation assumes that all habitat is of equal quality. Hence an assessment is required of habitat quality and the score needs to be adjusted to reflect any degradation in habitat quality. Habitat condition scores should be calculated and applied to the habitat area scores. See Box 6 for an example of how this could be done.

#### Box 6: Habitat condition scoring example

At the time of the baseline assessment 10,000 hectares (ha) of coniferous forest was present. Monitoring suggests this area is now 8,000 ha; however, 2,500 ha of the forest has been significantly degraded as a result of wood fuel clearance. Surveys show that the degraded area has only 10% of the species count of the remaining habitat.

Remaining forest (8,000 ha) = natural forest (5,500 ha) + degraded forest (2500 ha)

The percentage of habitat remaining is initially calculated as 8,000/10,000 x 100 = 80%, scoring 'moderate' according to the scoring table (Table 10).

An adjustment is required to account for the habitat degradation as follows:

[(2,500*0.1) + 5,500]/10,000 = 57.5%

Therefore, accounting for both habitat loss and degradation, 57.5% of the habitat remains, leading to a poor score.

*Table 10: Overall scoring table for state*

| % potential population or habitat remaining of the worst species or habitat | State score |
|---|---|
| >90% | Good |
| 70-90% | Moderate |
| 0-70% | Poor |

## *4.2.2 Calculating a site score for pressure*

Pressures are assessed according to their timing, scope and severity and the extent to which they are likely to impact the focal biodiversity feature in question. Some pressures will be absolute and easy to define, while others may be diffuse, and impact may vary over space and time. Each pressure upon a focal biodiversity feature that is attributable to the company's activities at site should be scored. It is also important to note additional pressures on the feature that occur within the landscape but that are not attributable to the company[20]. This can provide context for the relative contribution the company's actions have on the state of the feature as well as providing information on where best a company could achieve a positive contribution to biodiversity by addressing external pressures on biodiversity within the landscape.

In many cases, multiple actors may be responsible for a pressure, making it challenging to attribute the pressure solely resulting from the company's activities. In these cases, reasonable adjustments to severity can be made based on available data. If no credible data is available then the pressure should be maintained as caused by the company's activities, but contextual information can be provided within the report to help with interpretation.

Timing:

Pressures associated with a company's activities are unlikely to occur uniformly throughout the project lifecycle. For example, habitat loss due to direct footprint (e.g. infrastructure, buildings, etc.) is likely to be most prevalent during the construction phase. Once a pressure has ceased the window for avoiding or minimizing its effect closes and the emphasis of response shifts to restoring and offsetting the impact the pressure had. As a result, an assessment of the timing of the pressure is required to differentiate pressures that occurred in the past from those happening now or that are predicted in future[21] (see Table 11). Once pressures move to 'Past' they appear greyed out within the dashboard to signify that company responses can no longer influence the pressure directly.

[20] Rather than the pressures attributable to the company, for social investment/positive impact sites, the existing pressures within the area of influence that are caused by factors external to the company but which the company has decided to address as a social contribution should be used instead. In these cases, it is likely that the pressures' baseline will be high, and the company's objective will be to reduce them over time.

[21] Pressures predicted to occur in the future should be included when they are incorporated within the project for the purpose of regulatory and management requirements. Where pressures are predicted to occur only in the long term and will require their own impact assessments (e.g. decommissioning) these should be documented but are likely to require a separate assessment in due course.

*Table 11: Scoring for the timing of pressures on focal biodiversity features*

| Timing | Outcome | Visualization |
|---|---|---|
| Past | Company unable to influence the pressure directly and should focus response on improving focal biodiversity feature's state. | Greyed out in dashboard. |
| Happening now | Company able to influence the pressure. Response should focus on avoiding and minimizing the pressure. | Maintained within dashboard. |
| Predicted in the future | Company able to influence the pressure. Response should focus on avoiding and minimizing the pressure. | Maintained within dashboard. |

To assess the significance of the pressure upon the focal biodiversity feature, the scope and severity of its impact needs to be assessed.

Scope:

Scope is assessed based on the percentage of the local population or extent (i.e. the population or extent within the area of influence of the project).

Severity:

Severity of a pressure encompasses both the degree to which a feature is affected by the pressure, as well as the duration over which this effect occurs. This is assessed by identifying the predicted percentage decline in the feature (either in terms of abundance, extent or quality) over a 10-year period or three generations (whichever is longer).

Both scope and severity fall within one of four categories (see Table 12).

*Table 12: Calculating site scores for pressure (note that scope and severity refer to the population or extent of the species/habitat within the landscape, not at a global level)*

| Pressure | Score based on thresholds | | | |
|---|---|---|---|---|
| Scope of pressure | Few individuals/ small area (<2%) | Some of population/area (2-9.9%) | Most of population/area (10-49%) | Whole population/ area (≥50%) |
| Severity of pressure | No or imperceptible deterioration (<1% over 10 years or 3 generations) | Slow deterioration (1-10% over 10 years or 3 generations) | Moderate deterioration (10-30% over 10 years or 3 generations) | Rapid deterioration (>30% over 10 years or 3 generations) |

The overall pressure score is calculated by combining assessments for scope and severity of pressure for each feature (see Table 13). By applying this matrix that combines scope and severity, pressures are scored such that:

- Pressure leading to <1% decline in the local population or habitat extent/quality = Low;
- Pressure leading to ≥1% but <10% decline in the local population or habitat extent/quality = Medium; and
- Pressure leading to ≥10% decline in the local population or habitat extent/quality = High.

Pressures likely to impact overall ecosystem function of the broader landscape, such as connectivity, should always be scored high (e.g. the disruption of migratory routes) as these pressures will have wide ranging effects which may not be adequately represented by their effect on a single focal biodiversity feature.

*Table 13: Overall scoring table for pressure*

| | | Severity | | | |
|---|---|---|---|---|---|
| | | **No or imperceptible deterioration (<1 % over 10 years or 3 generations)** | **Slow deterioration (1-<10% over 10 years or 3 generations)** | **Moderate deterioration (10-30% over 10 years or 3 generations)** | **Rapid deterioration (>30% over 10 years or 3 generations)** |
| Scope | Whole population/area (≥50%) | Medium | High | High | High |
| | Most of population/area (10-49%) | Low | Medium | High | High |
| | Some of population/ area (2-9.9%) | Low | Medium | Medium | High |
| | Few individuals/ small area (<2%) | Low | Low | Low | Medium |

See Box 7 for an example of how this could work in practice.

## Box 7: Calculation of pressures example

Prior to development, 10,000 ha of a site were covered with pristine forest. A major pressure that is monitored by the company is habitat loss as a result of mine development.

In Year 1, habitat loss was predicted to affect 'most of the population' and cause 'moderate deterioration'. It is therefore assigned an overall pressure score of High.

In Year 2, implementation of avoidance measures means the pressure is now predicted to affect 'some of the population' and still cause 'moderate deterioration' this decreases the overall pressure score to Medium.

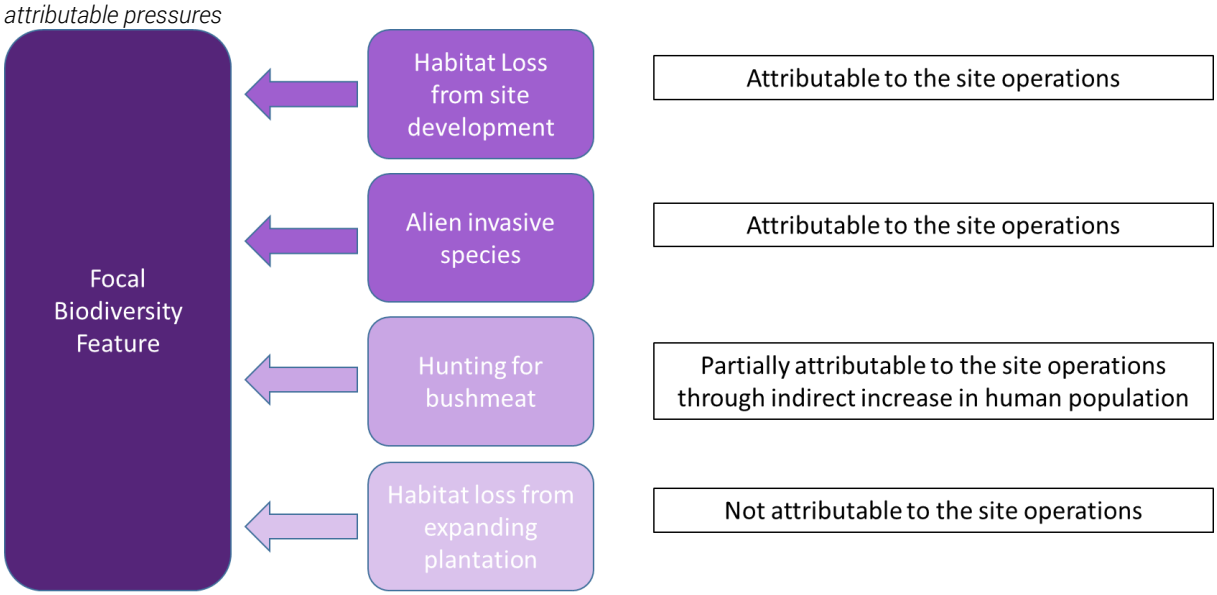
| Pressure: Habitat loss | Scope score | Severity score | Overall score |
|---|---|---|---|
| Year 1 | Most of population/area (10-49%) | Moderate deterioration (10-30% over 10 years or 3 generations) | High |
| Year 2 | Some of population/ area (2-9.9%) | Moderate deterioration (10-30% over 10 years or 3 generations) | Medium |

When calculating pressure, it is important to consider the level of attribution to company activities. In complex landscapes, there may be multiple other actors, including other energy and mining companies, agriculture and urban areas that are likely to contribute to pressures (see Figure 17). Where possible this should be accounted for when examining metrics. For example, if the metric used to measure pressure on a forest habitat is the area of forest lost, and an unassociated new plantation development

has occurred within the area of influence, then forest lost as a result of the plantation should be discounted.

It is, however, not always possible to assign pressures to individual actors within the landscape and so discounting of pressures should only occur where there is a robust case for the pressures not to be attributed to site activities. This rationale should be documented and transparent when presenting findings.

*Figure 17: Example pressures on a focal biodiversity feature, including direct and indirect impacts as well as non-attributable pressures*




## 4.2.3 Calculating a site score for response

The scoring for response at sites is designed to capture elements of both the quality of mitigation planning and the degree to which it has been implemented. The scoring matrix below (Table 14) ranks the quality of the management plan to address pressures on the focal biodiversity feature and the progress against the specified timeline.

*Table 14: Scoring matrix for response*

| | | | | | |
|---|---|---|---|---|---|
| Mitigation Planning | Comprehensive Plan | Low | Medium | High | High |
| | Intermediate Plan | Low | Medium | Medium | High |
| | Basic Plan | Low | Low | Medium | Medium |
| | No Plan | Low | Low | Low | Low |
| | | Significantly Behind Schedule | Behind Schedule | On Schedule | Complete |
| | | Mitigation Implementation | | | |

In order to ensure comparisons between response within and between sites, clear criteria have been defined for each category of planning and implementation, which must be met in order to achieve that score.

The planning score is determined by the number of essential and desirable planning criteria (Table 15) that have been met as outlined below:

- **No Plan:** One or more essential criteria missing.
- **Basic Plan:** All essential criteria included. No desirable criteria included.
- **Intermediate Plan:** All essential criteria included. At least one desirable criteria included.
- **Comprehensive Plan:** All essential and desirable criteria included.

*Table 15: Planning criteria for assessing ability of managment plan to address impacts on focal biodviersity features*

| Planning Criteria | |
|---|---|
| Essential Criteria | ✓ Action plan in place that feasibly addresses impacts upon focal biodiversity feature.<br>✓ Planned goals meet company's biodiversity commitments (both voluntary, regulatory, national targets and lender requirements).<br>✓ Plan has an institutional owner with adequate budget authorisation level. |
| Desirable Criteria | ✓ Structured treatment of the mitigation hierarchy throughout.<br>✓ Plan incorporates appropriate stakeholder engagement.<br>✓ Plan is sufficiently resourced for the duration of the project.<br>✓ Roles and responsibilities have been clearly defined.<br>✓ Timeline for implementation and monitoring in place.<br>✓ Process and thresholds for adaptive management in place. |

Implementation is scored against the following criteria (Table 16), comparing current progress to the timeline outlined within the management plan.

*Table 16: Response implementation criteria*

| Implementation Criteria | |
|---|---|
| Significantly Behind Schedule | • Progress is significantly behind the specified timeline and the efficacy of mitigation may be compromised as a result.<br>OR<br>• No timeline has been specified within the management plan. |
| Behind Schedule | • Progress is behind schedule, but this does not currently compromise the efficacy of mitigation. |
| On Schedule | • Progress is currently on or ahead of the implementation timeline. |
| Complete | • Planned mitigation has been completed. |

## 4.3 Combining SPR scores to give indicators of site performance

Red, amber and green score categories can be assigned for state, pressure and response for each focal biodiversity feature based on the scoring system set out above. Pulling the different scores into a site dashboard enables a site-level indicator to be built, turning SPR metrics into indicators of performance (see Figure 18).

*Figure 18: Example site dashboard*

| | Focal biodiversity feature | Example of project-induced pressures | State | Pressure | Response |
|---|---|---|---|---|---|
| 1 | Feature 1 | Direct habitat loss (from footprint) | | | |
| | | Indirect impacts | | | |
| 2 | Feature 2 | Direct habitat loss (from footprint) | | | |
| | | Mortality from collision with infrastructure | | | |
| 3 | Feature 3 | Direct habitat loss (from footprint) | | | |
| | | Disturbance | | | |

In the first year of assessment no trends will be available, hence absolute scores will need to be considered. Undertaking the analysis periodically can allow trends to be determined for state, pressure and response for each site. There will be an inherent lag from response to pressure to state, with the potential for response to be shown as high while pressure remains poor

Given the differing nature of state, pressure and response and their differing sensitivity to change over time, it may be advisable for monitoring to align with the site's procedures to track response. Response is likely to see change between assessments; however, state and pressure is likely to change over a longer time period than response. Hence response could be monitored annually and state/pressure on a 3 to 5-year basis. There should be a consideration here for the severity of the pressures, with more frequent monitoring suggested for pressures predicted to cause rapid declines.

### *4.4 Additional drill-down tables for species and habitats*

As part of the piloting, additional tables have been developed for species and habitats to drill down into the results. Given significant links to the Species Threat Abatement and Recovery (STAR) metric methods which are not yet published, more details or a redirect to available methods will be added in due course.

# Third Stage: Aggregating indicators to corporate level

This section sets out the methodology to aggregate site-level indicators up to a higher level. Please note that this section has not been piloted. This was due to piloting applying the methodology to one or two sites within a company given feedback that the methodology needs first to be tested internally before it can be used for reporting purposes. This stage will be updated following further piloting of the methodology. The information below provides an outline of the issues to be addressed during further testing.

Step 5: Aggregate site SPR scores based on the information gathered and presented in site-level dashboards. This step should look aggregate SPR scores from site and then identify which sites within the portfolioi may be priorities for action based on their SPR status and trends.

Step 6: Reporting and disclosure of the indicators in a format that is readily accessible to key internal and external stakeholders. These corporate indicators are based on the current status of sites across the portfolio, trends in status, and qualitative disclosures.

# Step 5: Aggregate site SPR scores

The aggregation approach proposed below enables site-level information to be reported up to the corporate level. This will facilitate a meaningful portfolio view of performance while driving greater consistency of monitoring. In turn, this will give greater insight to performance on the ground.

## *5.1 Aggregation of scores from the SPR framework*

Changes in site performance over time will be reflected in site scores allowing trends to be monitored. This may allow aggregation of those indicators set out below:

Current status:

- Number of sites considered to be in areas where biodiversity significance is high and the number of those sites where response is high;
- Number of sites progressed from global significance screening to site-level assessment in terms of SPR; and
- Mean number of focal biodiversity features per site.

Trends:

- Number of SPR indicators shifting categories from previous assessment, disaggregated by trend (positive or negative) and category (state, pressure- and response).

See Figure 19 for how these trends might look within a dashboard. In the example below, trend arrows show the movement across the portfolio of the red, amber and green status at each site (increasing, decreasing or remaining constant).

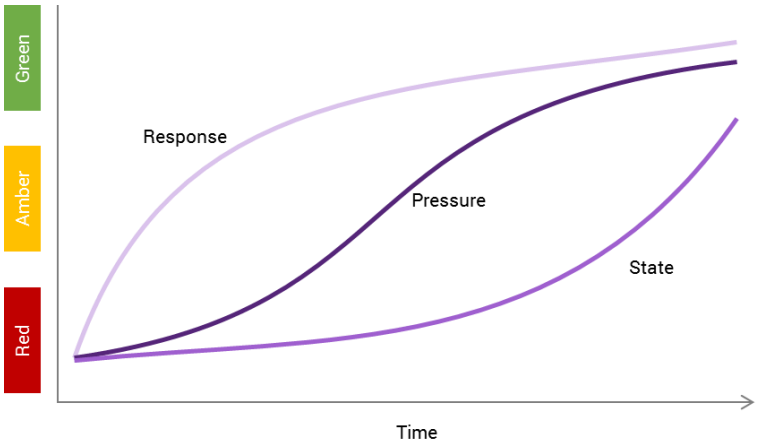
*Figure 19: Example dashboard*

| | State | Pressure | Response |
|---|---|---|---|
| Red | 2⇔ | 2⇩ | 2⇩ |
| Amber | 3⇩ | 3⇔ | 2⇩ |
| Green | 2⇧ | 2⇧ | 3⇧ |

## *5.2 Assessment of trends in SPR across site portfolio*

Over time, trends could be tracked graphically as in Figure 20 below. It is advisable to maintain separate indicators for state, pressure and response. When looking at trends over time, the first area where company action is likely to result in a change of status is in the response indicator, because this is one of the areas under most direct control by the company.

*Figure 20: Example SPR trends at a company level over time (Note that the Y axis represents movement from red to green, thus for pressure it represents a movement from high to low rather than an increase in pressure.)*




A change in response should result in a change in pressure, which over time would be expected to result in a change in state; however, there may be a significant lag before state is influenced by changes in management activities. Allowing the indicators to be presented in this disaggregated form will increase the resolution of information on change and trends over time.

# Case studies

Detailed case studies that have developed through piloting the methodology with energy and mining companies from 2019 to 2020 will be made available as separate documents on the UNEP-WCMC website: https://www.unep-wcmc.org/featured-projects/corporate-biodiversity-indicators.

# References


Biodiversity Indicators Partnership (2011) Guidance for national biodiversity indicator development and use. UNEP World Conservation Monitoring Centre, Cambridge, UK.

BirdLife International (2006) Monitoring Important Bird Areas: a global framework [Online] Available from: http://datazone.birdlife.org/userfiles/file/IBAs/MonitoringPDFs/IBA_Monitoring_Framework.pdf [Accessed May 2018]

Cross-Sector Biodiversity Initiative (2015) A cross-sector guide for implementing the mitigation hierarchy [Online] Available from: http://www.csbi.org.uk/our-work/mitigation-hierarchy-guide/ [Accessed May 2018]

Dudley N (2008) Guidelines for applying protected area management categories. IUCN, Gland, Switzerland.

Energy and Biodiversity Initiative (2003) Biodiversity Indicators for monitoring impacts and conservation actions [Online] Available from: http://theebi.org/pdfs/indicators.pdf [Accessed May 2018]

Globalbalance and The Biodiversity Consultancy (2014) Review of the International Council on Mining and Metals members' biodiversity performance management since 2003 [Online] Available from: https://www.icmm.com/website/publications/pdfs/biodiversity/biodiversity-performance-review_full-report [Accessed May 2018]

Global Reporting Initiative (2016) GRI 101: Foundation [Online] Available from: https://www.globalreporting.org/standards/media/1036/gri-101-foundation-2016.pdf [Accessed May 2018]

Global Reporting Initiative (2016) GRI 304: Biodiversity 2016 [Online] Available from: https://www.globalreporting.org/standards/gri-standards-download-center/gri-304-biodiversity/?g=00c406b0-4242-4ebe-9c7b-0944e6129566 [Accessed May 2018]

Gullison, R.E., J. Hardner, S. Anstee, M. Meyer (2015) Good Practices for the Collection of Biodiversity Baseline Data [Online] Available from: http://www.csbi.org.uk/our-work/good-practices-for-the-collection-of-biodiversity-baseline-data/ [Accessed May 2018]

IFC (2012) Performance Standard 6 Biodiversity Conservation and Sustainable Management of Living Natural Resources [Online] Available from: https://www.ifc.org/wps/wcm/connect/bff0a28049a790d6b835faa8c6a8312a/PS6_English_2012.pdf?MOD=AJPERES [Accessed May 2018]

IFC (2013) Good Practice Handbook. Cumulative Impact Assessment and Management: Guidance for the Private Sector in Emerging Markets [Online] Available from: https://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/sustainability-at-ifc/publications/publications_handbook_cumulativeimpactassessment [Accessed May 2018]

IPIECA/API/IOGP (2015) Oil and gas industry guidance on voluntary sustainability reporting [Online] Available from: http://www.ipieca.org/resources/good-practice/oil-and-gas-industry-guidance-on-voluntary-sustainability-reporting-3rd-edition/ [Accessed May 2018]

IPIECA (2016) Biodiversity & Ecosystem Services peer to peer training workshop. Module B2. [powerpoint presentation]

IPIECA and IOGP (2016) Biodiversity and ecosystem services fundamentals [Online] Available from: http://www.ipieca.org/resources/good-practice/biodiversity-and-ecosystem-services-fundamentals/ [Accessed May 2018]

Natural Capital Coalition (2016) Natural Capital Protocol [Online] Available from: https://naturalcapitalcoalition.org/protocol/protocol-application-program/ [Accessed May 2018]

Natural Capital Coalition (2018) Natural Capital Protocol – Forest Products Sector Guide [Online] Available from: https://naturalcapitalcoalition.org/natural-capital-protocol/forest-products/ [Accessed Nov 2018]]

OECD/DAC (2002) Glossary of Key Terms in Evaluation and Results Based Management Development Assistance Committee [Online] Available from: http://www.oecd.org/dac/evaluation/2754804.pdf [Accessed May 2018]

Sparks T. H., Butchart, S.H.M, Balmford, A., Bennun, L., Stanwell-Smith, D., Walpole, M., Bates, N.R., Bomhard, B., Buchanan, G.M., Chenery, A.M., Collen, B., Csirke, J., Diaz, R.J., Dulvy, N.K., Fitzgerald, C., Kapos, V., Mayaux, P., Tierney, M., Waycott, M., Wood, L. and Green, R.E. (2011) Linked Indicator Sets for Addressing Biodiversity Loss In Oryx Vol. 45, Issue 3, pp. 411-419.

Tucker, G. (2005) A review of biodiversity conservation measures. Earthwatch Institute (Europe).

UNEP-WCMC (2017) Biodiversity Indicators for Extractive Companies: An assessment of needs, current practices and potential indicator models. UNEP-WCMC, Cambridge, UK, 39pp.

World Resources Institute and World Business Council for Sustainable Development (2004) The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard [Online] Available from: https://ghgprotocol.org/corporate-standard [Accessed May 2018].

# Annexes

## Annex 1: Relationship to other sources of guidance

Several initiatives have set out guidance for the energy and mining sector on biodiversity indicators. The Energy and Biodiversity Initiative (EBI 2003), the GRI indicators on biodiversity (GRI 2016), the 2005 review conducted by Earthwatch and Rio Tinto (Tucker 2005), the 2012 International Council on Mining and Metals analysis of member's biodiversity performance (Globalbalance & TBC 2014) and IPIECA's sustainability reporting guidance (IPIECA API  IOGP 2015) all have some form of guidance on indicators. However, these initiatives have largely focused on the process for indicator development and measuring and reporting on actions taken, rather than performance (impact) on the ground.

A number of groups are actively investigating corporate biodiversity indicators – see the Aligning Biodiversity Measures for Business initiative[22] led by UNEP-WCMC for more details on these measurement approaches. However, this methodology is the only measurement approach tailored specifically to site-level impacts.

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[22] https://www.unep-wcmc.org/featured-projects/corporate-biodiversity-indicators

# Annex 2: Principles for indicator development

A number of principles should be followed in the development and disclosure of biodiversity indicators. Detailed guidance on the nature and implications of these principles is given below.

### Principle 1: Relevance

Any biodiversity indicator must appropriately reflect the biodiversity impacts and performance of the company and meet the decision making needs of internal and external users and stakeholders. The scope of the indicator must reflect the substance and economic relevance of the company's business relationships, not just its legal form (adapted from WRI and WBCSD 2004). Indirect as well as direct operational impacts should be included, and the indicator should be designed to enable discernment of sources of impacts (e.g. natural vs company vs third party) (IPIECA 2016). Joint ventures are excluded as companies cannot readily exert control over the management activities of joint ventures.

### Principle 2: Completeness

All sites/impacts should be considered in the first instance, with more focused attention on sites/ impacts with most significant risk. When we refer to risk within this document, we are referring to the risk to biodiversity (e.g. impacts on protected areas, at risk species etc.), not business risk.

### Principle 3: Comprehensible

Any indicator needs to be simple and conceptually clear as to how the measure relates to the purpose, and must lend itself to effective communication and interpretation. The underlying methodology itself need not be simple and must be rigorous enough to ensure scientific robustness (see Principle 5).

### Principle 4: Consistency

The methodology must be sufficiently detailed to allow for meaningful comparison of impacts and mitigation activities over time. Information gathering processes and definitions must be systematically applied. This allows a meaningful review of a company's performance over time and helps internal and peer comparison (adapted from IPIECA/API/IOGP 2015 and WRI and WBCSD 2004).

### Principle 5: Scientifically credible

Indicators should use technically robust and verifiable information, as well as data and methods from a scientific perspective that are fit for decision making (BIP 2014) and responsive to decision making over the appropriate timeframe and spatial scale (IPIECA 2016). For example, there should be an accepted theory of the relationship between the indicator and the purpose, with agreement that change in the indicator indicates change in the issue of concern. Uncertainties should be reduced as far as possible (adapted from the Natural Capital Protocol 2016 and WRI and WBCSD 2004). Data or mechanisms used should be supported by well-established organisations (e.g. IUCN Red List) and updated over time. Robust modelled data and expert judgment can be used where data gaps exist.

### Principle 6: Transparency

The methodology and data should be documented with assumptions and limitations laid out and data sources documented, the results repeatable and an audit trail maintained (adapted from IPIECA/API/IOGP 2015 and WRI and WBCSD 2004).

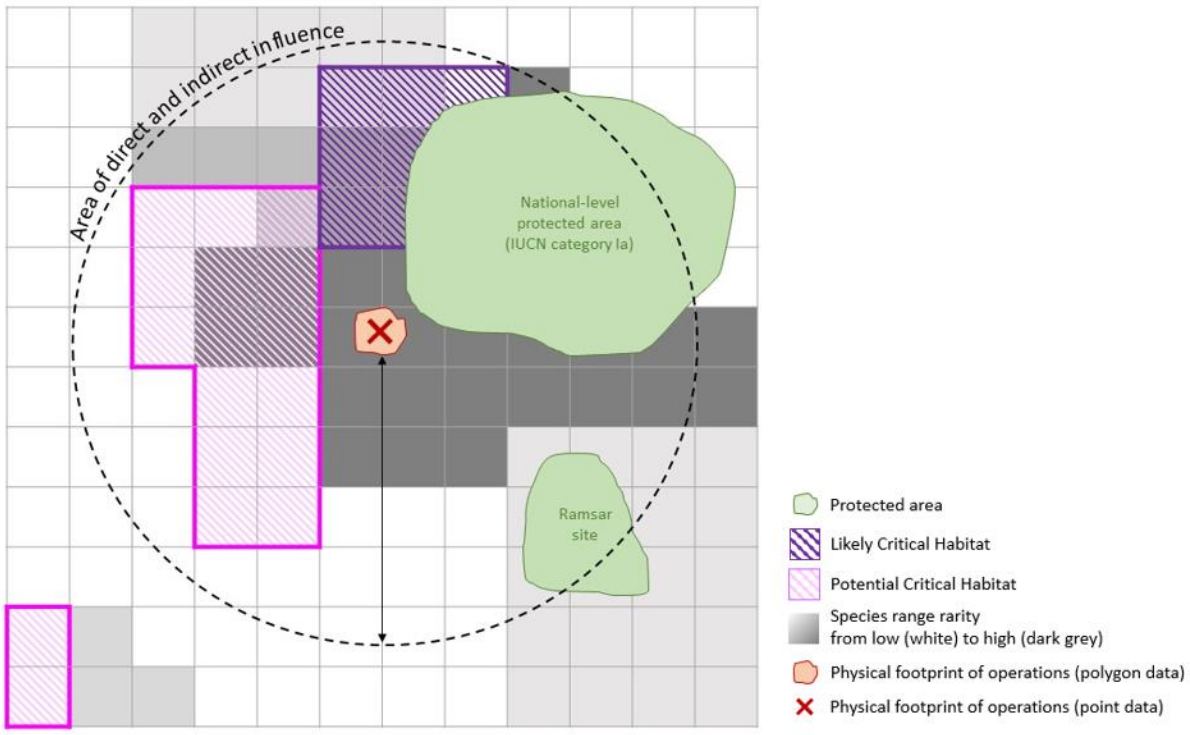
# Annex 3: Defining area of influence

Figure 21 below provides an illustrative example of how the methodology defines area of direct and indirect influence.

It should be recognised that the area of influence is unlikely to be uniformly distributed around the site. The circular buffer is used as a precautionary approach, with the radius extending out to the furthest reach of area of influence in any direction.

Consideration should be given to discrete management units that lie partially within the area of influence. For example if a protected area partially overlaps with the area of influence, an assessment should be conducted to identify whether company-induced pressures within the area of influence would compromise the integrity of the protected area as a whole. This should inform the decision whether or not to extend the area of influence to encompass the whole protected area.

*Figure 21: Theoretical example for explanatory purposes*



# Annex 4: Limitations

## *Limitations of biodiversity significance screening*

The approach proposed in the first stage has a number of limitations, including:

- Inability to assess ecosystem services impacts and dependence may mean that a number of impacts and risks are overlooked: the assessment focuses on indicators of biodiversity significance, not ecosystem services. Evaluating ecosystem service significance is not yet feasible based on global datasets. Consideration of dependence on ecosystem services should be part of a more detailed site-level assessment of those operations determined as high significance and could be added into a sitelevel assessment to overlay on the global assessment.
- Site screening based on critical habitat identification may result in risks being overlooked: a focus on critical habitats without consideration of Natural Habitat may result in the overlooking of critical ecological processes, patterns and integrity. Inclusion of Natural Habitat in the screening process could identify additional locations where ecosystem services and other landscape relevant ecological considerations are important to the integrity of species triggering critical habitat.
- Assessment looks at current status of biodiversity rather than future predictors of decline: hence the assessment is valid currently and into the short term, but global trends such as climate change and broader development may impact the validity of the significance over time. A periodic update of the assessment could ensure it remains valid over time. The profile of a business may also change over such a period and repeating the analysis would take into account shifts in the number and location of different operating sites.
- Incompleteness of datasets may lead to understatement or overstatement of significance: the biodiversity datasets used represent the best available data; however, such data are not globally or regionally comprehensive.
- Data gaps are likely to affect the relative scores between operations in terrestrial and marine environments: a lack of datasets for the marine environment in comparison to terrestrial datasets may give rise to bias in the results.

## *Limitations of the site SPR monitoring framework*

The approach proposed in the second stage has a number of limitations, including:

- Isolating pressures attributable to corporate action: pressures on biodiversity can come from multiple sectors and sources so it will be important to isolate the source of the pressures and ensure that reporting focuses on those pressures that are attributable to company activity.
- Determining linkages between state, pressure and response indicators: capturing feedback loops between state, pressure and response and identifying the appropriate linked indicator sets will need further guidance.
- Subjectivity: the thresholds set may be subjective and open to interpretation.
- May not meet needs for external disclosure: the framework does not give an absolute measure of performance on the ground and therefore may not meet the needs of, for example, stakeholders external to the company.
- The resultant indicator set may be complex to communicate: this may make it challenging for use in external reporting and disclosure.

- The approach is reliant on existing management systems: where biodiversity management systems are not robust and monitoring frameworks are not in place additional work will be required to identify focal biodiversity features and indicators for monitoring.
- Lags in responsiveness of indicators may obscure performance: a time lag will be experienced between implementing a response and improved state. The length of this time lag will vary depending on the biodiversity feature concerned.
- Climate change impacts on biodiversity: the methodology relies on using the current distribution patterns of species and habitats to assess and identify possible indicators. However, it is known that climate change is impacting these distributions. An additional layer of consideration on how climate change might be impacting distribution patterns is therefore required before finalizing the selection of potential indicators for a particular site.
- Assessment periodicity: the frequency of application, and measuring and monitoring for indicators, should be considered to decide the best approach for the company. Future implementation of the methodology should leverage current practices to align periodicity with the acquisition of new data for a site (e.g. monitoring studies are typically conducted multiple times a year and many will uncover new data).
- Identifying focal biodiversity features: it should be noted that this process is aimed at efficiently reducing the number of features to be considered. As a result, it applies a number of screening criteria that may require a high-level qualitative assessment to understand whether the feature meets these criteria. This process has an inherent degree of uncertainty and as such an iterative approach can be taken if the initial application does not produce sufficient, suitable focal biodiversity features. This may involve more stringently applying the criteria if an initial assessment produces an abundance of biodiversity features, or a more lenient approach if too few are generated.

# Annex 5: Site-level questionnaire

The site-level questionnaire is designed for use within Step 2. It is designed to be completed by site-level managers as part of the site validation in the first stage of the methodology.

| Questions | | Y/N | Text evidence and source |
|---|---|---|---|
| 1.a | **Species** - Are there IUCN Red List Critically Endangered or Endangered species at the site? | | |
| 1.b | **Species: Extractives threats -** Are any of these species impacted by threats from energy production & mining according to the IUCN Red List? | | |
| 1.c | **Species: Indirect threats** – Are there species known to be impacted by indirect threats? | | |
| 2.a | **Habitat** – Is the site located within IFC critical habitat, or is IFC critical habitat within 50 km of the site? | | |
| 2.b | **Habitat: Critically Endangered/Endangered** – Are there habitats of significant importance to Critically Endangered and/or Endangered species at the site? | | |
| 2.c | **Habitat: Endemic -** Are there habitats of significant importance to endemic and/or restricted-range species at the site? | | |
| 2.d | **Habitat: Migratory/Congregatory** – Are there habitats supporting globally significant concentrations of migratory species and/or congregatory species at the site? | | |
| 2.e | **Habitat: Threatened/Unique -** Are there habitats which have highly threatened and/or unique ecosystems at the site? | | |
| 2.f | **Habitat: Evolution** – Are there areas associated with key evolutionary processes at the site? | | |
| 3 | **Protected Areas** – Is the site located within a nationally, regionally or internationally protected area, or is a protected area present within 50 km of the site? | | |
| 4 | **Key Biodiversity Areas** - Is the site located within a Key Biodiversity Area or is a Key Biodiversity Area present within 50 km of the site? | | |
| 5 | **Culturally Sensitive -** Does the site explore or extract resources within or adjacent to sites or other culturally sensitive areas (archaeological sites, burial grounds, ceremonial spaces, etc.)? | | |
| 6 | **Water Bodies -** Does the site explore or extract resources within or adjacent to important water bodies (creeks, rivers, lakes and seas) that support human well-being in nearby populations? | | |
| 7 | **Commitments** – Do additional corporate or site-level commitments apply at this site (e.g. No Net Loss, Net Gain, 'Environment and Climate Change Our Requirements', World Heritage Site commitments)? | | |
| 8 | **National, Regional, Local Requirements -** What are the biodiversity-related regulatory/permitting requirements (e.g. additional national/regional species/habitat Red Lists; relevant sector-specific legislation requirements with respect to environmental issues)? | | |

| | | | |
|---|---|---|---|
| 9.a | **Area of Influence -** Has an area of influence been defined? | | |
| 9.b | **Area of Influence: Method –** Has an area of influence been impacted? If so how (i.e. have direct, indirect and/or cumulative impacts been considered)? | | |
| 9.c | **Area of Influence: Size -** What is the size of the area of influence (e.g. hectares for land; stream km for freshwater, or marine equivalent measure)? | | |
| 10 | **Existing Biodiversity Data -** Has existing biodiversity data for all relevant ecosystems, where applicable, (terrestrial, freshwater, coastal, marine) been compiled? | | |
| 11 | **Baseline Biodiversity Assessments –** Have baseline biodiversity assessments been conducted for all relevant ecosystems via appropriate methods (e.g. population measures, local expert accounts, core methods)? | | |
| 12 | **Sensitive Biodiversity Features -** Have sensitive biodiversity features been identified and mapped (i.e. IFC critical habitat criteria, Red List species, ecosystems services or stakeholder identified components of importance)? | | |
| 13 | **Local Communities/Social -** Are there habitats of significant cultural, economic and/or livelihoods importance to local communities/human populations at the site? | | |
| 14 | **BAP –** Has the site developed a BAP with clearly articulated targets? | | |
| 15.a | **Monitoring -** Are changes to biodiversity features (stocks and flows) and human well-being measures being tracked over time (e.g. wildlife picture index)? | | |
| 15.b | **Monitoring: Pressures -** Have drivers of impacts and other pressures in the region been identified and quantified (e.g. population growth, climate change, habitat destruction, pollution, invasive species, other livelihoods, other industry and extractive sectors)? | | |
| 15.c | **Monitoring: Cumulative Pressures -** Have pressures affecting biodiversity in the region been assessed cumulatively? | | |
| 16 | **Monitoring: BAP/Pressures -** Does the BAP address these pressures? | | |

| | | | | | |
|---|---|---|---|---|---|
| | | | Indicators | | |
| | | | State | Pressure | Response |
| 17.a | | **For marine, land and freshwater**: Have the appropriate SPR indicators been identified for species of concern, including invasive and nuisance species? | | | |
| 17.b | | **For marine, land and freshwater**: Have the appropriate SPR indicators been identified for extent, condition and trend of important habitat types? | | | |