A Guide to Developing Biodiversity Action Plans for the Oil and Gas Sector

IPIECA
International Petroleum Industry Environmental Conservation Association

OGP
International Association of Oil & Gas Producers

This guidance has been prepared by the International Petroleum Industry Environmental Conservation Association (IPIECA) and the International Association of Oil and Gas Producers (OGP) through the joint Biodiversity Working Group.

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Disclaimer

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About this Guidance

Biodiversity conservation has risen rapidly up the environmental and political agenda and now represents one of the most important challenges of the 21st century. Oil and gas companies can contribute to international, national and local conservation targets through careful planning and management of operations, working with stakeholders and partners to develop long-term and sustainable solutions.

This IPIECA guide is designed to help HSE professionals and other relevant staff, e.g. those involved with project planning, in the oil and gas industry to develop Biodiversity Action Plans (BAPs) for their sites and projects. BAPs are a systematic approach to biodiversity conservation that can build on, and be integrated with, existing company activities and processes throughout the oil and gas project life cycle.

This guidance recognises that each site or project represents a unique situation with its own set of biodiversity conservation-related issues and that corporate cultures and management methods may vary widely from one company to the next. Therefore the guidance focuses on the general process recommended to be used in preparing and implementing a BAP rather than on a prescriptive or inflexible method that may be difficult to apply or interpret at many sites and projects. This gives users the flexibility to address their needs in a way that is appropriate to their specific situation. In the absence of legal requirements, the decision whether or how to develop a BAP is always at the discretion of the company.

The principal process steps in developing a BAP are:

- Deciding if a BAP should be done – understanding legal, biodiversity and business case drivers.
- Completing prerequisites – planning for integration with site or project management systems and management of resources.
- Preparing the BAP– establishing the priorities for conservation.
- Implementing the BAP– rolling out the necessary actions.
- Monitoring, evaluation and improvement – tracking implementation progress and effectiveness.
- Reporting, communication and verification of performance – upgrading engagement processes and building support with stakeholders and partners.

Each of these steps is underpinned by stakeholder engagement and consultation. The different ways in which oil and gas companies have approached each of these steps are explored in a number of Case Studies drawn from sites and projects that reflect a range of environmental, social and operational settings.

To assist users with limited biodiversity experience, supplementary information and references are used to set the guidance in the wider biodiversity conservation context. A Glossary of key terms and phrases, a list of Acronyms and a compilation of Further Resources (including contacts, potential partners and an annotated bibliography) can be found in the Appendices.

The continued improvement, development and sector-wide uptake of this guidance depend on the active participation of end-users. Therefore, we welcome comments and suggested revisions that will improve its usability and application within the oil and gas sector.

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1. Understanding Biodiversity

In simple terms biological diversity, or biodiversity, is the variability among living organisms from all sources including terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species, and of ecosystems (*UN Convention on Biological Diversity, Article 2*). Biodiversity provides us with a host of raw materials, foods and medicines and is the basis for the life support system of our planet by, for example, underpinning the continued availability of clean air and fresh water. Interwoven with these functional aspects are spiritual, cultural and recreational elements. These elements are more difficult to value, but in many countries and cultures they are considered to be at least as important as the more functional aspects of biodiversity.

The conservation of biodiversity is clearly important, both for the long-term and sustainable supply of raw materials and for the spiritual, cultural and recreational benefits that it brings. However, as the human population continues to grow, biodiversity is being lost at an increasing rate. Concern about this loss has prompted international, regional and national legislation, including the United Nations Convention on Biological Diversity (CBD – see www.biodiv.org) that engendered the target to reduce the rate of loss of biodiversity by 2010. The private sector, working with governments, NGOs, science and community partners, has a significant role to play in the conservation of biodiversity. Like many other sectors, the oil and gas industry faces the challenge of understanding what biodiversity conservation means in practical terms (see Box 1) and how its day-to-day activities can be organised and managed to maximise the protection and enhancement of biodiversity.

Box 1: Defining Biodiversity Conservation

A useful way of defining biodiversity conservation is as "*a philosophy of managing the environment in a manner that does not despoil, exhaust or extinguish*" (from *Replacing Quantity with Quality as a Goal for Global Management* by Carl F. Jordan (1995)).

This broad definition encompasses both a utilitarian perspective (conservation driven by the rational and prudent management of biological resources to achieve the greatest sustainable current benefit while maintaining the potential of the resources to meet the needs of future generations) and an ethical perspective (biodiversity having an intrinsic value outside of the materials that it supplies or services that it supports that is worthy of protection).

The actions required to the successful conservation of biodiversity typically entail preservation, species and habitat management, sustainable utilisation, restoration and/or enhancement. The development and enforcement of legislation and regulation, and education and capacity building are also elements of the conservation process.

2. What is a Biodiversity Action Plan?

A Biodiversity Action Plan is a "plan to conserve or enhance biodiversity"[1], more specifically a set of future actions that will lead to the conservation or enhancement of biodiversity. BAP is a general term that is used worldwide and across a large number of sectors, but in the context of this guidance document it is taken to refer specifically to an action plan associated with an oil and gas site or project unless noted otherwise.

The principal steps in developing and implementing a BAP are:

- Deciding if a BAP should be done – understanding legal, biodiversity and business case drivers.
- Completing prerequisites – planning for integration with site or project management systems and management of resources.
- Preparing the BAP– establishing the priorities for conservation.
- Implementing the BAP– rolling out the necessary actions.
- Monitoring, evaluation and improvement – tracking implementation progress and effectiveness.
- Reporting, communication and verification of performance – upgrading engagement processes and building support with stakeholders and partners.

1 Earthwatch Institute. 2000. *Case Studies in Business & Biodiversity,* ISBN 0-9538179-2-X, 30 pp.

These steps are summarised in Figure 1 and explored in greater detail in subsequent sections. Each step is supported by stakeholder consultation and engagement (as detailed in Chapter 5).

A BAP *may* be more effective if there is a broader company biodiversity strategy – such a strategy is not, however, a prerequisite for the successful preparation and implementation of a BAP.

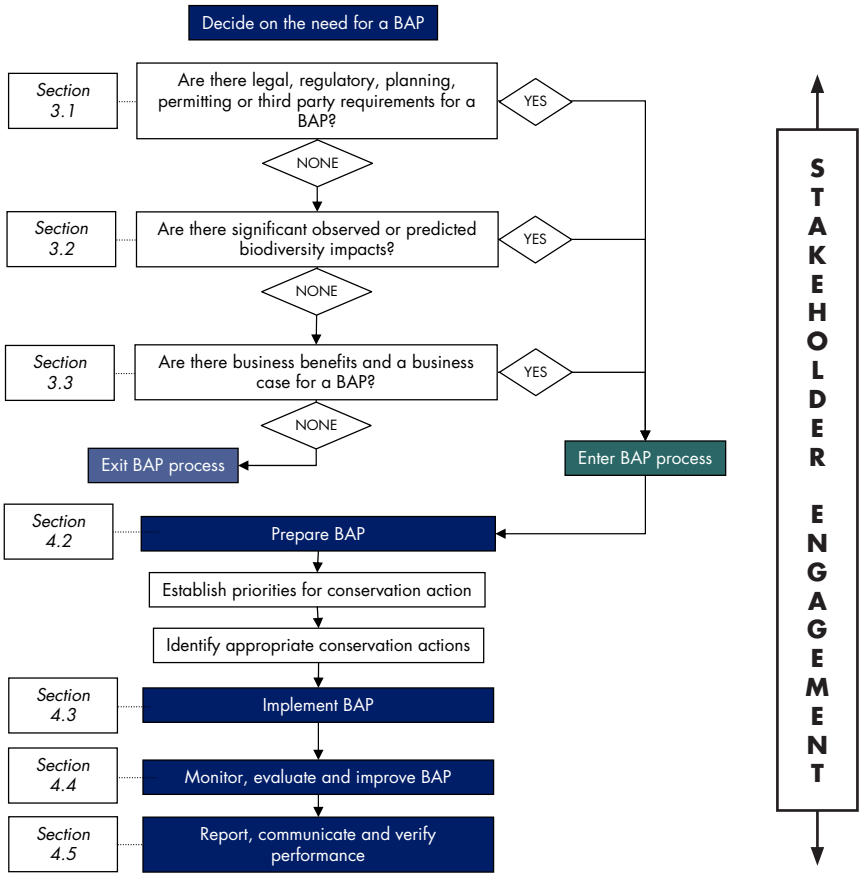

Figure 1. *Simplified flowchart for preparing and implementing a BAP*

The scope and relevance of each of these steps and the detail in which they are reported, will vary according to the oil and gas project life cycle stage (from concession acquisition to decommissioning), the type of site or operation and the environmental and social context in which the company's activities are taking place. Similarly, reports may vary from a one page 'brief' for a small or simple individual site in an early stage of the oil and gas project life cycle, through a portion of an integrated Environmental Management Plan (EMP), to a multiple-volume detailed management plan for a complex project. Examples of how the oil and gas project life cycle stage can influence the nature and extent of the BAP process and related reporting are shown in Appendix 3.

There is a substantial overlap among the steps outlined in Figure 1 and the technical elements of Environmental and Social Impact Assessments (ESIAs), Environmental Management Plans (EMPs), Environmental Management Systems (EMSs) and other plans, e.g. related to the management of waste and impact mitigation. This is quite deliberate. It is not the purpose of a BAP to replace these standard approaches but rather to be part of, or co-ordinate and

BAPs can take varied – and less obvious – forms, with a sometimes limited scope and duration. For example, EnCana Ecuador S.A. and Walsh Ecuador S.A. have developed a remote sensing technique to accurately identify historic heliports in mature tropical rainforest for reuse in a subsequent seismic exploration program, eliminating avoidable deforestation and making a significant contribution to conservation through appropriate planning and action (see CASE STUDY 3).

build on them to benefit biodiversity conservation (see Section 2.2). Equally, a BAP should be compatible with previously prepared National or other BAPs that may overlay the geographical area of the site or project (see Section 2.1).

2.1 What is the relationship between a BAP and other biodiversity action plans?

In developing a BAP it is important to recognise that additional action plans may exist:

- *National Biodiversity Strategies and Action Plans* (NBSAPs) are country-specific strategic frameworks for action, stemming from the CBD, and encompass both utilitarian and ethical perspectives on biodiversity conservation. They guide on-the-ground activity at smaller geographic scales. Many, but not all, countries where oil and gas companies operate have or are developing NBSAPs.
- *Company Biodiversity Action Plans* (CBAPs) are corporate frameworks addressing 'high-level' biodiversity issues such as operating in sensitive areas and areas containing high profile fauna and flora. They guide the development of site and/or project BAPs. Being strategic in nature, a CBAP can encompass one or more site and project BAPs that are action-oriented.

A BAP will need to be in line with the priorities of an existing or planned NBSAP to allow it to contribute to the broader vision of biodiversity conservation at national and regional scales. Where a NBSAP does not exist and is not planned, a BAP should align with national priorities. In all cases, care should be taken to ensure that the BAP does not involve actions that are likely to negatively impact other action plans. External bodies involved in the preparation of other action plans or the setting of national priorities should thus be consulted as part of the BAP process. Liaison with the relevant government agencies and experienced NGOs is also advisable.

BP's Indonesia Biodiversity Action Plan was specifically designed to support the Indonesian government's Integrated Biodiversity Strategic Action Plan and allow BAPs from other BP units in Indonesia to be included in future updates (see CASE STUDY 4).

In some countries or regions, additional types of biodiversity-related action plan may be encountered that are specific to that geographical area or political jurisdiction. For example, in Europe three other types of action plan are common:

- *Species Action Plans* (SAPs) and *Habitat Action Plans* (HAPs) target particular species or habitats and are often developed by government or NGOs.
- *Local Biodiversity Action Plans* (LBAPs) outline the actions to be taken at a local level, often led by local government bodies with partners drawn from industry, local communities, NGOs and other stakeholder groups.

A BAP should give due consideration to the aims, objectives and priorities of such regional and local action plan variants where they exist.

2.2 What is the relationship between a BAP and an ESIA or EMP?

A BAP covers both *assessment* (traditionally the domain of an ESIA) and the corresponding *plan* (traditionally the domain of an EMP) (see Figure 2). For projects for which an ESIA and/or EMP is planned, the process of preparing a BAP may be separate, partially integrated, or fully integrated into the ESIA and/or EMP processes and work products. The decision whether to integrate or not may be influenced by regulatory requirements, community expectations, company policy, or other internal or external factors and is at the discretion of the organisation conducting the BAP, and is case-specific.

For projects or facilities for which an ESIA and/or EMP already exists, it is more likely that additional BAP work is necessary, simply because, in general, the integration of biodiversity considerations in traditional ESIAs and EMPs is often incomplete. Furthermore, the definition of what needs to be addressed to properly understand and avoid biodiversity impacts is often non-systematic in existing ESIAs and EMPs. Similar to projects, the decision whether to integrate the BAP process into the existing ESIAs and EMP is case-specific.

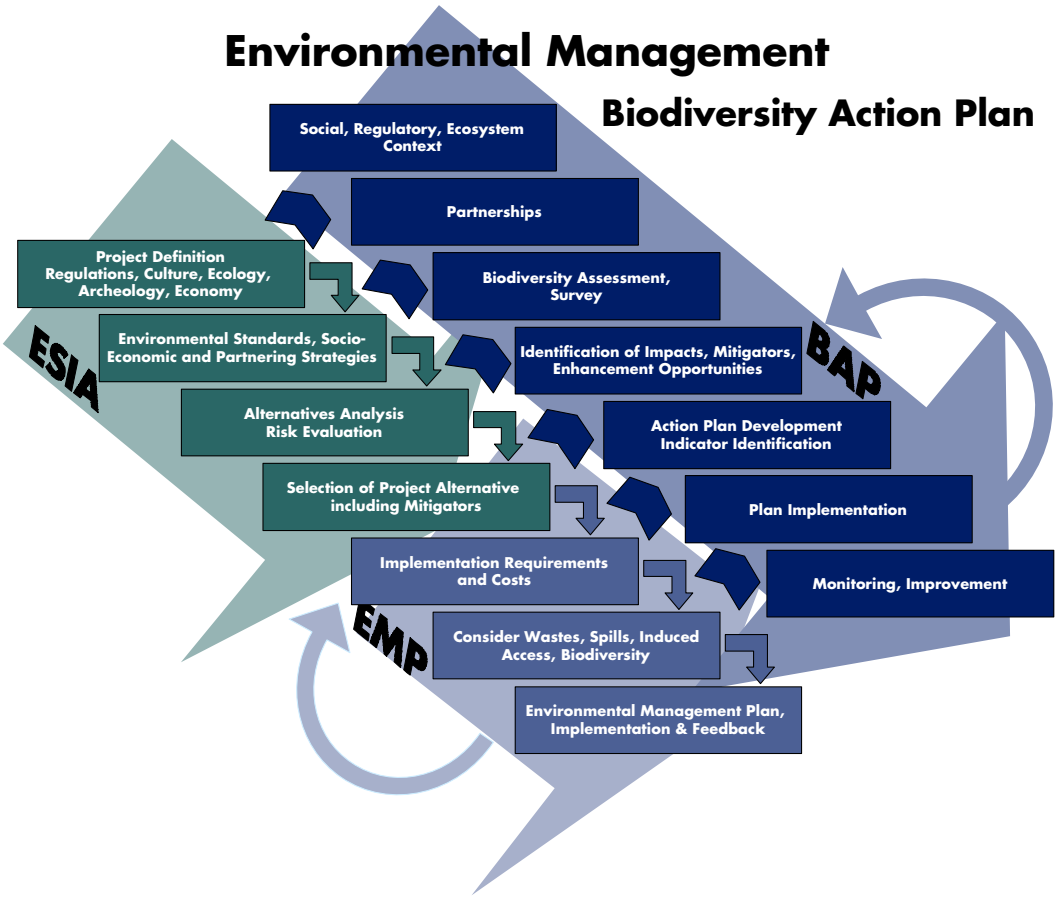

Figure 2. *Relationship between a BAP and an ESIA and EMP*

An ESIA and EMP process with full integration of biodiversity can be the technical equivalent of the BAP process, as described above, and can have significant process and efficiency advantages where effective processes for ESIA and EMP are already in place, and where external and internal factors allow integration. These advantages can include:

- Reduced burden and resource demands, thereby potentially allowing more biodiversity-related work at equal cost.
- Increased synergy between biodiversity-related and other environmental work, potentially allowing more effective and more efficient overall environmental management.
- Enhanced credibility of biodiversity action planning when it is seen as integrated with and compatible with existing proven processes, not as an afterthought.
- Efficient planning and execution of activities, potentially generating results more quickly and cost-effectively than parallel but separate processes.

Further information on the integration of biodiversity with the ESIA process can be found in the Energy and Biodiversity Initiative (EBI) document *'Integrating Biodiversity into Environmental and Social Impact Assessment Processes'* available at www.theEBI.org.

However, there are benefits to a stand-alone BAP process distinct from those offered by the integrated approach, which will vary from one site or project to another. In general, the benefits of a stand-alone BAP include:

- Emphasis on biodiversity as a distinct issue of importance, addressing stakeholder expectations for special emphasis on biodiversity. This may enhance a company's reputation and public goodwill and can be especially valuable where a development or operation is not covered by a robust ESIA
- Enhanced stakeholder engagement, through highlighting co-operation among industry, local communities, government, academic institutions, NGOs and lending agencies. Though a fully integrated BAP will incorporate the same co-operative partnerships, the narrower scope of a stand-alone BAP may improve understanding and 'buy-in' from local communities and partners.

- A potentially clearer relationship to stated local, regional and national priorities through having a focused parallel structure.
- Increased internal focus on biodiversity aspects of environmental management in cases where existing internal processes do not explicitly address biodiversity.

Once a systematic and thorough approach to biodiversity action planning is adopted, the resulting documents may also be presented as either a separate BAP or incorporated into ESIA and EMP documents. The essential decision on whether to have a separate BAP document or not comes down to which form will best meet external requirements and business needs, while ensuring that the action plan is effectively developed and implemented. Where the integration of biodiversity into the ESIA and EMP processes is already substantial, the BAP documentation may simply require insertion into the relevant ESIA and EMP documentation. In cases where biodiversity integration is limited or absent in existing ESIA and EMP processes, biodiversity planning documentation may be best dealt with in a stand-alone document.

In the Gulf of Paria, ConocoPhillips incorporated findings from its biodiversity characterisation work into the environmental and social impact assessment process and the management plan, which were being completed at the time (see CASE STUDY 5).

3. Deciding if a BAP is mandatory, necessary or recommended

The need for a BAP depends on its regulatory, ecosystem and business context. In some cases a BAP will be *mandatory* due to legal, regulatory, planning, permitting or third party requirements. In other cases, the presence of significant (see Box 2) observed or predicted impacts will generally make the use of a systematic approach such as a BAP necessary (but not mandatory) for most efficient and effective biodiversity conservation. Even in the absence of legal requirements or significant observed or predicted impacts a BAP may still be *recommended* due to the business benefits that can accrue, e.g. for making a positive contribution to biodiversity conservation such as support to biodiversity-related initiatives. If none of these conditions apply a company may still decide to proceed with a BAP on a purely discretionary basis or decide that a BAP is unnecessary.

The logical process by which a company can decide whether a BAP is mandatory, necessary, recommended or unnecessary is summarised in Figure 1. The factors that should be considered during that decision-making process are examined in more detail in Sections 3.1-3.3. Information and data gathered during this preliminary decision-making process forms a significant part of the BAP preparation and implementation process (if the decision to proceed with a BAP is taken). Consequently, if a company arrives at a decision to undertake a BAP prior to carrying out the analysis described in Sections 3.1-3.3, then that analysis is still required as part of the subsequent BAP process.

Box 2: What is 'Significant'?

Setting criteria for the determination of significance of impacts means deciding what degree of change is acceptable in the context of a specific area or project, and defining impacts above that threshold as 'significant.' This decision should consider the capacity of an ecosystem, habitat, or species to recover its character and function following disturbance. Those impacts meeting the criteria for significance can then be further prioritised (such as being of 'higher', 'medium' or 'lower' significance) to establish a hierarchy for preventive or mitigative actions. Ideally, these criteria can be derived from objectives and targets set for in other biodiversity action plans such as species and habitat action plans (see Section 2.2). When no appropriate targets or objectives exist, specific criteria can be developed on a case-by-case basis, based on consultation with experts and other stakeholders. The use of 'off-the-shelf' criteria should not be encouraged.

3.1 Legal, regulatory, planning, permitting or third party requirements

3.1.1 Legal and regulatory requirements

The HSE professional (or other relevant staff) should assess whether international conventions related to biodiversity that *mandate* a BAP, have been ratified and/or enacted in national legislation. In some cases international agreements that have not been ratified or enacted can still be relevant to a company and act as important drivers for the preparation and implementation of a BAP. For example, Russia is an important country in the African Eurasian Waterbird Agreement (AEWA) region, but has not yet ratified the agreement. Nevertheless AEWA's Action Plan and Implementation Priorities are valid for Russia as well. Thus although AEWA is not enacted in Russian legislation (and does not therefore give rise to a mandatory requirement for a BAP), a company operating there may consider a BAP to be *necessary* or *recommended* to ensure its biodiversity conservation efforts are aligned with the AEWA Action Plan. A comprehensive analysis of international and regional conventions relevant to biodiversity can be found in the (EBI) document 'International Conventions', available at www.theEBI.org (last updated May 2003).

Staff should also assess whether other national and local laws relating to biodiversity, species, habitats and ecosystems (including their functions and services) will mandate a company to draw up a BAP.

3.1.2 Planning and permitting requirements

In some cases, BAPs may be *mandatory* under the permitting and/or planning process overseen by central and local government. These requirements will then influence the scope, aims and objectives of the BAP.

3.1.3 Third party requirements

Some third parties may be in a position to *mandate* a BAP or request a voluntary BAP. Examples include joint venture partners and financial lending institutions such as the World Bank when involved in specific sites or projects, and local stakeholders, e.g. local authorities.

3.2 Presence of significant observed or predicted biodiversity impacts

3.2.1 Preliminary desktop assessment

An early indication of whether a BAP might be considered necessary for most efficient or effective biodiversity conservation can be gained from a desktop environmental assessment. If the site or project is in, near or contains an area that is legally protected, host to one or more protected species, habitats or ecosystems or considered 'sensitive', a BAP is likely to be necessary. However, the apparent absence of certain species, habitats or ecosystems should not be taken to indicate that a BAP is unnecessary; the need for it may become apparent at a later stage.

The desktop assessment is likely to include the identification and determination of:

- Known sensitive habitats, protected areas and species or ecosystems that have a high conservation value (for utilitarian or ethical reasons – see Box 1) and that exist within, overlap with, or are adjacent to the site or project through review of GIS and text-based databases.
- How identified species or habitats are addressed in the national biodiversity strategy or other action plans (if they exist).

Box 3: What are Secondary Impacts?

Secondary impacts, rather than resulting directly from project activities, are usually triggered by the operations, but may reach outside project or even concession boundaries and may begin before or extend beyond a project's life cycle.

The potential importance of secondary impacts for biodiversity conservation should not be underestimated. For example, oil and gas projects can cause localised rises in human population through planned migration (workers and families) and unplanned migration (of non-company related people via new roads and pipeline pathways) into previously sparsely populated areas. This increase in population can have significant implications for biodiversity and the management of its conservation.

The scope of the desktop assessment may range from one specific area within the site or project boundary, to an area that extends far beyond the boundary of land under the control of the company. It is often important to include areas outside the site or project itself, given the effect secondary impacts may have on biodiversity (see Box 3). However, whatever its scope, a desktop assessment is not a substitute for a baseline survey and impact assessment.

A comprehensive database containing information on the status, environment and management of individual protected areas worldwide can be accessed at http://sea.unep-wcmc.org/wdbpa/index.htm.

Similarly, regions of the world identified as the earth's most biodiverse and threatened ecosystems are described and mapped on www.conservation.org/xp/CIWEB/regions/priorityareas/. Further examples of sensitive sites can be found in '*The Oil and Gas Industry: Operating in Sensitive Environments - Revised and Updated*', available at www.ipieca.org.

3.2.2 Baseline survey of biodiversity

A baseline biodiversity survey has two objectives, first to identify or confirm species, habitats, and ecosystems that are wholly or partly within the site or project boundaries, along with their related functions and services, and second to identify statutory designations and priority species, habitats and ecosystems. Meeting these objectives establishes the baseline for future monitoring of impacts and of the performance of the BAP.

The survey methods used will depend on the characteristics of the project and site. For existing sites, previous work may be sufficient or may need to be updated or supplemented, while for planned sites or projects, the baseline survey may be effectively integrated with the ESIA process or combined with other surveys, for example during preliminary geological and resource surveys, or as part of the scoping of impact assessments. Further advice on how to integrate biodiversity

surveys into pre-existing survey work can be found in the EBI document "Integrating biodiversity into environmental and social impact assessment processes" (available at www.theEBI.org).

In reviewing existing data or undertaking fieldwork it is important to consider the natural variability and uncertainty in measuring biodiversity: a baseline survey is a 'snap-shot' and multiple 'snap shots' will be necessary, e.g. covering different seasons, to get a more accurate picture of an area's biodiversity. In virtually every case, it must be borne in mind that ecosystems are not subject to simple quantitative analysis, and that all quantitative measures will reflect at least some influences that have not been characterised. Comparison of metrics alone cannot be used to discern positive or negative effects on ecosystem health.

Stages in the baseline survey typically include:

- Consulting and engaging with stakeholders to tap into local, regional, national and international knowledge and build support for subsequent stages in the BAP process.
- Identifying potential partners to assist with the baseline survey process and analyse the resulting data.
- Determining where gaps exist in existing data (if there are none, additional fieldwork may not be required).
- Engaging appropriate (and where possible, local) experts to guide and/or undertake field studies (see Appendix 2 (Part A) for a list of potential contacts and partners).
- Identifying priority species, species density, key habitats and ecosystems, those identified during the preliminary desktop assessment and those with statutory protection.
- Identifying ecosystem functions, key ecological processes and ecosystem sensitivities (these aspects are more useful than general species counts).
- Identifying existing impacts on biodiversity, including those that derive from socio-economic pressures, to establish factors that could or already have contributed to degradation of biodiversity.

The baseline biodiversity survey should identify significant biodiversity issues and provide the focus of the subsequent biodiversity impact assessment.

Data resulting from the survey and analysis of existing information and/or field studies should be reported to stakeholders as a means of soliciting feedback and additional input. In some cases feedback may identify additional gaps that indicate a need for additional focused field studies, and therefore the survey stage should be considered an iterative process, particularly where seasonal changes in habitats and species need to be addressed.

A more detailed assessment of baseline biodiversity surveys is given in the EBI document '*Integrating Biodiversity into Environmental and Social Impacts Assessment Processes*', available at www.theEBI.org.

3.2.3 Biodiversity impact assessment

The process of assessing impacts should systematically consider the various activities and aspects of the site or project to determine the likely effects of those activities on the biodiversity baseline. An accurate assessment also requires consideration and integration of the socio-economic issues that arise from, or give rise to, secondary impacts. The significance of secondary (indirect) impacts (see Box 2) is explored in detail in '*Negative Secondary Impacts from Oil and Gas Development*' (available at www.theEBI.org).

The following steps may be necessary during the assessment:

- Determination of predicted, pre-existing, or observed impacts, with an equal focus on direct (primary) and indirect (secondary) impacts, including socio-economic aspects and cumulative impacts.
- Determination of which – if any – impacts are significant via consultation with experts and potentially affected stakeholders (see Box 2). Understanding the local role and value of biodiversity is particularly important as the perspective of local people may be quite different from that derived from considering international biodiversity priorities and values. The process of determining significance should include consideration of the capacity of any particular ecosystem, habitat or species to recover from disturbance.
- Definition of appropriate objectives or indicators against which criteria for definition of impact significance can be set.
- Prioritisation of significant impacts, e.g. according to whether they are higher', 'medium' or 'lower' significance, preferably in consultation with experts and potentially affected stakeholders (see Box 2).
- Development of criteria for determining whether any observed impacts result from subject activities and operations, or from some other influences or factors.

- Evaluation of "significant" impacts and whether they are such that biodiversity conservation measures are necessary, i.e. a BAP is required.
- Consideration of multiple alternatives for sites or projects, which are still at the planning stage.

Further information on biodiversity aspects of ESIAs is given in the EBI document 'Integrating Biodiversity into Environmental and Social Impacts Assessment Processes', available at www.theEBI.org.

The EBI document "Biodiversity Indicators for Monitoring Impacts and Conservation Actions" available at www.theEBI.org/pdfs/indicators.pdf contains useful guidance on the definition of appropriate indicators.

3.3 Business benefits and the business case for a BAP

A business case will clearly establish why preparing and implementing a BAP is mandatory or necessary, e.g. responding, to legal or permitting requirements (see Section 3.1), improving stakeholder relations and perceptions or avoiding costly mitigation actions later in the operation's life by incorporating effective constraints into the initial design process. It will also establish what benefits a BAP will bring to the company and to biodiversity conservation, and the likely consequences of not pursuing this approach. However, it is often difficult to place a monetary value on the benefits of a BAP, particularly where there is no regulatory requirement or biodiversity impact, or where companies need to respond to more diffuse pressures and drivers, e.g. public opinion, interaction with environmental NGOs, investor concerns regarding financial exposure, societal requirements and material risks. Valuation is made more difficult as at present ecosystem services are not properly costed in economic systems – this is likely to change in the future as biodiversity costs are increasingly internalised in new developments, resulting in a stronger and clearer business case for BAPs.

Despite these problems, in responding to these pressures and drivers there may often be tangible benefits from taking a systematic approach to biodiversity and choosing to develop and implement a BAP. Documentation of business benefits (even if difficult or impossible to quantify in monetary terms) will facilitate staff support and commitment that will underpin subsequent development and implementation of the BAP. Equally, such documentation, if made available to investors, demonstrates socially-responsible business decision-making.

Regarding the business benefits of voluntarily preparing and implementing a BAP, it should be noted that a company might see a value in developing a BAP with the sole objective of making a positive contribution to biodiversity conservation. For example, a company may want to voluntarily improve habitat quality on lands under its operational control, but which are not being used for or affected by operations. Or it may wish to work with local landowners to enhance habitat quality on lands adjoining lands under the company's operational control. In such cases, the decision whether to undertake a BAP is made solely on the basis of perceived business value.

The business case for biodiversity is explored in greater detail in:

- The EBI document '*Integrating Biodiversity Conservation into Oil & Gas Development*' (Available at www.theEBI.org).
- Earthwatch's '*Is Biodiversity a Material Risk for Companies?*' (Available at www.earthwatch.org/europe/corporate/environmentalprogramme.html#biodiv).
- The World Resources Institute report '*Changing Oil: Emerging Environmental Risks and Shareholder Value in the Oil and Gas Industry*' (Available at pubs.wri.org/pubs_description.cfm?PubID=3719).

More information on the assessment of business benefits can be found in:

- '*Opportunities for Benefiting Biodiversity Contribution*' (Available at www.theEBI.org).
- '*Business and Biodiversity: Handbook for Corporate Action*' (Available at www.businessandbiodiversity.org/publications.html).
- '*Mainstreaming Biodiversity into Business*' (Available at www.iied.org/docs/mdg/MDG2-ch7.pdf).

4. Preparing and Implementing a BAP

The process for preparing a BAP set out in the following sections recognises that each site or project represents a unique situation with its own set of biodiversity and conservation-related issues and that corporate cultures and management methods may vary widely from one company to the next. Therefore the process describes the *general* steps to be followed in preparing and implementing a BAP. This gives users the flexibility to reach goals and targets in a way that is appropriate to their specific situations. As explained in Chapter 5, the development of partnerships with external organisations and experts is an important step in ensuring that the use of this guidance is optimised and that the process of preparing and implementing the BAP is appropriately informed by the local and national contexts and aligned with wider aims and objectives.

4.1 Prerequisites

Having decided that a BAP is mandatory, necessary or recommended (see Figure 1), a number of prerequisites should be in place before the process of preparing and implementing the BAP begins:

- *Stakeholder engagement and consultation:* see Chapter 5. Stakeholder engagement and consultation need to continue throughout the BAP process as described in Sections 4.2-4.5.
- *Partnerships:* see Chapter 5. Partnerships can increase the effectiveness and efficiency of the BAP.
- *Plan for integrating the BAP into the site or project EIA, EMP, and/or related processes:* although it is important to ensure biodiversity issues are dealt with in a transparent and visible fashion, from a management perspective, the BAP may be treated as a stand-alone issue or activity or an integrated one. The company will make this management decision as appropriate for each case (see Section 2.2). Having been through the process of identifying potential biodiversity impacts (see Section 3.2), the subsequent process will then be designed for integration or, if separate, compatibility with the related site or project processes. BAP activities can be integrated into existing activities and processes where this is appropriate, or carried out on parallel timing.
- *Plan for managing company resources:* it is easy to underestimate financial, time and human resource requirements, particularly at the outset of preparing a BAP. To be successful, a BAP should be realistic in its aims and objectives and consider biodiversity priorities, resource/staff availability, and timing issues. The likely costs and resource needs should be identified at an early stage, making note of where resources are available (within the company and amongst the BAP partners). Both the integration of BAP activities into other related environmental efforts and leveraging through effective partnering could be used to manage resources, while setting and reviewing priorities with stakeholders ensures realistic expectations.

If not already undertaken as part of the decision-making process the following activities should be completed prior to the preparation of the BAP:

- *Determination of the legal, regulatory, planning, permitting and third party requirements* (and their influence on the nature and scope of a BAP): see Section 3.1.
- *A preliminary desktop assessment of the site or project context:* see Section 3.2.1.
- *A baseline survey of biodiversity:* see Section 3.2.2.
- *Biodiversity impact assessment:* see Section 3.2.3.

Once the necessary prerequisites are in place the process of preparing and implementing the BAP can begin, using the following key steps:

- Preparation of the BAP:
  - Establishment of priorities for conservation.
  - Identification of conservation actions, to be undertaken based on priority.
- Implementation of the BAP.
- Monitoring, evaluation and improvement.
- Reporting, communication and verification of BAP performance.

These steps are addressed in the following sections, each of which reviews the *necessary actions* (without which successful completion of the step is unlikely) and – where appropriate – *further actions* (which can be used to improve some aspect of the BAP beyond the minimum standard required), *potential problems* and *potential opportunities* that may arise during preparation and implementation. Where relevant, *supplementary information* is also presented to help users expand their understanding of the process step and point them towards sources of additional information.

Examples of the variations in these steps that may arise at different stages of the operations life cycles (from concession acquisition to decommissioning) are given in Appendix 3.

4.2 Preparation of the BAP

4.2.1 Establishment of priorities for conservation

Objective
Identify species, habitats and ecosystems (occurrence and services) that need special management, taking into account international, national and local priorities within existing national and local biodiversity action plans and related priorities. Also the BAP should consider secondary impacts on biodiversity and ecosystem functions outside the fence line, including socio-economic aspects.

Necessary Actions
1. Building on earlier work in the decision-making process (see Section 3.1), establish legal requirements and associated priorities, using local or national experts, e.g. academia and research centres, as appropriate.
2. Determine the relevance of priorities as identified in international agreements and conventions (including those not yet ratified or enacted in national legislation), NBSAPs, other biodiversity action plans and conservation initiatives to the specific biodiversity context of the site or project, as established by the biodiversity baseline survey and biodiversity impact assessment.
3. Incorporate information and priorities from stakeholder groups and partners.
4. Engage with stakeholders on the integrated set of priorities and modify and amend the priorities as appropriate.

Potential Problems
1. If there are multiple significant biodiversity risks at one or more sites owned by the company, they may need to be ranked to help prioritise biodiversity action planning and management between sites. A phased approach to implementing project and site BAPs also helps to spread and manage resource requirements across sites with identified risks. Available resources within the company and across its partners may influence the timing of certain elements of the BAP.
2. As noted in Section 2.1, NBSAPs will sometimes not be sufficiently detailed or of enough quality to allow relevant priorities to be identified with the necessary degree of confidence. In these cases, expertise from (inter-)national NGOs, scientists and other stakeholders should be sought.

Supplementary Information
1. There is a great deal of academic literature available on biodiversity priority setting. However, a more general example – *Priority Setting for Biodiversity Conservation* – can be found at http://science.hq.nasa.gov/earth-sun/science/biodiversity/paper2.html.
2. Information on current NBSAPs (including priorities) can be found at http://www.biodiv.org/world/reports.aspx?type=nbsap.

4.2.2 Identification of conservation actions

Objectives
Identify the objectives of the BAP, set out the prioritised actions to achieve these objectives, and set targets against which progress can be monitored.

Necessary Actions
1. Specify aims and objectives, taking into account legal obligations, other biodiversity action plans, and other values for the site including its landscape, value and amenity use, security and access considerations, and available resources. Stakeholder consultation and partnerships are beneficial to this process.
2. Identify required actions and timings.
3. Set targets and deadlines
4. Identify appropriate indicators (for both biodiversity conservation *and* BAP implementation – see Section 4.3).
5. Allocate resources and responsibilities.

Potential Opportunities
1. For some types of operation, e.g. legacy operations, significant actions for biodiversity conservation may already be in place. Where plans and studies already exist, these may need to be improved based on experience to date to enhance biodiversity conservation and performance.

Potential Problems

1. There is value in identifying quantitative targets, but it is often difficult to define these using a consistent and universally acceptable methodology, and a dependence on quantitative targets and indicators may generate misleading results. Working with stakeholders and partners is an essential step in overcoming this problem.
2. Indicators are required to regularly assess the progress made towards achieving BAP goals. If an action is not working, it can then be re-assessed to determine why and if necessary, the action plan can be amended to take a different approach to the problem. However, indicators developed need to be specific to the situation – the use of 'off-the-shelf' non-site-specific indicators often leads to ignoring or misjudging important site-specific factors with subsequent unwanted impacts on biodiversity and corporate reputation. Equally, indicators must be chosen to measure activity-related impacts (as distinct from natural variation or impacts from other causes).

Supplementary Information

1. Documentation that compiles existing information on required actions, studies, plans, etc and their timing, can improve the efficiency of BAP implementation.
2. Goals, and deadlines: one of the crucial aspects of the BAP process is that it sets goals and deadlines where appropriate. Development and documentation of realistic goals and deadlines will take into consideration the ecological priorities, the resources and staff available, and the timing of related management activities, thereby increasing the likelihood of cost-effective success.
3. Identifying appropriate indicators: companies need to establish systems for tracking the effectiveness of BAPs and their implementation actions, whether targets are being met, and whether the overall biodiversity objectives are being achieved. Performance should be assessed both in relation to the process, by monitoring and evaluating management activities and actions against targets, and in relation to biodiversity objectives, by monitoring outcomes of specific species, habitat, and ecosystem-related activities using feasible, measurable, and representative biodiversity indicators. Further information on setting targets and identifying indicators can be found in the (EBI) document '*Biodiversity Indicators for Monitoring Impacts and Conservation Actions*', available at www.theEBI.org.
4. Allocation of roles and responsibilities: the project BAP will include activities that can be carried out by employees as well as external organisations. For example, staff already working in landscaping may have biodiversity-related objectives written into their job targets.

4.3 Implementation of the BAP

Objectives

Once the planning process is complete, the next step is to develop and implement a management schedule for the implementation process to ensure that the BAP is conducted in accordance with the steps necessary to meet defined objectives and address priorities.

Necessary Actions

1. In collaboration with stakeholders, identify the role of lead organisations, partners, landowners and others in delivering the actions. Each BAP should identify a lead organisation that is responsible for the delivery of individual actions, with partners as appropriate.
2. Undertake the appropriate level of integration of the site BAP into existing company processes.
3. Prevent, minimise, or (as a last choice) offset impacts as appropriate.
4. Consider opportunities for biodiversity conservation enhancement beyond simply addressing predicted or existing impacts.

Further Actions

1. Assess how the BAP can be aligned with the process of continuous improvement set out in the site or project management systems.

Potential Opportunities

1. In addition to addressing project- and/or site-related biodiversity conservation, a company may choose to support biodiversity-related initiatives or organisations at or near a project site, or elsewhere in the country or region of operation (see Box 4). Such support not only makes a contribution toward conservation but can also allow a company to gain access to new networks and information, raise its profile and assist in building good relations with stakeholders. In such situations, the BAP can be helpful to guide the support and implementation of such initiatives and communicate the progress of such activities to stakeholders.

2. The implementation phase may identify additional opportunities to link environmental and social issues and address the socio-economic aspects of biodiversity conservation. This is especially the case for secondary impacts management.
3. Consider the potential for involvement in Integrated Conservation and Development Projects (see for example *Integrating Conservation and Development Experience: a Review and Bibliography of the ICDP Literature* – information at www.iied.org/blg/pubs/biolivlihood.html#9080IIED.

Potential Problems

1. As the plan is executed, problems, issues, and changes will be encountered. Keeping the BAP practical and effective may involve reiteration of previous development and implementation steps.
2. If stakeholders have not been adequately involved throughout the BAP development process, BAP implementation may encounter significant stakeholder opposition, possibly requiring time and resource-consuming rework (especially in the implementation of plans for addressing secondary impacts).

Box 4: Supporting external initiatives

Companies may provide support to biodiversity–related initiatives and organisations as a way to promote biodiversity conservation in the areas in which they work. Besides financial assistance, there are many other ways for companies to help conservation work, including:

- Supplying resources such as office facilities, access to sites, vehicles or tools.
- Building capacity of the conservation organisations through training, for instance in financial or project management.
- Supporting employee programmes.
- Participating in activities in work programmes of biodiversity organisations.
- Contributing to local biodiversity action plans by sponsoring a particular species or habitat action plan, or supporting a local biodiversity partnership.
- Supporting specific projects or activities, such as research into conservation issues.
- Skill sharing, e.g. Shell/IUCN or BP/WBCSD.

Supplementary Information

1. Compatibility with existing company systems and processes: the BAP should be compatible and consistent with the company's existing environment-related management systems and processes. This is readily achieved in cases where the BAP is fully integrated into existing processes. In other cases, care should be taken to ensure that the elements of the BAP and its overall results are in practice consistent with the approach the company uses to manage the environmental aspects of its activities in general.
2. Phased plan for impact prevention and mitigation: a phased approach will address the highest priority species or habitats first and act on additional ones in subsequent phases. Mitigation actions can also be phased to correspond with mitigation needs of existing, near-term, and future operations, where some actions may already underway, e.g. implementation of an impact mitigation plan stemming from a prior ESIA.

4.4 Monitoring, evaluation and improvement

Objectives

Assess biodiversity status, track implementation of the BAP and make adjustments to reflect changes to biodiversity as resulting from company activities. This process of verification and improvement is aligned with concepts of ISO 14001 and many Company Environmental Management Systems (EMS).

Necessary Actions

Monitoring

1. Identify organisation(s) with responsibility for managing monitoring activities and reporting on the progress being made on individual actions.
2. Track BAP implementation (monitoring of how the BAP is being implemented).
3. Undertake biodiversity monitoring in comparison with the baseline, to assess the biodiversity situation and BAP action and project outcomes. The monitoring programme should be implemented according to the specific site or project requirements. Monitoring does not need to be a complex process: some companies use a simple database or spreadsheet to record and monitor quantitative information.

Evaluation

1. Regularly review BAP indicators and performance against objectives, targets and stakeholder expectations to measure how well the BAP has been implemented, and how successful it has been.
2. Maintain communications with stakeholders and partners to align performance versus expectations.
3. Assess alignment with local and national biodiversity action plans.

4. Periodically review objectives and targets. If objectives are not met, identify causes and take appropriate steps to modify objectives or improve the action plan..

Improvement

1. Identify discrepancies between goals and performance and modify actions or implement new approaches to close gaps, as appropriate.

Further Actions

1. Monitoring methodologies have been developed in many countries in alignment with national and, in the case of Europe, EU priorities, and can serve as a starting point for site or project-specific monitoring methods. Additional information on monitoring options are publicly available, such as through the potential partners listed in Appendix 2 (Part A). Engagement with relevant government agencies will also be useful.
2. Periodically revisit areas under monitoring as these areas may change with time, and undertake additional surveys where necessary.

Potential Opportunities

1. Some companies have enlisted enthusiastic staff in the monitoring process, developing simple recording sheets for species. New data should be checked with experts for validation and recorded in the BAP and local and national biodiversity recording systems where they are available.

Potential Problems

1. The monitoring of some ecosystem functions and processes underlying biological diversity often require long-term dedicated programmes as changes in these functions and processes are generally difficult to quantify and take a long time to become observable, for example nutrient cycling between ecosystem compartments.

As part of its efforts to catalyse conservation, BP Indonesia has implemented a staff biodiversity education, awareness and volunteer programme (see CASE STUDY 4)

2. Numerical targets for species may be misleading. In some cases behavioural targets are more useful, but a cautious approach to the choice of target is still necessary, e.g. one potential behavioural indicator is courtship behaviour – but courtship behaviour does not equate with reproductive success, so it is in fact not a good indicator of a healthy population in all contexts. A combination of indicators is sometimes required to give the necessary level of confidence in the data.
3. Ongoing monitoring information must periodically be incorporated into the 'baseline' assessment in order to re-evaluate the basis of the BAP and so that understanding of biodiversity status and conservation actions can be adjusted as necessary. Priorities and objectives in national and other biodiversity action plans may change and it is important to ensure that the BAP remains aligned with these.
4. Companies should be aware of the drawbacks of monitoring as an exercise in itself, without clearly defined targets and outcomes. An extensive monitoring programme that fails to track significant indicators of biodiversity status or value linked directly or indirectly to project activities will neither be cost-effective nor useful.

Supplementary Information

1. A monitoring programme is a key element in the successful implementation of a BAP and can be used to assess biodiversity impacts and the effectiveness of the BAP in achieving its intended outcomes, and inform any subsequent required changes to the BAP process. This ensures efficient management of the programme and provides a means to communicate initiatives and achievements. Appropriate monitoring draws attention to issues as they arise, and identifies new species, impacts or issues that were not present at the time of the initial baseline survey, and identifies whether such changes are related to the project.
2. Numbers of a species will fluctuate but specifying 'minimum criteria' (numbers or behaviour) for a given species at a particular time will help to signal when action or further review may be needed. Monitoring should employ an adaptive management approach, where objectives are set, actions are taken, monitoring and evaluation of the affected ecosystem and human responses are assessed, results are compared against expectations, and future actions are adjusted, with each iteration of activity based on past experience. Targets themselves will need periodic review as conditions change and it is important that the outcomes of monitoring exercises are shared with stakeholders and experts able to assist in interpreting and analysing data.

4.5 Reporting, communicating and verification

Objectives

Report, communicate and verify the progress and outcomes of the BAP internally and to relevant or interested parties externally. While reporting sometimes has a formal regulatory or official nature, for example through government or independent certification schemes, communication may be a more informal way to share progress. Both reporting and communication can help to build support among both internal and external stakeholders and increase the probability of success for current and future biodiversity-related activities.

Necessary Actions

Reporting

1. Identify who to report to and how to report, based on statutory or legal requirements and stakeholder consultation and engagement activities.
2. Consider reporting through a certified programme if applicable, e.g. ISO 14001.
3. Assess opportunities to use widely acknowledged reporting frameworks such as the Global Reporting Initiative (GRI), if applicable.
4. Where (2) and (3) are not appropriate, develop an alternative, independent reporting mechanism, such as a website on biodiversity activities or data.
5. Consider the development of mechanisms to report data internally, making data available for reference and decision-making to practitioners, management, and other concerned staff.
6. Consider co-operating with post-secondary educational institutions to allow/assist research and have papers published as a means of reporting and contributing to the scientific knowledge base.
7. Use annual reports and sustainability reports to communicate progress.

Communicating

1. Develop a communications strategy.
2. Distribute information internally and externally, e.g. community newsletters.
3. Engage with the media where applicable for larger scale initiatives.

Verification

1. Institute internal verification procedures as consistent with existing business and environmental management processes.
2. Engage appropriate external parties, at company discretion, to audit and verify performance and associated BAP documentation.

Further Actions

1. Some target groups, e.g. indigenous people) might require oral or other adapted forms of reporting.

Potential Opportunities

1. Reporting openly to stakeholders can improve a company's reputation and drive better performance through feedback and reviews. Keeping the participants and stakeholders of a BAP informed also helps to gain continued support from within as well as outside the company. Stakeholders, such as local and national non-government organisations or investors, can also provide useful guidance on the scope, form, and frequency of reporting and communication.

Potential Problems

1. Ensure reporting follows plan and actions – beware of public relations communications that are ahead of internal policies, plans, and actions.

Supplementary Information

1. Companies and their partners should seek opportunities to integrate information on BAP work across project, local, national and international levels and across different organisations. Where they exist or evolve, BAP reporting formats that are common to the relevant national and international action plans may be beneficially used. Communication on biodiversity actions should begin with internal staff, potentially using staff briefings and presentations, leaflets, articles in existing staff publications, company-wide e-mails, intranet systems or notice boards. Communication to external stakeholders might use press releases, meetings of local stakeholders, a dedicated leaflet or brochure, existing media such as environmental reports or the company website.

5. Stakeholder engagement and partnerships for biodiversity

Diverse individuals and groups may have diverse and sometimes conflicting ideas about which species, habitats or ecosystems are the most 'important' and therefore most worthy of conservation. For local communities the conservation target may be a small area used primarily for recreational purposes; for indigenous people it may be a site that is host to plants and animals of particular cultural significance, while a pharmaceutical company might have an interest in a specific plant species and habitat from which it is harvesting raw materials. Companies can negotiate conflicting opinions and perspectives of different individuals and groups and still develop a manageable plan of action through engaging in two key activities that are useful in informing and supporting the company's biodiversity-related actions (including Biodiversity Action Plans) – stakeholder engagement and consultation, and the development of partnerships. These facilitate a consensus approach and give a broad basis for decisions and actions, ensuring that the company's efforts are in line with the wider biodiversity aims and objectives in an area and address both utilitarian and ethical perspectives.

Restoration efforts at ChevronTexaco's Cincinnati Facility are designed to change a century old industrial site into a green space including grasslands and wetlands for the benefit of the local community and wildlife. This is being accomplished through a multi-use site plan, developed in 1997 with input from community stakeholders, which aims to return commercial, recreational and environmental value to the site, reflecting the different needs of different stakeholders (see CASE STUDY 2).

5.1 Stakeholder engagement and consultation

Ensuring the long-term success of biodiversity-related actions requires a company to understand more than just the biological and ecological features of the project or site area or host country. It is equally important to understand the interactions and characteristics of the human and institutional environment in the area – typically represented by the stakeholders in a site or project. Stakeholder engagement can help a company build trust, manage expectations, promote a partnership approach (see below) and allow companies to enjoy a better working environment, avoid conflict, foresee and prevent potential problems and improve their global business reputations. It should also be recognised that government requirements and legal agreements may narrowly define what parties may be treated as valid stakeholders and limit a company's ability to integrate stakeholder views into decision-making.

Potential stakeholders include:

- Local and national government conservation department that may have technical skills and regulatory experience needed to inform biodiversity actions by the company.
- Local communities and indigenous people.
- Local NGOs and conservation groups.
- International NGOs.
- Statutory bodies.
- Land management and use groups.
- Civil society. [Note: people use this term all the time, but it needs to be clarified who represents 'civil society' outside the local community, which is already listed. This 'stakeholder' group presents many pitfalls]
- Other companies within and outside the oil and gas industry.

Engaging with local communities, indigenous people and local NGOs requires responsiveness and creativity. In the case of conflicting issues and priorities among stakeholders, experts can be used to act as mediators and facilitate discussions. Pro-active measures are needed to overcome particular cultural, social or economic barriers to effective engagement.

Further information on stakeholder engagement can be found in:

- The EBI document '*Integrating Biodiversity Conservation into Oil & Gas Development*', available at www.theEBI.org.
- Documents from the Participation and Civic Engagement Group of the World Bank, available at www.worldbank.org/participation.
- International Finance Corporation Guidance for Preparation of a Public Consultation and Disclosure Plan, available at www.ifc.org/enviro/EnvSoc/ESRP/Guidance/GuidanceF/guidancef.htm.

- *"Doing Better Business through Effective Public Consultation and Disclosure: A Good Practice Manual."* IFC 1998.
- *Integrating Indigenous Knowledge in Project Planning and Implementation*. Emery, A.R. 2000, International Labour Organisation, the World Bank, CIDA and KIVU Nature Inc.

5.2 Development of partnerships

Potential partners will typically have goals that are shared or aligned with company goals (at least for a specific site or project), have value to add (scientific knowledge, cultural expertise, local relevant experience), and are open to working with business. Potential partners may be drawn from local government, government departments and agencies, local conservation groups, national and international environmental/conservation NGOs, scientific bodies, statutory bodies, land management and use groups, civil society and other companies within and outside the oil and gas industry – in others words, the stakeholders that have an interest in oil and gas development and biodiversity conservation. A central feature of the BAP process is the involvement of stakeholders as partners throughout the process, from preparation to implementation.

In preparing its BAP for the Gulf of Paria, ConocoPhillips undertook consultation at each step; helping it to guide the process and generating opportunities to leverage expertise and resources through partnerships and other forms of collaboration (see CASE STUDY 5)

Each type of organisation has its strengths and weaknesses and it is important to assess the needs of the company when selecting partner organisations. Responsibilities should be agreed with partners in order to manage expectations and avoid misunderstandings and tensions. Examples of potential partners are given in Appendix 2 (Part A). It is important to recognise that in some settings, a company's capacity to develop partnerships with external bodies may be prevented or constrained by political, legal and cultural factors. These must be considered in the specific context within which the BAP is to be prepared and implemented.

A better BAP may result when a company works outside of its 'comfort zone' and draws in different perspectives and considers a range of cultural viewpoints (via different partners) that are relevant to the project context. Partners can be useful also as they can review, monitor and contextualise the shape of the BAP in partnership with the company, improving continuity of stakeholder interaction throughout the process and allowing an effective working relationship built on trust to develop.

Company Case Studies

Summary

1. Turning Concepts into Action – Shell

Type of operation	Refinery
Industrial life cycle stage	Operational
Region	Europe
Biodiversity context	Adapted to industrial activities

The Stanlow Manufacturing Complex, situated south of the Mersey estuary near Ellesmere Port in the UK covers an area of 546 hectares (1,350 acres) and is in close proximity to a range of protected areas, including Ramsar and Natura 2000 sites and other regionally or locally sites. Stanlow's Biodiversity Action Plan aims to both manage and increase the number of conservation areas around the site, and also contribute to the protection of biodiversity in the surrounding area through partnerships and provision of funding for external initiatives With the creation of new habitats and careful monitoring and protection of old habitats, the site is now rich in flora and fauna, with hundreds of different plants and at least 24 species of butterflies and 91 different types of birds in 11 individual habitats – a substantial improvement on the biodiversity status prior to development and implementation of the action plan.

2. Wildlife Management at Former Refinery Site – Chevron

Type of operation	Refinery
Industrial life cycle stage	Post-Closure
Region	North America
Biodiversity context	Disturbed, polluted area

This case study focuses on the wildlife management aspects of the redevelopment of a former refinery site under a multi-use plan. The proposed plan developed by Chevron with input from the local community advisory panel is converting a century old industrial site into wildlife habitat, recreational areas and light industry. The site is situated along the banks of the Great Miami River in southwest Ohio. While the site redevelopment is still a work in progress, current wildlife management efforts have better than doubled biodiversity and earned a nomination for the Wildlife Habitat Council (WHC) 2004 Corporate Habitat of the Year Award.

3. Reducing the Footprint of Seismic Exploration Activities in Ecuador – EnCana

Type of operation	Onshore Oil
Industrial life cycle stage	Exploration
Region	South America
Biodiversity context	National Park, mature rainforest

Although the action plan in this case study is not described as a Biodiversity Action Plan by EnCana, it has many similar characteristics and is a useful example of how BAPs can take varied – and less obvious – forms, with a sometimes limited scope and duration. Multiple seismic exploration programs have been conducted in the Ecuadorian Amazon without reusing previously cleared areas for heliports, resulting in unnecessary cumulative deforestation impacts. Walsh Ecuador S.A. and EnCanEcuador S.A. have developed a remote sensing technique to accurately identify historic heliports in mature tropical rainforest for reuse in a subsequent seismic exploration program, eliminating avoidable impacts.

4. The BP Indonesia Biodiversity Action Plan – BP

Type of operation	Liquid Natural Gas
Industrial life cycle stage	All
Region	Southeast Asia
Biodiversity context	Undisturbed, undeveloped area

The BP Indonesia Biodiversity Action Plan, developed with conservation partners, illustrates an integrated and targeted program that addresses biodiversity issues in a proactive manner, building local capacity and protecting sensitive envi-ronments. The IBAP includes activities across Indonesia, with a focus on biodiversity issues in the Berau Bintuni Bay re-gion of West Irian Jaya Province (which is host to Southeast Asia's most extensive intact old growth mangrove area), specifically those arising from the development and generation of the Tangguh Liquid Natural Gas project including the development, completion and adoption of the Bintuni Mangrove Nature Reserve Management Plan. The IBAP program results and the trust and relationships developed will serve as a foundation for the next generation of Tangguh's envi-ronmental and conservation leadership development in Papua Indonesia to begin in 2006.

5. Putting the Gulf of Paria's Biodiversity on the Map – ConocoPhillips

Type of operation	Offshore Oil
Industrial life cycle stage	Exploration to operational
Region	South America
Biodiversity context	Largely undeveloped & pristine

ConocoPhillips Venezuela and its partners discovered offshore oil resources in the Gulf of Paria, north-eastern Venezuela in 1999. Initially little was known about biodiversity in this region and ConocoPhillips has been leading a collaborative process of baseline characterisation, raising awareness, promoting consensus and evaluating priorities. By 2005, with the participation of national and international organisations, several studies specific to the Gulf of Paria – including an initial Biodiversity Action Plan – have been completed and disseminated in Venezuela and internationally. Consultation was conducted at each step, helping to guide the process and presenting opportunities to leverage expertise and resources through partnerships and other forms of collaboration.

1. Turning Concepts into Action at Stanlow – Shell

Stanlow's Biodiversity Action Plan (BAP) aims to both manage and increase the number of conservation areas around the site, and also contribute to the protection of biodiversity in the surrounding area. A number of important protected areas lie within a 15 mile radius of the site, mainly within the Mersey estuary. These include Ramsar and Natura 2000 sites, Sites of Special Scientific Interest and local Sites of Biological Interest and Sites of Nature Conservation Value.

The BAP is guided by the Shell Group Biodiversity Standards, in particular the following themes:

- Conducting environmental assessments, which include the potential impacts on biodiversity, prior to all new activities and significant modifications of existing ones.
- Respecting the basic concept of protected areas.
- Seeking partnerships to enable the Group to make a positive contribution towards the conservation of global biodiversity and working with others to maintain ecosystems.

Preparation and implementation of the BAP on the Stanlow site is undertaken in partnership with the local Cheshire Wildlife Trust Ranger, who monitors and reports on the status of wildlife and habitats around the site and assists with ecological aspects of environmental impact assessments. Activities beyond the site boundary involve the provision of both logistical and financial support for external initiatives. Examples of on- and off-site activities within the BAP include:

The Stanlow Manufacturing Complex, situated south of the Mersey estuary near Ellesmere Port in the UK, dates back to 1924. Since this time, it has grown to cover an area of 546 hectares (1,350 acres), adding a number of units designed to extract maximum value from crude oil. The refinery is integrated with the adjoining Shell Chemicals plants and has an annual refining capacity of 12 million tonnes. The refinery's crude oil arrives by ship to Tranmere Oil Terminal on the south bank of the Mersey, and then pumped through a pipeline to storage tanks at Stanlow, 15 miles away. About 40% of products leave by pipeline, 30% by road and 30% by water.

- Creation of Stanlow Pond for use by local schools as a teaching resource on wetland biodiversity. Situated in a remote corner of the Stanlow site, the pond offers an opportunity to show children how wildlife can flourish in close proximity to busy industry. Local schoolchildren also assist in maintenance of the pond.
- Support for the Delamere Forest Classroom – Stanlow sponsors the Shell Forest Classroom in Delamere Forest as well as the Forestry Commission's 'What's On' brochure highlighting events taking place throughout the year. The Shell Forest Classroom is used by over 10,000 school children from the North West of England each year.
- Participation as a partner in the Mersey Basin Campaign, a 25-year Government backed partnership which brings together local authorities, businesses, voluntary organisations and government agencies to deliver water quality improvements and waterside regeneration throughout the Mersey Basin river system.
- Participation as a corporate member of the Cheshire Wildlife Trust. The Trust works in partnership with the County and Local Authorities, other conservation bodies, schools and other educational establishments, naturalists, landowners and the general public to preserve the heritage of Cheshire's plants, animals, and wild places.
- Partnership with Environment Agency and Cheshire Wildlife Trust to create and maintain the Gowy Meadows wetland on land owned by Shell, creating large areas of seasonally wet grassland to attract breeding and wintering waders and wildfowl, as well as water voles and rare plants.
- Work with Shell Global Solutions to experiment with remediation in wetlands areas.

Key steps in the preparation and implementation of the action plan, and their relation to steps in the BAP process noted in this guidance include:

Conduct assessments prior to all new activities and significant modifications of existing activities	Biodiversity impact assessment (Section 3.2.3)
Monitor success of BAP activities using commissioned surveys by Wildlife Trust Ranger	Monitoring, evaluation and improvement (Section 4.4)
Publish regular report on biodiversity status of the Stanlow site	Reporting, communication and verification (Section 4.5)
Develop partnerships with appropriate local and regional organisations	Development of partnerships (Section 5.2)
Develop local education centres (Delamere Forest Classroom and Stanlow Pond) to promote bidiversity studies in the area	Support external initiative (Box 5)

With the creation of new habitats, particularly the pond, and careful monitoring and protection of the old habitats, the site is now rich in flora and fauna, with hundreds of different plants and at least 24 species of butterflies and 91 different types of birds in 11 individual habitats – a substantial improvement on the biodiversity status prior to development and implementation of the BAP.

2. Wildlife Management at a Former Refinery Site – Chevron

The Chevron Cincinnati Facility covering about 630 acres is located in a river bottom and bluff area along the banks of the Great Miami River about 20 miles southwest of Cincinnati. The site habitat includes a riparian zone, freshwater wetlands, prairie grasslands, and upland and bottomland forests. Over the years the site has been used for logging, farming, grazing, gravel mining and industrial purposes. Refinery operations began in 1931 and ended in 1986. Cleanup has been an ongoing process involving the removal of process equipment, cleanup of soil and treatment of ground water.

In southwest Ohio the limiting ecological niches are grasslands and wetlands as many areas were ploughed under and/or drained for farming and to make room for humans over the past century. Restoration efforts at Chevron's Cincinnati Facility are designed to change a century old industrial site into a green space including grasslands and wetlands for the benefit of the local community and wildlife. This is being accomplished through a multi-use site plan, developed in 1997 with input from community stakeholders, which aims to return commercial, recreational and environmental value to the site. For Chevron the primary objective of wildlife management is to "manage habitat not species." Chevron applies the "build it and they will come" approach to wildlife projects. The success of this approach can be seen in the increase in species: up from 50 to 124 for flora and from 40 to 69 for fauna in the period 1996-2004. A monitoring programme supports the wildlife management process. Chevron uses predator/prey relationships as a tool to quickly assess the health of an ecosystem, looking first at the predators at the top of the food chain. If they are present, then the ecosystem is likely to be healthy. If they are missing, the ecosystem may or may not be healthy, and further assessment is required. Predator studies are supplemented by site surveys of flora and fauna and an assessment of whether enough food and shelter (habitat) is available to sustain the wildlife.

There were a number of proposed uses considered in the plan including active and passive recreation, environmental education, wildlife habitat and/or light industry. Chevron has focused on dual purpose activities which create wildlife habitat, promote cleanup, contribute to environmental education and/or further the proposed multi-use site plan – a concept that can be used at any site. Some of the dual-purpose activities undertaken as part of the wildlife management plan are summarised overleaf.

Activity	Wildlife Benefit	Dual Purpose
Surveys of flora and fauna	Monitors habitat changes and growth processes, documents plant growth and wildlife use and identifies future restoration opportunities	Identifies trophy trees for future hiking trails and educates local graduate students in survey techniques
'Landfarming'	Revegetates bare area, restores upper soil horizons and creates new habitat for wildlife	Stabilises soil and controls erosion, safely and economically treats landfarm materials on-site.
Planting	Creates wildlife habitat (trees, shrubs, wildflowers, grasses, wetland plants) and increases species biodiversity	Controls erosion and storm water runoff, reducing river sediment load and improving water quality
Bird boxes	Provides artificial nesting cavities for birds and attracts avian species	Attracts birds that consume insects and provides educational opportunities
Constructed treatment wetland	Creates wetland habitat for upland and wetland species, increases wildlife species biodiversity and creates shelter for aquatic species	Replaces old water treatment system, treating storm water and ground water to allow site to meet water discharge permit limits

Although designed primarily to replace an aging water treatment system, the dual purpose constructed treatment wetland is a key feature in the wildlife management work. Nearly all the site wildlife uses the wetland in some part of their life cycle and the wetland supports a wide variety of plants, including species adapted to wetland conditions, grasses, wildflowers, shrubs and trees, providing ample food and shelter all year round.

Key steps in the preparation and implementation of the action plan, and their relation to steps in the BAP process noted in this guidance include:

Develop multi-purpose plan with stakeholders and enable them to take ownership of the work	Stakeholder engagement and consultation (Section 1.1)
Integrate habitat creation with cleanup actions by using dual purpose approach (landfarming and wetland)	Plan for how company resources will be managed (Section 4.1)
Determine most appropriate target habitats in the local context (grassland and wetlands)	Establishment of priorities for conservation action (Section 4.2)

In 2002 the Cincinnati Facility became certified as a Wildlife Habitat Council (WHC) site and in 2004 was nominated for the WHC Corporate Habitat of the Year Award (further information on the criteria for nominations can be found at www.wildlifehc.org/awards/index.cfm).

3. Reducing the Footprint of Seismic Exploration Activities in Ecuador – EnCana

EnCana, working in a sensitive environment within the boundaries of an Ecuadorian national park, planned to use helicopters during seismic exploration as a means of reducing its impact on biodiversity (see box, right). However, it was aware that past seismic exploration programs in the Ecuadorian Amazon have failed to reuse previously cleared heliport areas, and as a consequence caused unnecessary deforestation and cumulative impacts. EnCana wanted to eliminate avoidable impacts, and an action plan based around the identification and reuse of historic heliport sites was required to promote biodiversity conservation. Although EnCana does not describe this action plan as a Biodiversity

Working in specified and sanctioned areas of previous petroleum exploration activity within Yasuni National Park, EnCana understands that it has special responsibilities to minimise its environmental footprint in these sensitive locations. As the principal impact to rainforest environments from seismic programs is the cutting of primary forest, EnCanEcuador S.A. made a strategic decision to rely primarily on helicopter logistical support, using previously intervened areas at heliports, during the execution of its 2004 seismic program. It was anticipated that this would reduce the impacts of boat, vehicle and foot traffic and facilitate the conservation of biodiversity.

Action Plan, it has many similar characteristics (see below) and is a useful example of how BAPs can take varied – and less obvious – forms, with a sometimes limited scope and duration.

Walsh Ecuador S.A. was assigned the task of identifying natural openings in the forest canopy to reduce the need for cutting mature rainforest for these heliports. Its Geographic Information Systems (GIS) team acquired Landsat satellite imagery for the proposed seismic area and, working closely with field botanists, divided the images into seven categories, namely bare soil, wetlands, mature forest, river vegetation, secondary vegetation, agricultural areas and water. Based on this assessment, three categories were identified as potential locations for historic heliports: bare soil, secondary vegetation and agricultural areas. Initially the GIS team did not identify a sufficient number of locations on bare soil and agricultural areas for the heliports in these images. The distinction between secondary vegetation and mature forest was very subtle and it was necessary to develop a reliable method to distinguish secondary vegetation.

The GIS team began looking at archived satellite images from the1980s and 1990s to determine if historic heliports, which had reforested naturally with pioneer species, could be identified. After careful inspection of the images faint rectangular-shaped areas were identified, ranging in size from 0.1 Ha to 1.8 Ha (0.2 to 4.5 acres). The areas were generally aligned, indicating an association with a seismic line. These rectangular features also appeared on multiple years of images confirming they were not problems in data quality of the Landsat images. The features were progressively more difficult to distinguish on images from later years, a trend that is attributed to progressive re-growth and diversification of the forest canopy. Further higher resolution images of the area were obtained and the features also appeared very clearly on these. The leaf patterns in the candidate historic heliports sites were interpreted by field botanist and determined to be cecropia or balsa canopy, which are typical pioneer (secondary) species in the Ecuadorian Amazon. Environmental experts will trek to the proposed heliport locations to delineate the sites based on botanical criteria.

The historic heliports were presented in the Environmental Management Plan and a commitment was made by EnCana to reutilise these locations, based on the following key findings:

- A total of *324 locations were identified*, approximately three times the necessary heliports needed for the program.
- A helicopter over-flight in May 2004 *confirmed that 95%* of features identified in the satellite images were indeed groves of pioneer species and likely historic heliports, demonstrating the reliability of the GIS study.
- *The seismic contractor's costs will fall* since scouting the area for new heliport locations is not required.
- Clearing of secondary growth is expected to be *quicker* than clearing of mature forest.
- The new heliport size in most cases will be *smaller than the original heliports*.

Key steps in the preparation and implementation of the action plan, and their relation to steps in the BAP process noted in this guidance include:

Establish partnership with Walsh	Development of Partnerships (Section 1.2)
Identify past practices that led to unnecessary biodiversity impacts and formulate potential solutions	Establish priorities for conservation action and identify necessary conservation actions (Section 4.2)
Integrate actions with Environmental Management Plan and implement	Integration with EMP (Section 2.2), Implementation – roll out actions (Section 4.3)
Communicate project details and outcomes to Ecuadorian government and other stakeholders	Reporting, communication and verification of performance and build support with stakeholders & partners (Section 4.5)

This project won the 2004 Energy Institute Environment Award (further information on these awards can be found at http://www.energyinst.org.uk/ipawards/environment.html).

4. The BP Indonesia Biodiversity Action Plan – BP

In Indonesia, one of the world's most biodiverse countries, BP has developed an action plan that is making real, positive and measurable differences to biodiversity conservation at local, regional and national levels – the BP Indonesia Biodiversity Action Plan (IBAP). *The IBAP includes activities across Indonesia, with a focus on biodiversity issues in the Berau Bintuni Bay region of West Irian Jaya Province (which is host to Southeast Asia's most extensive intact old growth mangrove area), specifically those arising from the development and generation of the Tangguh Liquid Natural Gas project including the development, completion and adoption of the Bintuni Mangrove Nature Reserve Management Plan.*

The Tangguh LNG plant is a world-class, highly automated facility. Construction of the plant began in 2004 and production is expected to commence in the last quarter of 2008. The project involves offshore production platforms and undersea gas pipelines in Berau Bintuni Bay, connected to land facilities located on the bay's southern shore. The onshore project site is located between the Saengga and Manggosa rivers within an area of approximately 3,266 hectares (8,070 acres). The LNG plant and operations buildings will occupy approximately 600 hectares (1,483 acres) and the remaining area (approximately 2,400 hectares – 5,931 acres) will be set-aside as limited-use and future use areas (including dedicated conservation and wildlife habitat).

The IBAP:

- Encourages minimal impacts to biodiversity at the Tangguh LNG site through the development of a site-level Flora and Fauna Baseline Survey as part of the ESIA Study and the Tangguh LNG Flora and Fauna Survey that forms the baseline for developing forestry and conservation management plans.
- Integrates biodiversity conservation priorities at the local, regional, and national levels.
- Increases indigenous human capacity-building to ensure long-term positive change.
- Promotes responsible practices for biodiversity conservation and sustainable use of all natural resources.

In short, the IBAP provides the means to describe and document through baseline surveys and assessments the biodiversity in the Berau Bintuni Bay region, the threats that it faces and the actions necessary to address biodiversity loss. Focusing resources on Tangguh and capacity and conservation leadership development across Indonesia enables BP to use the project to catalyse improved conservation efforts locally, regionally and nationally, leading to:

- Development in 2002 of a *conservation training and resource centre*, building practical and applied conservation management capacity in Papua and across Indonesia.
- Completion in 2003 of a *land use planning atlas*, as part of a significant national series, for the Berau Bintuni Bay region.
- A targeted *biodiversity baseline study* with wise use recommendations for the Tangguh LNG site.
- Creation and adoption in 2005 of a *strategic management plan* for the Bintuni Teluk Mangrove Reserve.
- Completion of a business and biodiversity case study for the Tangguh LNG Plant as part of the *Energy and Biodiversity Initiative focusing on field testing the metrics tools and sharing lessons learned in 2005.*
- Completion in January 2005 of the *Bintuni Bay Fisheries Health Assessment*, led by the University of Manokwari and World Wide Fund for Nature and feeding into the ongoing development of a bay-wide management plan. This assessment and the recommendations are being shared in the region as a much needed source of data.
- A founding contribution to the *Papua Conservation Fund*, developed by Conservation International and World Wide Fund for Nature, making small grants to local Papuan NGOs.
- Publication of a *significant ecology book on Papua*, as part of the Ecology Series of Indonesia (in partnership with Conservation International) due to be completed in 2008.

Key steps in the preparation and implementation of the IBAP, and their relation to steps in the BAP process noted in this guidance include:

Working with Indonesia's National Planning Agency to ensure that the IBAP supports Indonesia's Integrated Biodiversity Strategic Action Plan	Define relationship between BAP and other action plans (Section 2.1)
Using a consultative process to design and implement activities, thus ensuring indigenous capacity building	Stakeholder engagement and consultation (Section 1.1)
Identifying and linking with environmental organisations to exchange biodiversity information and to encourage strategic partnerships	Development of partnerships (Section 1.2)
Ensuring that it is complementary to the company's Environmental Impact Assessment and Environmental Management Systems	Define relationship between BAP, ESIA and EMP (Section 2.2)
Ensuring BAPs from other BP units (BP West Java, VICO Indonesia & Kaltim Prima Coal) can be included in future updates of the IBAP	Define relationship between BAP and other action plans (Section 2.1)
Identifying conservation priorities	Section 4.2.1
Increasing coordination and collaboration with the Tangguh Integrated Social Program when programs are mutually beneficial	

Further information on the Tangguh LNG project can be found at: www.bp.com/subsection.do?categoryId=755&contentId=2016171. BP's Indonesia Biodiversity Action Plan can be found at: www.bp.com/liveassets/bp_internet/globalbp/STAGING/global_assets/downloads/B/bp_bap.pdf

5. Putting the Gulf of Paria's Biodiversity on the Map – ConocoPhillips

Since 1999, ConocoPhillips has been leading a collaborative process of baseline characterisation, raising awareness, promoting consensus and evaluating priorities. By 2005, with the participation of national and international organisations, several studies specific to the Gulf of Paria – including an initial BAP – have been completed and disseminated in Venezuela and internationally. Consultation was conducted at each step, helping to guide the process and presenting opportunities to leverage expertise and resources through partnerships and other forms of collaboration.

Development of an initial BAP began in 1999 when ConocoPhillips decided to address this emerging issue as part of the Company's sustainable development approach to hydrocarbon development in the region. Since then, organisations such as Audubon, Colección Ornitológica Phelps, Conservation International, Ecology & Environment Inc., Fundación la Salle, the Smithsonian, Universidad Simon Bolivar, Universidad de Oriente – have been involved to characterise Gulf of Paria biological resources. Relevant findings were incorporated into the environmental and social impact assessment process and the management plan, which were being completed at the time. In 2003, ConocoPhillips organised workshops with a diverse group of more than 10 leading conservation organisations – as well as the Venezuelan Ministry of Environment and the United Nations Development Program – to evaluate new information; and to achieve consensus on potential risks to biodiversity and opportunities for regional conservation. This effort culminated

ConocoPhillips, Venezuela and its partners discovered offshore oil resources in the Gulf of Paria, north-eastern Venezuela in 1999, at which time little was known about biodiversity in this region. However, the Gulf of Paria's unique geographical setting between the Orinoco River Delta and the Caribbean Sea and the presence of multiple protected terrestrial areas around the Gulf suggested that it could harbour significant aquatic biodiversity. Many of the region's local communities depend on fishing for income generation. Socio-economic constraints, the presence of indigenous Warao who also rely on natural resources; pressure from fishing practices such as trawling; and anthropogenic activities that have altered regional flow patterns are among some of the threats to aquatic biodiversity in this unique area.

in an initial BAP, which was published in partnership with Conservation International and formally launched at a Biodiversity Symposium, *Contribution to the Knowledge on Biological Diversity and Socio-Cultural Aspects of the Gulf of Paria and the Orinoco Delta* that ConocoPhillips organised on June 3, 2004 in Caracas, Venezuela. Later that year, the www.ConocoPhillipsParia.com website was established to provide a focal point and repository for information.

Key steps in the decision to address biodiversity, preparation and implementation of the action plan, and their relation to steps in the BAP process noted in this guidance include:

Risk analysis including evaluation of threats and opportunities for biodiversity	Assessment of Business Benefits (Section 3.1)
Consultation with and involvement of relevant stakeholders including communities, government and non government organisations, and private sector	Stakeholder engagement and consultation (Section 1.1)
Baseline characterisation (fisheries, vegetation, coastal morphology, avifauna, socio-economic, benthic, biodiversity assessment, and deepwater study).	Establishment of priorities for conservation action (Section 4.2.1)
Integration of results into impact assessment	Assessment of impacts (Section 3.2.3)
"Biodiversity Threats and Opportunities" and follow-up "Biodiversity Priorities" Workshops	Establishment of priorities for conservation action (Section 4.2.1)
Partnerships with local fishermen, Conservation International, United Nations Development Program and the Venezuelan Ministry of Environment	Development of partnerships (Section 1.2)
Participation in UNDP-MARN Regional Biodiversity Initiative	Define relationship between BAP and other action plans (Section 2.2)
Publishing and distributing the Rapid Biodiversity Assessment and initial BAP, organising a Biodiversity Symposium, and posting information on public website	Reporting, communication and verification (Section 4.5)
Implementation of initial BAP, including Wildlife Response Plans	Implementation of the BAP (Section 4,3)
Evaluating the development of pilot community-based monitoring program	Monitoring, evaluation and improvement (Section 4.5)

Results of this process indicate that the Orinoco River Delta and the Gulf of Paria are intrinsically connected. The Gulf of Paria combines terrestrial and aquatic habitats to support a variety of species, including some new to science. Biodiversity is further augmented because this area is a migratory route for many species of birds. Marine biodiversity is also high, with more than 80 benthic invertebrate species (mostly crustaceans and mollusks) and over 100 fish species recently identified in the southern part of the Gulf of Paria. ConocoPhillips continues to work with local communities, government institutions, non-government organisations and the private sector to implement recommendations of the BAP such as, for example, the establishment of a pilot biodiversity monitoring program. The initial BAP is the first step in putting Gulf of Paria biodiversity "on the map" by generating and disseminating knowledge, raising awareness, achieving consensus on priorities and encouraging regional conservation as well as sustainable development through cooperation and dialogue among stakeholders.

APPENDIX 1. Glossary and Acronyms

ADAPTIVE MANAGEMENT: A continuous sequence in which objectives are set, actions to manage biodiversity are taken, monitoring and evaluation of the affected ecosystem and human responses are assessed, results are compared against expectations, and future actions are adjusted, with each iteration of activity based on past experience. Such management is adaptive because lessons learned are put in practice in the next cycle.

BIODIVERSITY ENHANCEMENT: The planned alteration of environmental attributes in order to provide improvements to biodiversity. The concept of enhancement is subjective and depends on context and point of view. Stakeholder consultation is recommended to ensure the goal of enhancement is broadly agreed.

BIOLOGICAL DIVERSITY [often shortened to BIODIVERSITY]: The variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species, and of ecosystems (UN Convention on Biological Diversity, Article 2).

BIOLOGICAL RESOURCES: Genetic resources, organisms or parts thereof, populations, or any other biotic component of ecosystems with actual or potential use or value for humanity. Unlike non-living resources, biological resources are renewable if conserved and destructible if not conserved.

CIVIL SOCIETY: The realm of public participation in voluntary associations, mass media, professional associations, trade unions, etc.

CONSERVATION: The rational and prudent management of biological resources to achieve the greatest sustainable current benefit while maintaining the potential of the resources to meet the needs of future generations. Conservation includes preservation, maintenance, sustainable utilisation, restoration and enhancement of the natural environment. A mixture of utilitarian and ethical considerations often drives conservation.

DOWNSTREAM [OPERATIONS]: All operations occurring after the oil or gas is either shipped away from the production unit or delivered to a terminal through a pipeline. Downstream operations include the refining, marketing, terminalling, and supply of oil or gas.

ECOSYSTEM: A dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit in a specific place, e.g. a pond, a forest, an estuary, a grassland, etc.

ECOSYSTEM FUNCTIONS: Ecosystem functions are the physical, chemical, and biological processes or attributes that contribute to the self-maintenance of an ecosystem and thereby provide many of the natural resources on which humans depend; in other words, what the ecosystem does. Some examples of the consequences of ecosystem functions are provision of wildlife habitat, carbon cycling, or the trapping of nutrients. See also Ecosystem Services.

ECOSYSTEM SERVICES: The beneficial outcomes, for the natural environment, or for people that result from ecosystem functions. Examples include support of the food chain and provision of clean water. In order for an ecosystem to provide services to humans, some interaction with, or at least some appreciation by, humans is required. See also Ecosystem Functions.

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA): A process for predicting and assessing the potential environmental and social impacts of a proposed project, evaluating alternatives and designing appropriate mitigation, management and monitoring measures.

ENVIRONMENTAL MANAGEMENT SYSTEM (EMS): The system of organisational capacity, plans, procedures, resources, policies and standards used by energy and other companies to manage their environmental programmes.

FAUNA: All of the animals found in a given area.

FLORA: All of the plants found in a given area.

HABITAT: The physical and biological environment on which a given species (or group of species) depends for its survival; the place or type of site where an organism or population naturally occurs.

INDICATORS (BIODIVERSITY): The metrics that are used by an organisation or entity to measure and monitor biodiversity.

INDIGENOUS PEOPLE: No definition has been agreed upon internationally, but the principle of self-identification has been broadly accepted. For purposes of its operations, the World Bank treats as indigenous people "those social groups with a social and cultural identity distinct from the dominant society, which makes them vulnerable to being disadvantaged in the development process." They are distinctive from other vulnerable social groups insofar as they are recognised by international law and by some states as autonomous seats of power within the state, and exercise collective rights as groups.

LIFE CYCLE (OIL AND GAS): The entire sequence of activity relating to an oil and gas project, from initial planning to final decommissioning and closure.

LOCAL COMMUNITY: Any community that is adjacent to and/or affected by an action, operation, or facility.

MITIGATION: Measures and actions taken to avoid, minimise, reduce, remedy and/or compensate, e.g. using offsets, for adverse impacts of development. A hierarchy of "avoid – reduce – remedy – compensate" is used to establish an order of preference (beginning with avoid) for mitigation measures.

NATURAL RESOURCES: Resources produced by nature, commonly subdivided into non-renewable resources, such as minerals and fossil fuels, and renewable natural resources that propagate or sustain life and are naturally self-renewing when properly managed, including plants and animals as well as soil and water.

PARTICIPATION: Active involvement in decision-making of those with an interest in or affected by important decisions.

POPULATION: For animals and plants, a group of individuals living in a particular geographical space and sharing common ancestry who are much more likely to mate with one another than with individuals from another such group. When the population has observable characteristics that distinguish it from other populations, it is sometimes called a subspecies. Also, a group of organisms of a species, occupying a defined area and usually isolated to some extent from other similar groups or geographically defined subdivisions of a species that form a group whose members differ genetically from other members of the species. Population is also commonly used to denote the number of human inhabitants.

PRIMARY IMPACTS: Effects on an ecosystem resulting directly from site or project activities.

PROTECTED AREA: A geographically defined area that is designated or regulated and managed to achieve specific conservation objectives (UN Convention on Biological Diversity, Article 2). An area of land or sea especially dedicated to the protection and maintenance of biological diversity and of natural and associated cultural resources, and managed through legal or other effective means (1992 World Congress on National Parks and Protected Areas).

SECONDARY IMPACTS: secondary impacts, rather than resulting directly from project activities, are usually triggered by the operations, but may reach outside project or even concession boundaries and may begin before or extend beyond a project's life cycle. Impacts are most commonly associated with changes in human population in an area or of government decisions about infrastructure needs and associated economic growth.

SPECIES: A group of inter-breeding organisms that seldom or never interbreed with individuals in other such groups, under natural conditions; most species are made up of subspecies [or populations] [non-parallel thought].

SPECIES DIVERSITY: Species diversity is simply the variety of life measured at the level of the species. It is the number of different species found at a site and is the most commonly used metric of biodiversity.

STAKEHOLDER: An individual or institution that can affect or is affected by an operation. Stakeholders include, but are not limited to, local communities, advocacy groups, development agencies, governments, customers, shareholders, management, employees and suppliers.

SUSTAINABLE DEVELOPMENT: Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

UPSTREAM [OPERATIONS]: Includes oil and gas exploration and production, gas processing activities and shipping away from the production unit or delivery to a terminal.

BAP:	Biodiversity Action Plan
CBD:	United Nations Convention on Biological Diversity
EBI:	Energy and Biodiversity Initiative
EMP:	Environmental Management Plan
EMS:	Environmental Management System
ESIA:	Environmental and Social Impact Assessment
GIS:	Geographical Information System
HSE:	Health, Safety and Environment
IFC:	International Finance Corporation
IPIECA:	International Petroleum Industry Environmental Conservation Association
NBSAP:	National Biodiversity Strategies and Action Plans
NGO:	Non-Governmental Organisation
OGP:	International Association of Oil and Gas Producers

APPENDIX 2. Further Resources

A. Contacts, Potential Partners and Sources of Further Information

Note: Many of the contacts and potential partners noted below have access to a broad range of biodiversity-related skills and experience beyond the principal categories to which they have been assigned.

Habitats (including sensitive and protected areas) and Species

Audubon Society *(www.audubon.org)* works to protect birds and other wildlife and the habitats that support them.

BirdLife International *(www.birdlife.org)* is an organisation whose remit covers species, sites, habitats and approaches to sustainable development, data handling and distribution.

Conservation International *(www.conservation.org)* works to conserve the Earth's living natural heritage and to demonstrate that human societies are able to live harmoniously with nature, through efforts in biodiversity Hotspots and Wilderness Areas.

European Tropical Forest Research Network *(www.etfrn.org/etfrn/index.html)* is a forum for communication between European organisations, researchers, EU institutions and others concerned with (sub-) tropical forest research.

Fauna and Flora International (FFI) *(www.fauna-flora.org)* works to protect endangered plant and animal species through partnerships, technical assistance and funding.

Forest Stewardship Council *(http://www.fsc.org/)* promotes environmentally appropriate, socially beneficial and economically viable management of the world's forests and provides standard setting, trademark assurance and accreditation services for companies and organisations interested in responsible forestry.

Global Forest Watch *(www.globalforestwatch.org)* is working to improve transparency and accountability in the decision-making processes that determine how forests are managed and for whom.

Marine Conservation Biology Institute *(www.mcbi.org)* undertakes multidisciplinary work on marine conservation biology.

Species Survival Commission (SSC) *(www.iucn.org/themes/ssc/sgs/sgs.htm)* deploys 7,000 members in more than 110 Specialist Groups based on their area of expertise.

Wetlands International *(www.wetlands.org)* is a global non-profit organisation dedicated to wetland conservation and sustainable management and works through well-established networks of experts and close partnerships with key organisations. It runs wetland species specialist groups (waterbirds and freshwater fish) in cooperation with IUCN SSC, runs the global waterbird monitoring programme (IWC) and is also Custodian of the Ramsar Site Database.

The World Commission on Protected Areas (WCPA) *(wcpa.iucn.org/wcpainfo/aboutwcpa.html)* is a global network of protected area specialists.

The Wildlife Habitat Council (WHC) *(www.wildlifehc.org)* helps large landowners, particularly corporations, manage their unused lands in an ecologically sensitive manner for the benefit of wildlife. WHC also works to broaden understanding of wildlife values. Over 120 companies are WHC members.

WWF *(www.wwf.org)* works to conserve nature and ecological processes through action on the ground, national and international advocacy work and international campaigns to highlight and demonstrate solutions to environmental problems.

Ecosystem Functions and Services

IUCN Commission on Ecosystem Management *(www.iucn.org/themes/cem)* provides expert guidance on integrated ecosystem approaches to the management of natural and modified ecosystems.

The Nature Conservancy *(www.nature.org)* is an international, non-profit organisation that preserves plants, animals and natural communities by protecting the lands and waters they need to survive.

Pro-Natura *(www.pronatura.org)* works in partnership with public entities, private initiatives, and organised civil society to conserve biodiversity through integrated sustainable development projects adapted as models that are replicable at a regional level.

Wetlands International (WI) *(www.wetlands.org)* works towards recognition and representation of wetland values (functions and services) in planning processes.

Biodiversity Data

Biodiversity Conservation Information System (BCIS) *(www.biodiversity.org)* is a consortium of ten international conservation organisations and programmes of IUCN, and comprises a framework facilitating access to biodiversity data and information.

The Biodiversity Economics Library *(www.biodiversityeconomics.org)* hosts six collections online: biodiversity business, biodiversity finance, biodiversity incentives, biodiversity trade, biodiversity assessment and biodiversity valuation.

Center for Applied Biodiversity Science (CABS) *(www.biodiversityscience.org)* is a part of Conservation International, and brings together experts in science and technology to collect and interpret data about biodiversity, develop strategic plans for conservation, and create partnerships in all sectors that promote conservation goals.

ConserveOnline *(www.conserveonline.org)* a 'one-stop' online, multi-lingual public library (English, Spanish, Portuguese) that makes conservation tools, techniques, and experience available to a broad community of conservation practitioners. Through discussion groups and information sharing, ConserveOnline is an open forum for sharing successes and failures, and for connecting scientific research with field-based conservation practice. They welcome anyone with documents, data, maps, or images relevant to the science and practice of conservation to make these resources publicly available through ConserveOnline, and to share their expertise through the discussion groups.

The Global Biodiversity Information Facility (GBIF) *(www.gbif.org)* is a network of biodiversity databases and information technology tools to enable users to navigate the world's vast quantities of biodiversity information.

IUCN - The World Conservation Union *(www.iucn.org/about/index.htm)* brings together about 80 States, 110 Government Agencies and 750 NGOs in a unique world partnership across some 141 countries, supported by a network of some 10,000 scientists and experts from 181 countries organised in six Commissions.

UNEP – CBD *(www.biodiv.org)* hosts information related to the Convention on Biological Diversity, including information on NBSAPs at www.biodiv.org/world/reports.aspx?type=nbsap.

UNEP - WCMC - Interactive Maps Service *(www.unep-wcmc.org)* contains links to other sites on coral disease, marine turtles, arctic birds, bird migration routes and breeding areas as well as a number of interactive maps serving the Mediterranean Sea, the Black Sea, the Caribbean and the Caspian.

World Conservation Monitoring Centre (UNEP-WCMC) *(www.unep-wcmc.org)* is the biodiversity assessment and policy implementation arm of UNEP, providing information on the conservation and sustainable management of natural resources.

Business and Biodiversity

Biodiversity Conservation Network (BCN) *(www.bcnet.org)* contains information on the approach of business to biodiversity issues.

The Center for Environmental Leadership in Business *(www.celb.org)* is a division of Conservation International. It engages the private sector worldwide in creating solutions to critical global environmental problems in which industry plays a defining role.

Earthwatch Europe *(www.earthwatch.org/europe/)* and **Earthwatch Australia** *(www.earthwatch.org/australia)* promote sustainable conservation of natural resources and cultural heritage by creating partnerships among scientists, the general public, educators and businesses. Earthwatch Europe hosts the UK Business and Biodiversity Resource Centre, funded by the UK Department for the Environment, Food and Rural Affairs (Defra). The aim of the Centre is to raise awareness of how and why the private sector should get involved with biodiversity and to develop and promote initiatives that will engage companies in this area. The Centre publishes the ongoing series of Business and Biodiversity Guides, which address aspects of biodiversity to business and manages the UK Business and Biodiversity website at www.businessandbiodiversity.org.

Global Biodiversity Forum *(www.gbf.ch)* is an open and independent mechanism to encourage analysis, dialogue and partnership on key ecological, economic, social and institutional issues related to biodiversity.

World Resources Institute (WRI) *(www.wri.org)* is an environmental 'think-tank' with a business programme that promotes corporate responsibility and accountability.

Indicators and Reporting

The Compendium of Sustainability Reporting Practices and Trends for the Oil and Gas Industry *(www.oilandgasreporting.com)* was developed by IPIECA and the American Petroleum Institute to better understand and communicate the industry's sustainability performance measurement and reporting practices.

Global Reporting Initiative *(www.globalreporting.org)* is a multi-stakeholder process and independent institution whose mission is to develop and disseminate globally applicable Sustainability Reporting Guidelines.

International Network for Environmental Management *(www.inem.org)* aims to help companies improve their environmental and economic performance, and comprises more than 30 member and affiliated environmental management associations and cleaner production centres in more than 25 countries. It offers a range of environmental tools and guidance on reporting.

Stakeholder Engagement

Center for Biodiversity and Conservation *(research.amnh.org/biodiversity/index.html)* is a part of the American Museum of Natural History and undertakes activities that integrate scientific research, education, and outreach to enable people to become participants in conservation.

Center for Marine Conservation *(www.cmc-ocean.org)* promotes informed citizen participation to avoid and reverse negative impacts on oceans.

B. Annotated Bibliography

Title	Source	Summary	Relevance to the BAP Process
Online Biodiversity Information Sources	EBI (www.theEBI.org)	Comprehensive summary of online information sources (last updated April 2003)	Protected areas, sensitive environments, conventions and NBSAPs, species and habitat information, publications and journals. This document is an excellent source of biodiversity-related information and data throughout the BAP process
The Oil and Gas Industry: Operating In Sensitive Environments	IPIECA (www.ipieca.org)	This booklet summarises a series of short case studies describing some of the oil and gas industry's experience of operating in sensitive human and physical environments	Benefits of a partnership approach, impact assessment, best practice methods for working in and near sensitive environments and protected areas. Full case study details can be accessed at the IPIECA website (www.ipieca.org)
Biodiversity and the Petroleum Industry – a Guide to the Biodiversity Negotiations	IPIECA (www.ipieca.org)	Highlights practices of value in addressing biodiversity using a series of case studies that explore the need to balance environmental impacts with economic and social benefits to the company, country and community	Review of the CBD including developments leading to the current form of the Convention. Planning, implementation and follow up of biodiversity management procedures are also reviewed
An IPIECA Guide to Social Impact Assessment in the Oil and Gas Industry	IPIECA (www.ipieca.org)	This guide outlines the use of Social Impact Assessments (SIAs) by the oil and gas industry. It provides managers of existing oil and gas operations or new projects with an understanding of how to make the best use of SIAs	Socio-economic aspects of biodiversity issues, and defines how SIA can fit with other assessment processes and procedures
Key Questions in Managing Social Issues in Oil & Gas Projects	IPIECA (www.ipieca.org) OGP (www.ogp.org.uk)	This document provides typical questions relating to the management of social issues throughout the life cycle of oil and gas projects	Stakeholder consultation and engagement
Business & Biodiversity: a Guide for UK-based companies operating Internationally	Available at www.businessandbiodiversity.org/publications.html	A business guide for understanding and integrating nature conservation and biodiversity into Environmental Management Systems (EMS)	Defines the overlap between the steps necessary top develop and implement a BAP, and those undertaken as part of an EMS

Title	Source	Summary	Relevance to the BAP Process
Case Studies in Business and Biodiversity	Available at www.businessandbiodiversity.org/publications.html	Offers broad indicators of a company's commitment to biodiversity and the successful integration of biodiversity into its EMS	Includes case study examples of the development and implementation of site and project BAPs
Business and Biodiversity: The Handbook for Corporate Action	Available at www.businessandbiodiversity.org/publications.html	Outlines the business case for biodiversity, identifies corporate biodiversity issues and provides guidance for developing biodiversity corporate action	Business case for biodiversity, development of BAPs, and their integration with company EMSs
What is Sustainability? Biodiversity, the Environment and Sustainable development: a Summary Guide for Companies	Available at www.earthwatch.org/europe/publications/what_is_sustain.pdf	Summarises the common themes and organisational approaches that are emerging with reference to the environmental aspect of sustainability	Useful background information on the relationship between sustainability and biodiversity and how BAPs can contribute to sustainable development.
Measuring Biodiversity Performance	Available at www.earthwatch.org/europe/publications/measuring.pdf	Explains the approach which Business in the Environment, Earthwatch and English Nature take to biodiversity, and how companies might answer the biodiversity questions in Business in the Environment's Index of Corporate Environmental Engagement	Clearly explains the importance of BAPs in understanding, monitoring, managing and reducing biodiversity impacts.
Business & Biodiversity – Site Biodiversity Action Plans	Available at www.earthwatch.org/europe/publications/bandb-03.pdf	Filled with information, examples and contacts, this leaflet is a valuable resource for any company wishing to develop a site Biodiversity Action Plan. Includes brief case study materials.	See left.
Is Biodiversity a Material Risk for Companies?	Available at www.businessandbiodiversity.org/pdf/FC%20Biodiversity%20Report%20FINAL.pdf	Earthwatch, in conjunction with F&C Asset Management and funded by DFID, has undertaken pioneering research into the risks that biodiversity may present to business value.	Sets out the risks and opportunities presented by biodiversity to assist companies in understanding the benefits of managing biodiversity in a more systematic and sustainable manner in order to protect shareholder value as well as the natural and economic value represented by biodiversity.

APPENDIX 3. Variation in BAP Activities According to Industrial Life Cycle Stage

As noted in Section 2, the scope and relevance of each of the steps in the BAP process and the detail in which they are reported, will vary according to the industrial life cycle stage (from concession acquisition to decommissioning) and other factors such as the type of site or operation and the environmental and social context in which the company's activities are taking place. Similarly, reports may vary from a one page 'brief' for a small or simple individual site in an early stage of the industrial life cycle, through a portion of an integrated Environmental Management Plan (EMP), to a multiple-volume detailed management plan for a complex project. Examples of how the focus of the process may vary across the industrial life cycle are shown in the figure below (stakeholder engagement and consultation are assumed to be essential at all stages of the industrial life cycle).

Industrial Life Cycle Stage

Concession Acquisition	Exploration	Development	Production	Decommissioning	
Review of legal context (section 3.1.1) Desktop assessment of biodiversity (section 3.2.1)	Review of legal context (section 3.1.1) Desktop assessment of biodiversity (section 3.2.1) Baseline survey of biodiversity (section 3.2.2) Biodiversity impact assessment and monitoring (section 3.2.3)	Partnership development (section 1.2) Review of legal context (section 3.1.1) Review of permit requirements (section 3.1.2) Desktop assessment of biodiversity (section 3.2.1) Baseline survey of biodiversity (section 3.2.2) Biodiversity impact assessment and monitoring (section 3.2.3) Preparation and implementation of full action plan (sections 4.2 & 4.3) BAP performance monitoring and reporting (sections 4.4 & 4.5)	Partnership maintenance (section 1.2) Review of legal context (section 3.1.1) Review of permit requirements (section 3.1.2) Desktop assessment of biodiversity (section 3.2.1) Baseline survey of biodiversity (section 3.2.2) Biodiversity impact assessment and monitoring (section 3.2.3) Preparation and implementation of full action plan (section 4.2 & 4.3) BAP performance monitoring and reporting (sections 4.4 & 4.5)	Partnership maintenance (section 1.2) Review of legal context (section 3.1.1) Review of permit requirements (section 3.1.2) Biodiversity impact assessment and monitoring (section 3.2.3) Preparation and implementation of full action plan (sections 4.2 & 4.3) BAP performance monitoring and reporting (sections 4.4 & 4.5)	**BAP focus**
Status assessment	Activity description Best practice methods Monitoring Post-exploration closure of disturbed sites	Site or project description Steps in developing and implementing management plan Integrating plan with other management systems Monitoring methods Monitoring, assessment and verification of performance	Site or project description Steps in developing and implementing management plan Integrating plan with other management systems Monitoring methods Monitoring, assessment and verification of performance	Site or project description Steps in developing and implementing management plan Integrating plan with other management systems Monitoring methods Monitoring, assessment and verification of performance	**Report focus**

The International Petroleum Industry Environmental Conservation Association (IPIECA) comprises oil and gas companies and associations from around the world. Founded in 1974 following the establishment of the United Nations Environment Programme (UNEP), IPIECA provides one of the industry's principal channels of communication with the United Nations.

IPIECA is the single global association representing both the upstream and downstream oil and gas industry on key global social and environmental issues including oil spill preparedness and response; global climate change; health; fuel quality; biodiversity; and social responsibility.

The International Association of Oil & Gas Producers (OGP) encompasses most of the world's leading publicly traded, private and state-owned oil & gas companies, oil & gas associations and major upstream service companies. OGP members operate in more than 80 different countries and produce more than half the world's oil and about one third of its gas.

The association was formed in 1974 to develop effective communications between upstream industry and an increasingly complex network of international regulators.

OGP works with its members to achieve continuous improvement in safety, health and environmental performance, and in the engineering and operation of upstream ventures.