Integrating Biodiversity Conservation into Oil & Gas Development

The Energy & Biodiversity Initiative

EBI

BP • ChevronTexaco • Conservation International • Fauna & Flora International
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Note to Readers

This report, released by the Energy and Biodiversity Initiative (EBI), is the result of a collaborative effort by representatives of the nine member companies and conservation organizations of the Initiative. The views expressed herein do not necessarily represent the views of every EBI member.

EBI members recognize that there is a continuing public debate around biodiversity conservation and oil and gas operations. Although EBI was not intended to resolve all the issues involved in this debate, we believe the EBI products and process will make a significant contribution to constructive dialogue to accompany that debate. We welcome your comments and feedback on this document or any other EBI products.

Design

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Photography Credits

All photos ©Conservation International except where noted **FROM TOP** Haroldo Castro, Piotr Naskrecki, ©BP

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TABLE OF CONTENTS

BOXES

FIGURES

TABLES

EXECUTIVE SUMMARY

Increasingly, areas of interest for oil and gas development are also being recognized and valued for their biodiversity resources. Biodiversity, the complex web of genes, species, ecosystems and ecological processes that sustain life on Earth, provides human society with food, medicines, natural resources, ecological services and spiritual and aesthetic benefits. Yet, this biodiversity is under greater threat than ever before from human activities. While oil and gas operations are often not the biggest threat to biodiversity in an area, they can have a wide range of negative impacts on ecosystems. In some cases, company activities may also make a positive contribution to biodiversity conservation. With increasing demand for energy and the likelihood that oil and gas will be used to meet much of this demand over the next several decades, the risk to biodiversity from energy development projects is expected to increase.

The juxtaposition of energy needs and biodiversity values has led to some difficult challenges for both the energy industry and the conservation community. For energy companies, the challenge is to find a way to meet the public demand for abundant, low-cost oil and gas products and, at the same time, meet society's expectations for corporate social and environmental responsibility, including biodiversity protection. Many leading companies are finding strategic, operational, reputational and financial benefits to including biodiversity conservation in their decision-making, policies and operations. For conservation organizations, the challenge is to be a strong voice for biodiversity conservation while working with industry to find the balance between the potential threats that oil and gas development represents and the opportunities for harnessing the influence, expertise and resources of energy companies for conservation efforts.

To meet these challenges, several leading energy companies and conservation organizations have come together to form the Energy and Biodiversity Initiative (EBI), to produce practical guidelines, tools and models for integrating biodiversity conservation into upstream oil and gas development. This report presents a summary of the analysis and conclusions of the EBI to date. While this report and other products of the EBI focus specifically on biodiversity, it is important to note that biodiversity conservation is an integral component of the goals of sustainable development. There are many other important issues surrounding energy development and its environmental and social impacts, including the rights of indigenous people, the dependence of local communities on biodiversity, overlaps between lands set aside for legal protection and lands customarily owned or used by indigenous people, the role of governments, the impact of oil spills associated with shipping and the contribution of use of fossil fuels to global climate change. While we have chosen to address only biodiversity issues in this Initiative, we recognize that biodiversity cannot and should not be considered in isolation, but can only be managed properly if it

Mission and Members of the EBI

The Energy and Biodiversity Initiative (EBI) was created to develop and promote practices for integrating biodiversity conservation into upstream oil and gas development. The Initiative seeks to be a positive force for biodiversity conservation by bringing together leading energy companies and conservation organizations to share experiences and build on intellectual capital to create value and influence key audiences.

The nine members of the EBI are:

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is considered in conjunction with other sustainable development issues and potential areas of impact, including social and economic considerations, pollution and health issues.

The efforts of the EBI have focused on six important questions about the future of oil and gas development:

- *What is the business case for integrating biodiversity conservation into oil and gas development?* Many companies have begun to integrate biodiversity conservation into their internal business practices and operations for practical business reasons, as well as for moral reasons, because they view it as simply the right thing to do. However, faced with an increasingly competitive energy market, managers need to find a way to outline the arguments for biodiversity conservation in familiar risk-benefit terms. The basic business driver for addressing biodiversity issues as an explicit component of overall environmental performance is minimizing risks to business activities. Addressing biodiversity issues at the project level can help a company reduce operational risk and execute projects more effectively, enhancing both company reputation and the ability to access key business resources, such as land, oil and gas resources, capital, employees and public goodwill. On the other hand, poor performance on the ground can result in costly project delays and damage to a company's reputation on biodiversity issues, ultimately leading to a loss of access to resources required for meeting long-term business objectives.

- *How can companies integrate biodiversity considerations into their management systems and operations?* The products of the EBI are designed to build on systems already widely used within the industry, notably the Environmental Management System (EMS) and the Environmental and Social Impact Assessment (ESIA) process. Relevant biodiversity considerations can be integrated into the specific components and steps of an EMS at both the project and company levels, as well as into an integrated ESIA process that considers impacts using a broad-scale ecosystem approach. In some countries, the impact assessment process is managed by government agencies, while in others, primary responsibility for ESIA development is given to the private sector. In all cases, an ESIA will need to address the combination of existing biodiversity-related government standards, requirements, enforcement and ESIA processes, which may or may not help to ensure that impacts on biodiversity from a new oil or gas project will be reduced to an acceptable level. An ESIA is essentially a procedural standard, and the completion of an ESIA does not guarantee high performance on biodiversity issues or that the level of impact will be acceptable. In all cases, the commitment of the energy company to a high standard of environmental management will play an important role in determining the final, long-term effect on biodiversity from the operation. As with other issues, any actions or activities to manage and conserve biodiversity should be based on a valid and transparent risk assessment process – only in those cases where there are significant biodiversity issues will in-depth biodiversity management practices be necessary.

- *What are the potential negative impacts on biodiversity from oil and gas development, and what practices can companies adopt at their operational sites that will mitigate these impacts?* An oil or gas project can have negative impacts – both primary and secondary – on biodiversity in and around a project site. Although the ultimate effects of both primary and secondary impacts on biodiversity are broadly similar, they differ in cause, scope, scale, intensity and boundaries of responsibility. Primary impacts result specifically from project activities, are normally limited to the project area and lifetime, and can often be alleviated with sound operational practices. Secondary impacts, on the other hand, do not usually result directly from project activities, but are rather the result of other people's decisions and activities triggered by the project's presence. For example, deforestation resulting from increased access for settlers along a pipeline path is a secondary impact. Although it may be difficult to determine who is responsible for addressing and mitigating secondary impacts, they are just as likely to stop or disrupt a project as primary impacts. Secondary impacts are generally not entirely within the operational control of the oil and gas company and, in many cases, may exceed the project's primary impacts. Thus, it is important for companies to identify the potential for secondary impacts early in project planning and work closely with governments, communities and other local stakeholders to address the underlying causes of secondary impacts, for example through participation in strategic land-use planning and integrated regional development plans.

- *How can companies factor biodiversity criteria into their decisions about where they will work?* An energy company interested in pursuing hydrocarbon exploration or development in an area that may also have high biodiversity values needs a clear framework to help determine whether the inherent risks of operating in a

certain area – both to biodiversity and to the company's operations and reputation – are unacceptably high. The first step is to find out if an area has been identified as having particularly high biodiversity value, either as a result of legal designation as a protected area or some other kind of classification by a government or non-governmental organization. Hydrocarbon activities are prohibited by law in many kinds of legally protected areas, and many conservation organizations hold the view that extractive industries should not take place in protected areas. As a basic premise, companies should seek to avoid these areas. However, governments may allow oil and gas companies to operate in certain protected areas. In all cases, it is important to thoroughly understand the relevant laws and policies and carefully assess the magnitude of potential impacts. A company may decide that the operational and reputational risk to the company would be too high for it to operate in an area, regardless of the legality of the activity. In areas not legally designated for protection but identified as having a high biodiversity value, it is important to understand the criteria used in making the designation, confirm local biodiversity values and determine which specific areas are the highest priorities for conservation. For all development cases, a thorough ESIA process should be followed to determine the potential for primary and secondary impacts on biodiversity both inside and outside the project fence, even if a region of interest has been neither legally protected nor identified as having high biodiversity values. At any point in the decision-making process, a company may conclude that the risks to biodiversity are too great and choose not to proceed with the project. If a company does decide to proceed in an area where potential risks to biodiversity exist, it may be in the company's interest to go beyond any minimum legal requirements for biodiversity conservation and incorporate a more comprehensive set of management actions, including mitigation, compensation and investments in opportunities to benefit biodiversity conservation.

- *How can a company measure a specific project's impact on biodiversity and its company-wide performance in relation to biodiversity?* Developing a system to measure and monitor the effects of oil and gas development on biodiversity will enable a company to more easily understand, predict, prevent and report on impacts; manage activities; and develop, monitor and refine practices and policies. Impacts on biodiversity, whether negative or positive, can be monitored using indicators, which provide a measure of changes in the surrounding environment. Because each project and company is different, no one single all-purpose measure for impacts to biodiversity exists. However, a common method of risk assessment can be used to derive indicators of biodiversity performance at both the project level and company level.

- *How can companies go beyond minimizing impacts and take actions that benefit biodiversity?* For companies operating in areas with high biodiversity values, integrating biodiversity considerations into decision-making is no longer just about mitigating their negative impacts. Acting on increased public pressure and their own sense of corporate responsibility, some companies are going beyond mitigation to undertake investments that benefit biodiversity conservation. These investments, which might include financial contributions to protected area management, support for scientific research or government capacity-building, are particularly important in countries where capacity and resources for protecting the environment are limited. In some cases, a company's ability to prevent human incursion or other damaging activities can lead to biodiversity inside the boundaries of a concession being healthier than that outside the fence. Companies should work closely with government officials and other stakeholders to carefully evaluate the local economic, environmental and social situation in a project area, to identify and develop the most effective programs and strategies for benefiting biodiversity conservation.

CONCLUSION

This document and its accompanying products provide guidance for how to achieve the integration of biodiversity considerations into upstream oil and gas development. The EBI believes it is in the interests of the energy industry and society to continually work toward achieving this integration. Each company has a different set of values, principles and policies, each is at a different point along the path of integrating biodiversity into its systems and operations, and each will progress at a different rate toward achieving effective consideration of biodiversity issues. Companies also operate in different parts of the world and encounter a wide range of approaches to regulating the environmental impacts of oil and gas development. Thus, each company will need to adapt its existing business procedures, based on a process of prioritization of needs and potential risks and benefits. This includes the EBI companies, for whom this is also still a "work in progress." Each is starting from a different point in developing its internal biodiversity policies and programs. As such, each company has different needs and priorities for

addressing the individual recommendations below, and none is necessarily likely to fully implement them all. Furthermore, while energy companies can contribute expertise, influence and resources to biodiversity conservation, they cannot and should not be expected to resolve the challenges discussed above on their own. Rather, integrating biodiversity into oil and gas development will require a collaborative effort among companies, conservation organizations, governments, communities and other stakeholders.

Recommendations

To encourage progress in integrating biodiversity conservation into upstream oil and gas development, the EBI recommends that:

1. Companies and conservation organizations view biodiversity conservation as an integral part of sustainable development.

2. Energy companies are familiar with the Convention on Biological Diversity, understand its implications for their industry, and contribute to its implementation.

3. Energy companies and conservation organizations work together in partnership to integrate biodiversity conservation into upstream oil and gas development.

4. Energy companies and conservation organizations share information on biodiversity and make that information available in the public domain, whenever possible.

5. Stakeholder engagement that includes biodiversity considerations begins as early as possible and continues throughout the project lifecycle. Engagement is particularly important during impact assessment, indicator development and evaluation of opportunities to benefit biodiversity conservation.

6. Where project development proceeds, it does so, where possible, in the context of a general plan for conservation and sustainable development on an appropriate geographic scale. Energy companies and conservation organizations participate with other key stakeholders in government-led spatial/regional land-use planning processes to map out priorities for biodiversity conservation and sustainable economic development.

7. Energy companies integrate biodiversity considerations into their Environmental Management Systems.

8. Integrated environmental and social impact assessment (ESIA) processes are carried out for any new major development project. Potential impacts on biodiversity are fully assessed and analyzed when preliminary screening and scoping or subsequent review steps determine that the project may have significant impacts on biodiversity. An ESIA process:

   - Begins as early as possible and continues in an iterative manner throughout the project lifecycle.
   - Looks at all relevant levels of biodiversity.
   - Addresses both primary and secondary impacts by considering ecological, social and economic changes.
   - Analyzes and responds to the interaction between environmental and social issues.

9. Companies recognize the integrity of protected areas. They understand that, while some governments may permit oil and gas development in certain protected areas, this can present significant risks to biodiversity. When operating in such areas, companies first take action to avoid impacts from their operations, and then mitigate or, where appropriate, offset any unavoidable impacts.

10. Companies recognize that areas of high biodiversity value exist both in and outside of protected areas. When considering whether to operate in such areas, companies evaluate alternate locations, routes and technical solutions. If they do choose to operate in areas of high biodiversity value, companies employ a comprehensive set of management actions, including mitigation, compensatory measures and investments in opportunities to benefit biodiversity conservation.

11. While biodiversity indicators may not be necessary for every project or activity, companies develop and use biodiversity indicators at appropriate organizational levels.

12. Companies seek opportunities to make positive contributions to conservation.

INTRODUCTION

Leading energy companies increasingly perceive the value of integrating biodiversity conservation into upstream oil and gas development. To develop and promote biodiversity conservation practices for meeting this goal, several of these companies have joined with leading conservation organizations to form the Energy and Biodiversity Initiative (EBI), a partnership designed to produce practical guidelines, tools and models to improve the environmental performance of energy operations, minimize harm to biodiversity, and maximize opportunities for conservation wherever oil and gas resources are developed.

This document summarizes the conclusions of the EBI. While the EBI products are intended primarily for use by the energy industry, they will also be useful for conservation organizations, governments, communities and others with an interest in ensuring the effective integration of biodiversity considerations into oil and gas exploration and development (see Figure 1).

While this report focuses specifically on the relationship between biodiversity and upstream oil and gas exploration and production, it is recognized that

EBI Members

Each of the four energy companies and five conservation organizations that make up the Energy and Biodiversity Initiative has a global presence and has taken part in collaborative efforts between industry and conservation groups in a variety of ways.

The members of the EBI are:

BP
ChevronTexaco
Conservation International
Fauna & Flora International
IUCN – The World Conservation Union
The Nature Conservancy
Shell
Smithsonian Institution
Statoil

FIGURE 1: PRODUCTS OF THE ENERGY AND BIODIVERSITY INITIATIVE

The products of the EBI depicted below include this printed report as well as a number of additional guides, discussion papers and resources, which can be found on the CD at the back of this document and online at www.TheEbi.org. Within each product, there are links to related topics and discussions in other guides, discussion papers and resources.

EBI Report: Integrating Biodiversity Conservation into Oil and Gas Development

Guides

Integrating Biodiversity into Environmental Management Systems

Integrating Biodiversity into Environmental and Social Impact Assessment Processes

Framework for Integrating Biodiversity into the Site Selection Process

Biodiversity Indicators for Monitoring Impacts and Conservation Actions

Discussion Papers

Negative Secondary Impacts from Oil and Gas Development

Opportunities for Benefiting Biodiversity Conservation

Resources

Good Practice in the Prevention and Mitigation of Primary and Secondary Biodiversity Impacts

Online Biodiversity Information Sources

International Conventions

Glossary

PowerPoint Presentation on Integrating Biodiversity Conservation into Oil and Gas Development

public interest in the environment is not limited to its biodiversity value. It has not been possible to address all the complex issues surrounding energy development and environmental issues, nor is it appropriate to do so here, given the composition of the EBI. The conclusions in this report are made within the context of larger issues, recognizing the importance of a broad ecosystem approach, long-term regional land-use planning and the fact that much of the world's most valuable biodiversity remains outside protected areas. Many important issues are not addressed in detail in this report, such as the rights of indigenous people, the dependence of local communities on biodiversity, the role of governments and the impact of oil spills associated with shipping.

One of the most significant aspects of continued growth in the use of oil and gas products is the contribution to global climate change. While the direct footprint of energy development on biodiversity can be significant in specific ecosystems, the long-term effects of oil and gas use have wider implications for the global environment as a whole. EBI recognizes the importance of the issue of climate change, including its potential implications for biodiversity, but does not directly address it, as it was considered beyond the scope of this project and is being addressed in other fora.

Section 1 begins with a brief assessment of the current challenges facing society, the energy industry and conservation organizations seeking to reconcile the seemingly inherent conflicts between energy development and biodiversity conservation. Based on this analysis, six key questions arise about the relationship between biodiversity and oil and gas development (see Box 1). Sections 2 through 7 discuss each of these questions and reference the EBI guides, discussion papers and resources related to each issue.

BOX 1. KEY ORGANIZING QUESTIONS

1. What is the business case for integrating biodiversity conservation into oil and gas development?
2. How can companies integrate biodiversity considerations into their systems and operations?
3. What are the potential negative impacts on biodiversity from oil and gas development, and what practices can companies adopt at their operational sites that will mitigate these impacts?
4. How can companies factor biodiversity criteria into decisions about where they will work?
5. How can a company measure a project's impact on biodiversity and its company-wide performance in relation to biodiversity?
6. How can companies go beyond minimizing impacts and take actions that benefit biodiversity?

1. ENERGY AND BIODIVERSITY

Increasingly, many areas that are potentially valuable sources for oil and gas development are also being recognized and valued for their biodiversity. This section discusses the very real challenges that this juxtaposition represents to society, the energy industry and conservation organizations.

1.1 BIODIVERSITY AND THE CHALLENGE TO SOCIETY

Biological diversity, or biodiversity, is the variability among living organisms and the ecological complexes of which they are part, including diversity within species, between species and of ecosystems. Biodiversity provides a vast array of benefits to human society, including food and medicines, natural resources and ecological services such as pest control, water purification and climate regulation (see Box 2). Healthy ecosystems help maintain a sufficient and diverse gene pool for both wild and domesticated species and allow species to more easily cope with climatic variations. In addition, biodiversity can provide people with spiritual, cultural and aesthetic benefits. Some forms of biodiversity loss, such as species extinction, are irreversible. Although many ecosystems

BOX 2. BIODIVERSITY AND HUMAN WELFARE

Biodiversity is fundamental to human welfare and economic development and plays a critical role in meeting human needs by maintaining the ecological processes upon which our survival depends. Broad-scale ecological systems provide services such as clean air and fresh water, benefits needed by everyone, whether in urban or rural settings.

Biodiversity includes the full range of living organisms that people depend on, for both direct and indirect uses. Direct benefits from biodiversity come from the supply of goods or products – such as food, timber, clothing materials and medicine – that can be consumed or traded in exchange for other required or desired assets. Although all people depend on biodiversity to some extent, the poorest, especially the rural poor, most directly depend on the products of healthy ecosystems, harvesting wild plants and animals for their food, fuel, clothing, medicine and shelter. Conserving biodiversity is therefore part of protecting the critical ecosystems that are essential for both environmental and economic sustainability.

Biodiversity also provides less tangible, indirect benefits that cannot be traded, but underpin the natural and production systems central to human survival. Watershed protection, carbon storage, pollination and nutrient recycling are all necessary environmental services. Genetic diversity and its associated information are used to create new crops or animal varieties and pharmaceuticals; modern agriculture, which depends on new genetic stock from natural ecological systems, is now a US$3 trillion global business. Biodiversity allows adaptation to take place through natural and artificial selection.

There are many benefits of biodiversity that do not rely on use. Biodiversity is closely linked with human cultural and spiritual values, non-use benefits that are nonetheless powerful forces in many traditional cultures as well as in urbanized lives. For example, unique species and special landscapes provide aesthetic benefits that are important sources of revenue through economic activities such as tourism. Tourism based on an intact natural environment is rapidly becoming one of the leading sources of foreign exchange earnings in countries with high biodiversity.

Finally, other non-use benefits of biodiversity, such as the capacity to adapt to future changes, risks and uncertainties, cannot be captured by individuals, but are "owned" by society at local, regional and global levels.

can withstand some degree of human disturbance, reducing the biological diversity of an ecosystem can diminish its resilience to disturbance, increase its susceptibility to disease outbreaks, and decrease productivity. Thus, the conservation of intact, healthy ecosystems is paramount to maintaining the full range of benefits that human societies derive from nature.

Further definitions of concepts related to biodiversity and oil and gas development can be found in **The EBI Glossary**, as well as in the summary glossary at the end of this document.

Yet biodiversity is under greater threat than ever before. Human activities of all kinds, from logging, agriculture and fishing to mining, energy development, infrastructure and urbanization, threaten the integrity and health of ecosystems around the world. With the benefits of any economic development, including hydrocarbon extraction and use, come impacts on biodiversity that are inevitable, however efficient the technology used or careful the management.

Biodiversity is important in all places on Earth, and all potential impacts to biodiversity must be responsibly managed in some way. However, biodiversity in some places may be unusually distinctive, under greater threat, or more highly valued for biological, spiritual, cultural or political reasons. It is in these areas – where highly valued biodiversity will be placed at greatest risk if development takes place – that conflicts between development and conservation most often arise.

Society has responded to the threat to biodiversity and taken action in many ways. The principal international instrument targeted toward the conservation of biodiversity is the Convention on Biological Diversity (CBD), launched at the United Nations Conference on Environment and Development (the Rio Summit) in 1992. Other international agreements cover specific components of biodiversity, such as species protection, wetlands conservation and protected areas.

Further information on international conventions and agreements can be found in **International Conventions**.

At the same time, many countries have implemented national legislation regulating the use and management of biodiversity. More than 145 countries have either completed or drafted their National Biodiversity Strategies and Action Plans (NBSAPs), as detailed in the CBD. These NBSAPs describe how each country intends to fulfill the objectives of the Convention and the steps it will take to meet these goals, including strategies for biodiversity conservation, sectoral integration of biodiversity conservation, measurable targets to achieve the Convention's objectives, and the conservation and sustainable use of wetlands and migratory species and their habitats. In addition, the numbers and area covered by protected areas around the world expanded almost exponentially throughout the last century. There are about 96,000 protected areas around the world covering approximately 1.9 billion hectares (see Figure 2). Nearly 11 percent of the Earth's land surface is under protection. These protected areas range from areas strictly designated for conservation and off-limits to most human activity to areas that are managed for the use of natural resources or recreation (see Box 3). Nevertheless, there are still major gaps in the global protected areas network and many areas that contain some of the world's highest biodiversity values remain unprotected. For this

BOX 3. THE IUCN PROTECTED AREA MANAGEMENT CATEGORY SYSTEM

Because national legislation for protected areas varies from country to country and across types of protected areas, the World Conservation Union (IUCN) has created the IUCN Protected Area Management Category System, which offers a common language for describing types of protected areas. The categorization system, which classifies protected areas by management objectives, includes:

- I(a). Strict Nature Reserve (managed mainly for science)
- I(b). Wilderness Area (managed for wilderness protection)
- II. National Park (managed for ecosystem protection and recreation)
- III. Natural Monument (managed for conservation of specific natural features)
- IV. Habitat/Species Management Area (managed for conservation through management intervention)
- V. Protected Landscape/Seascape (managed for conservation and recreation)
- VI. Managed Resource Protected Area (managed for the sustainable use of natural resources)

reason, governmental and non-governmental organizations have created additional systems of prioritization and categorization, to identify some of the most important areas for biodiversity conservation (see Box 4).

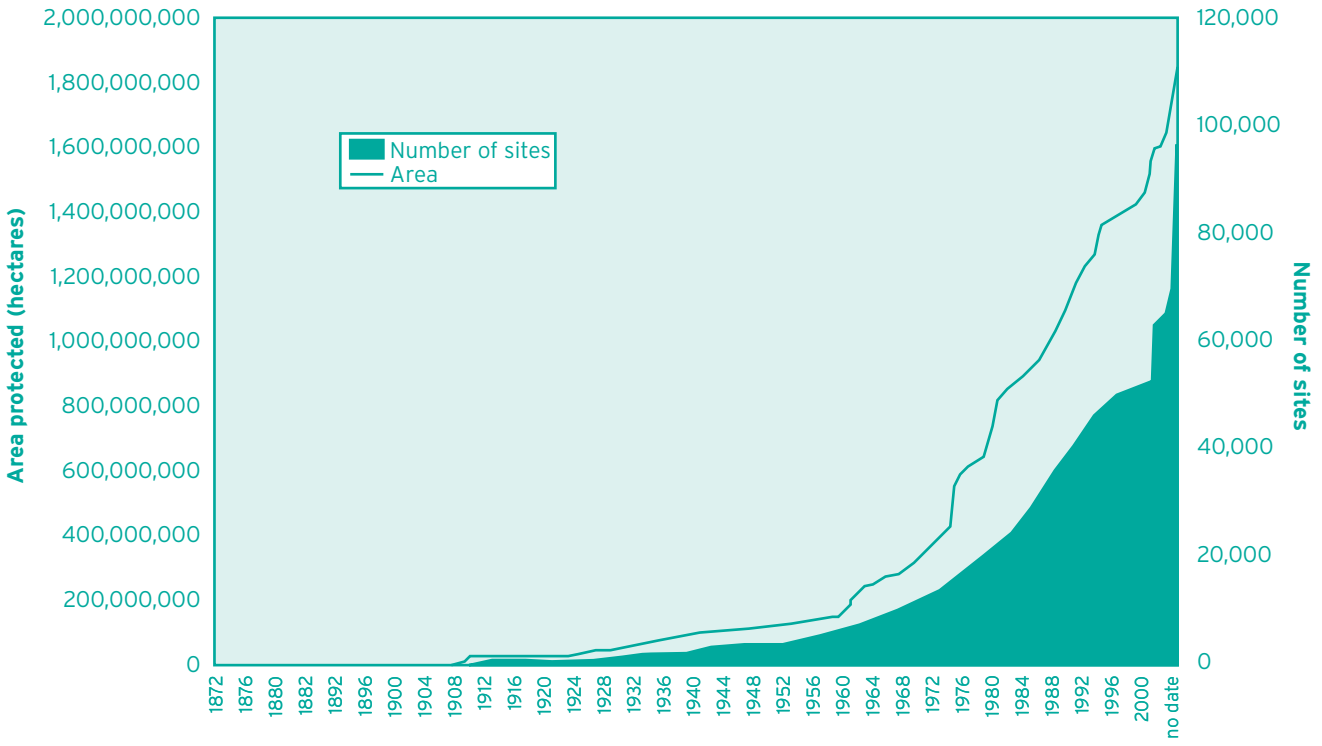
"Biodiversity is the human species' most valuable but least appreciated resource. The perilous future facing nature is of our own making. But the solution is also within our grasp. Progress towards global conservation will pick up or falter depending on cooperation among government, science and technology, and the private sector."

- Edward O. Wilson, Ph.D.
Pellegrino University Research Professor, Harvard University

Many areas with significant biodiversity remaining are also the traditional areas of indigenous, tribal or traditional peoples. Indigenous people often are ethnically different from the dominant national culture, and frequently their traditional territories, whether terrestrial or marine, are not recognized by national governments. The economies, identities and forms of social organization of indigenous people are often closely tied to maintaining the biodiversity and ecosystems that contain them intact. However, multiple pressures exerted on indigenous and other rural communities have made this a challenging proposition in many settings. There are often overlaps between lands set aside for legally designated parks and protected areas and lands customarily owned or used by indigenous peoples. Because of these factors, issues related to indigenous people and oil and gas development are complex and require special measures to ensure that indigenous people, like other local communities, are not disadvantaged and that they are included in and can benefit from projects supporting biodiversity conservation or oil and gas development.

At a project level, many countries regulate biodiversity protection through a network of policies and regulatory programs directed at conserving certain species and ecosystems. This regulation includes ESIAs that support company planning and decision making while informing government approval processes that consider the potential impacts on biological resources.

FIGURE 2. THE GROWTH OF PROTECTED AREAS 1872 TO 2003



Adapted from United Nations Environment Programme - World Conservation Monitoring Centre data, July 2003.

BOX 4. DEFINING AREAS OF HIGH BIODIVERSITY VALUE

Because much of the planet's important biodiversity remains outside of protected areas, a number of governmental and non-governmental organizations have identified areas that they believe are the most valuable for biodiversity conservation. At the national level, National Biodiversity Strategies and Action Plans prepared under the Convention on Biological Diversity often include a chapter on habitats that are a priority for conservation. In addition, several international conservation organizations have identified particular areas of high biodiversity value, including:

- Conservation International's Biodiversity Hotspots and Wilderness Areas, a system designed to identify and prioritize the richest and most threatened reservoirs of plant and animal life on Earth.
- The Nature Conservancy's Last Great Places, which identify the highest-priority places, both terrestrial and marine, that, if conserved, will ensure the long-term survival of biodiversity.
- The World Wide Fund for Nature's Global 200 Ecoregions, a global ranking of the Earth's biologically outstanding terrestrial, freshwater and marine habitats.
- BirdLife International's Important Bird Areas, sites that provide essential habitat for one or more threatened, endangered, restricted-range or vulnerable species of bird.
- IUCN's Centres of Plant Diversity, which include areas of global botanical importance based on the number of species present and/or the presence of a large number or endemic species.

i See **Framework for Integrating Biodiversity into the Site Selection Process** for more information on these and other categorization systems.

Civil society actors, from non-governmental organizations (NGOs) to consumer groups and community associations, are also growing more aware of, and involved in, efforts to conserve biodiversity. Societal expectations are increasingly shifting from preventing damage to biodiversity to providing benefits – in other words, not only mitigating risks and impacts to biodiversity, but capitalizing on opportunities to generate knowledge about the value of biodiversity and to support conservation.

"Preservation of the diversity of life, of which humans are a part, depends critically on our ability to understand it. Our institution has a long tradition of studying such diversity and is committed to both increasing scientific knowledge and making it available to those whose decisions will affect our shared survival."

– Dr. David Evans, Undersecretary for Science
Smithsonian Institution

1.1.1 The potential risk of oil and gas development

Despite the strength of this global response, biodiversity continues to disappear at an alarming rate. While oil and gas exploration and production is often not the biggest threat to biodiversity in an area, it can have a wide range of negative impacts on ecosystems, including soil, air and water contamination, habitat fragmentation and conversion, deforestation, erosion and sedimentation of waterways. Furthermore, oil and gas exploration and production are often pioneer economic activities in relatively undeveloped areas, and can lead to further economic and social activities, including migration, spontaneous settlement, agricultural conversion and infrastructure development that can cause even more harm to biodiversity through secondary impacts. While many of the primary impacts of an oil or gas project can be reduced, and sometimes fully overcome, through careful management and technology, many of the secondary impacts of development present a larger challenge to the industry and society as a whole (see Section 4 for more on secondary impacts). Although the focus of this document is on managing potentially

negative impacts, it is important to recognize that, when oil and gas operations are managed responsibly, they can generate benefits for biodiversity conservation as well (see Section 7 for more on benefiting biodiversity conservation).

"Developing countries recognize the importance of both oil and biodiversity. The challenge lies in achieving a balance in exploring the former without threatening the latter. Oil companies that share this interest are valuable partners."

- Yolanda Kakabadse Navarro, President
IUCN - The World Conservation Union

Global energy demand is expected to triple or even quadruple by the year 2050. In the short and medium term, a significant portion of this demand is going to be met with oil or gas, with natural gas playing an important role as a bridging fuel during a transition to a time when renewables have the potential to be the world's primary source of energy. An increased use of natural gas will mean a greater need for pipelines to transport the gas. Pipelines have been a significant source of controversy in areas of high biodiversity because of the potential for habitat fragmentation and secondary impacts related to their construction in relatively undeveloped areas. They also often cross political boundaries and different ecosystem types, which can lead to inconsistent planning, oversight and mitigation along the pipeline right of way. This is an important area for further study related to biodiversity considerations.

With this increase in demand, oil and gas activities are likely to grow over the next few decades, with continued risk of damage to biodiversity. The challenge to society in the coming years will be to ensure continued development to help the billions of people now in poverty while at the same time managing these oil and gas activities to minimize long-term disturbance of the valuable ecosystems on which all people depend.

1.2 THE CHALLENGE TO THE ENERGY INDUSTRY

Energy companies are now finding that, in addition to legal and regulatory incentives to focus on the conservation of biodiversity, there are strategic, operational, reputational and financial reasons as well. For many companies, especially those that operate internationally, environmental and social issues have as much potential to harm their bottom line as financial issues. In today's inter-connected world, news of a problem, even if only perceived, can be disseminated around the globe in minutes, through the news media and the internet. With global awareness of biodiversity loss, public interest in oil operations has grown to the point where an increasing number of activities are subject to scrutiny.

Among the potential risks to a company from real or perceived environmental and social problems are delays and disruptions at project sites, damage to company reputation, loss of a societal license to operate, and loss of access to business resources such as oil and gas resources, land, capital and employees. Increasingly, earning a social license to operate from communities around a project – as well as a broader range of interested parties, from local citizen groups to international NGOs – is as important to the continued viability of a project as legal permits from the host government. International campaigns, legal action and violent protests against a project can endanger company employees, interrupt cash flow, slow or halt operations and cause lasting damage to a company's reputation. In the long term, a poor reputation from just one project can threaten access to resources and markets around the world.

"For Statoil, it is vital to demonstrate that the company can operate in sensitive ecosystems without long-term adverse effects to the environment. Biodiversity is therefore a key issue for Statoil, one that we are learning to address at both the corporate and project levels. We consider biodiversity conservation a key element of sustainable development. Oil and gas companies are well placed to demonstrate that the private sector can be a positive force for the conservation of biodiversity, and thereby contribute to sustainable development, either by working with others to promote conservation or by integrating biodiversity issues into our own decisions and activities."

- Olav Fjell, CEO
Statoil

Furthermore, multilateral financial institutions, international commercial and investment banks and export credit agencies, partially in response to public pressure, are beginning to develop standards and conditions for lending to large infrastructure developments, such as oil and gas projects. For example, the World Bank Group has commissioned an independent review, the Extractive Industries Review (EIR), to discuss its future role in the oil, gas and mining sectors with concerned stakeholders and produce a set of recommendations that will guide their involvement in these sectors.

Nevertheless, for many energy companies, recognition of the importance of biodiversity, and society's concern about its loss, are not yet factored into risk management decisions. Few companies, therefore, have the policy and management mechanisms in place to fully integrate biodiversity issues into their decision-making processes and management systems. The EBI products seek to demonstrate practical ways to systematically include biodiversity within an EMS throughout the project lifecycle, to ensure that companies have processes in place to address biodiversity conservation.

Although the products of the EBI focus specifically on issues related to biodiversity, it is important to note that the conservation of biodiversity is integral to sustainable development and should be considered as an input into a company's overall sustainability strategy. Biodiversity cannot be considered in isolation, but can only be managed properly if it is considered in conjunction with other sustainability issues and potential areas of impact and benefit, including social considerations, economic impacts, pollution reduction, and health issues.

The challenge for energy companies is to find a way to meet the public demand for abundant, low-cost oil and gas products and, at the same time, meet society's expectations for corporate social and environmental responsibility, including biodiversity protection. Many leading energy companies, including those that are a part of the EBI, feel that there are strong arguments for integrating biodiversity into operations, within the context of their increasing focus on sustainable development. The Biodiversity Working Group, established in 2003 through a collaboration of two global oil and gas industry trade associations, the International Petroleum Industry Environmental Conservation Association (IPIECA) and the International Association of Oil and Gas Producers (OGP), is evidence of the growing recognition of the importance of biodiversity as an issue for the industry.

1.3 THE CHALLENGE TO CONSERVATION ORGANIZATIONS

Conservation organizations cover a broad spectrum, ranging from activist citizen groups to scientific governmental institutions, each of which may have made its own decisions about whether and how to work with the energy sector. Many conservation organizations, including those that participate in the EBI, increasingly have encountered energy companies operating in the same areas of the world where they are working. There is a great deal of controversy surrounding this overlap, even within the conservation community. Some conservation organizations believe there should be no oil development in areas of high biodiversity value, while others believe there should be no new oil or gas development at all. However, some organizations, whether or not they accept global scenarios for growth in oil and gas demand, have concluded that while oil and gas development may pose a threat, it also represents an opportunity to enhance biodiversity conservation. The presence of energy companies can provide influence, awareness, expertise and management capability, and revenues to support conservation activities. Because there is a balance to be struck between economic development and the conservation of biodiversity, the challenge to conservation organizations is to be a strong voice for biodiversity protection while seizing appropriate opportunities to partner with industry.

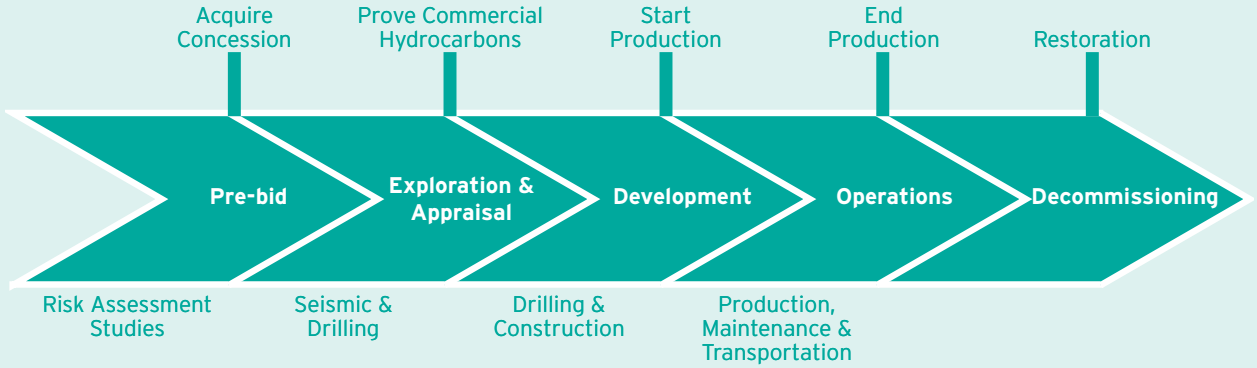
"We recognize that we need unlikely allies to win the war to save the Earth's most endangered biodiversity hotspots. Oil development can indeed co-exist with biodiversity conservation when it is thoughtfully planned, employs state-of-the-art practices, and is well coordinated with community interests."

– Russell Mittermeier, President
Conservation International

Several conservation organizations, including the EBI members, have chosen to approach energy companies – or respond to offers from the companies themselves – and collaborate on efforts to conserve biodiversity and integrate biodiversity issues into oil and gas development. By being involved in these activities, they believe they can protect the integrity of ecosystems,

BOX 5. THE OIL AND GAS PROJECT LIFECYCLE

The oil and gas development project lifecycle can be broken down into five basic phases. Biodiversity considerations apply at all phases of the lifecycle, and the EBI products are designed to address biodiversity concerns and questions at each of these stages.



1. **Pre-bid:** As a company prepares to decide whether or not to acquire a concession or other interest in a new area, it typically conducts a series of preliminary high-level identifications and assessments of potential business, environmental and social risks that acquiring the interest may present to future company operations and reputation. These activities are largely desk studies, but do not preclude limited field activities. Consortia of different companies (joint ventures) may be formed to share risks.

2. **Exploration and appraisal:** Once a company acquires a concession, the next stage is to explore the concession area, to gain an understanding of the subsurface. Seismic surveying and, if justified, exploratory drilling are conducted with the objective of proving or disproving the presence of commercially viable quantities of hydrocarbons.

3. **Development:** If the exploration and appraisal phase reveals the presence of commercially viable quantities of hydrocarbons, the company may decide to develop the field, an endeavor that may involve investment of hundreds of millions or billions of dollars over 20 to 40 years or more. Development activities include drilling production wells and construction of facilities, such as pipelines and terminals, to process and transport the hydrocarbons.

4. **Operations:** Once a field is developed, the operations phase begins, encompassing the day-to-day production of oil and/or gas, maintenance of facilities and transportation of the hydrocarbons to market via pipelines and export terminals.

5. **Decommissioning:** When the commercial life of the field comes to an end, the decommissioning process may involve removal of facilities and the restoration of project sites or other actions appropriate to the site's next intended use.

At the pre-bid stage, a company may choose not to proceed with investment and exit the project lifecycle, because of biodiversity or other concerns. For technical, economic or other reasons, a company may not continue activity after completion of exploration and appraisal. In addition, at any point in the project lifecycle after the pre-bid stage, a company may choose (or be required by the host government) to "exit" a project by divesting and transferring its legal interest to another operator. This possibility may raise a number of issues about the continuity of biodiversity-related philosophy, commitment and practice from one company to another, potentially jeopardizing sustainable biodiversity conservation and a company's ability to maintain the reputational value of its activities related to biodiversity conservation.

i See **Integrating Biodiversity into Environmental and Social Assessment Processes** and **Framework for Integrating Biodiversity into the Site Selection Process** for further discussion on this issue.

improve the environmental performance of a project and influence the criteria determining access to hydrocarbon resources. While the products of the EBI are directed primarily at companies, they also have value for conservation organizations and other parties interested in working with – and monitoring – the energy industry, to ensure the effective integration of biodiversity considerations into decision-making and operations throughout the project lifecycle (see Box 5).

"The Nature Conservancy believes that any lasting conservation solution must involve all sectors of society. The business sector commands significant resources and has a global reach and impact. Consequently, we believe businesses can and must be important and effective biological diversity conservation partners."

- Steve McCormick, President and CEO
The Nature Conservancy

1.4 CHALLENGE AND RESPONSE

Responding to these challenges – to society, the energy industry and the conservation community – will require a collaborative effort among companies, conservation organizations, governments (see Box 6), communities and other stakeholders. Only by working in partnership to promote a thorough integration of biodiversity considerations into policies, systems, operations and decision-making frameworks will energy companies, conservation organizations and other stakeholders be able to ensure a balance between meeting future energy needs and protecting vital biodiversity resources.

"Although we are a long way from having all the answers about how the diverse needs of people, business and the environment can best be integrated, we are only going to find them by dialogue. Partnerships between industry, communities and civil society are a fundamental part of that process."

- Mark Rose, CEO
Fauna & Flora International

Recognizing these challenges ahead, the EBI identified six important questions about the future of oil and gas development:

1. What is the business case for integrating biodiversity conservation into oil and gas development?
2. How can companies integrate biodiversity considerations into their systems and operations?
3. What are the potential negative impacts on biodiversity from oil and gas development, and what practices can companies adopt at their operational sites that will mitigate these impacts?
4. How can companies factor biodiversity criteria into decisions about where they will work?
5. How can a company measure a project's impact on biodiversity and its company-wide performance in relation to biodiversity?
6. How can companies go beyond minimizing impacts and take actions that benefit biodiversity?

The following six sections discuss these questions in more detail and reference related EBI products that offer further guidance and resources.

BOX 6. THE ROLE OF NATIONAL GOVERNMENTS

While energy companies and conservation organizations can have a significant influence on the state of biodiversity conservation in a given area, they cannot solve the biodiversity problems related to oil and gas development on their own. National and local government agencies and officials take the lead in shaping and implementing local and regional biodiversity conservation strategies and in setting priorities. Governments often face difficult decisions in balancing the trade-offs between biodiversity conservation and economic growth and development. In some cases, for example on a transboundary pipeline, two or more national governments may be jointly responsible for influencing a project and making the ultimate decisions about national development. Furthermore, in many countries, state-owned oil companies control production and the terms of joint ventures. These national companies are responsible for the majority of oil production around the world.

Where strong policies and government capacity for conserving biodiversity exist, companies and conservation organizations should work closely with government officials, within existing national and regional biodiversity conservation strategies and, where relevant, with state oil companies. However, in many remote and undeveloped areas that are both biodiversity-rich and of interest for oil and gas development, government may have little or no presence or capacity to protect biodiversity. An energy company may be the most powerful and wealthiest actor in the area, and there may be significant expectations from local communities and organizations for the provision of conservation programs and social services that are traditionally the government's responsibility. In such cases, it is important to strike a balance between a real contribution to conservation and the need to not supersede the government's role or create unrealistic expectations.

A key challenge for companies and conservation organizations in these situations is to work closely with officials from all relevant sectors of government, from the natural resources ministries to the environment agencies, and encourage them to play a leading role in conservation programs, for example by contributing to capacity building and institutional strengthening or arguing for a portion of oil and gas revenues to be directed to biodiversity management programs.

2. INTEGRATING BIODIVERSITY INTO THE BUSINESS CASE

What is the business case for integrating biodiversity conservation into oil and gas development?

It is widely acknowledged that biodiversity is valuable and that consideration of biodiversity issues should be a part of oil and gas development. But what are the drivers for business to support this assertion? Outlining the business reasons why a company should include biodiversity in the risk-benefit analyses that drive much of company decision-making will make it easier for managers to express these issues in familiar terms.

The "business case" for integrating biodiversity considerations into company management systems and operations is not just an off-the-shelf line of reasoning. Rather, the individual business case for each company is created, based on a company's values and principles. By tailoring basic arguments to their own particular company, health, safety and environment (HSE) managers, corporate officers and business unit leaders can better educate colleagues and shareholders about the value of biodiversity as a factor in business decisions.

See the **EBI PowerPoint Presentation** on Integrating Biodiversity Conservation into Oil and Gas Development.

Most energy companies are keenly aware that failure to operate in an environmentally and socially responsible manner can present significant risks to a company's operations and reputation. Thus, companies have increasingly recognized the business case that exists to support environmentally and socially responsible performance. Within the spectrum of environmental issues a company may face, biodiversity excites high societal interest and captures the public imagination. Nevertheless, many companies do not yet explicitly identify biodiversity conservation as a singular component of the company's environmental performance needs and objectives. Therefore, the discussion in this section focuses specifically on biodiversity to highlight attention to it, recognizing that the rationales presented are equally applicable and relevant to the business case for responsible environmental and social performance in general.

The first argument in favor of including biodiversity considerations in decision-making – and one that is the most important driver for many leading companies – is a moral and ethical one. In other words, conserving biodiversity is simply "the right thing to do." Increasingly, shareholders, employees and the public expect companies to do the right thing and to share the public's concern for environmental issues, including biodiversity.

For example, at BP's 2002 annual general meeting, a shareholder resolution was received that required clarity in how the company manages risk in the process of deciding whether to operate in protected areas. The resolution was unsuccessful, but in response BP committed to providing information on risk assessments undertaken when decisions were made to operate in IUCN Management Categories I-IV. During 2002 no such decisions were made, but in the interest of transparency the company published details of sites where existing operations were located in categories I-VI.

A risk- or financial-based business case is a complement to the values-based arguments that exist around environmental and social issues. Faced with an increasingly competitive energy market, companies still need to find a way to fit the intuitive arguments around biodiversity into the economics-driven paradigm of oil and gas development. The basic drivers for integrating biodiversity into management systems and operations are fundamentally grounded in the discipline of risk management – minimizing risks and maximizing opportunities (see Figure 3). Failing to address biodiversity considerations at the project level can lead to delays and problems on the ground, impeding a company's ability to operate efficiently. Repeated problems at project sites can damage a company's overall reputation, negatively affecting its access to land, oil and gas resources, capital, employees and public goodwill, and constraining future business opportunities.

2.1 ADDRESSING BIODIVERSITY AFFECTS PROJECT-SPECIFIC PERFORMANCE

At the project-level, public concern about the loss of biodiversity is an issue that should be recognized as an important business risk, and a company's timely response to this concern is a key factor in ensuring that projects are executed without problems or delay. Identifying and addressing potential biodiversity impacts in project ESIA, company or project EMS and stakeholder consultation can reduce the risk of delays, unexpected crisis management costs, conflicts with local communities or governments, confrontations with NGOs and even the threat of civil or criminal litigation. Minimizing these risks can increase the predictability of being able to fully and effectively carry out project plans and improve the economics of a project. A good reputation and positive relations with local people may also mean greater cooperation and understanding in case of future conflicts.

2.2 PERFORMANCE AFFECTS COMPANY REPUTATION

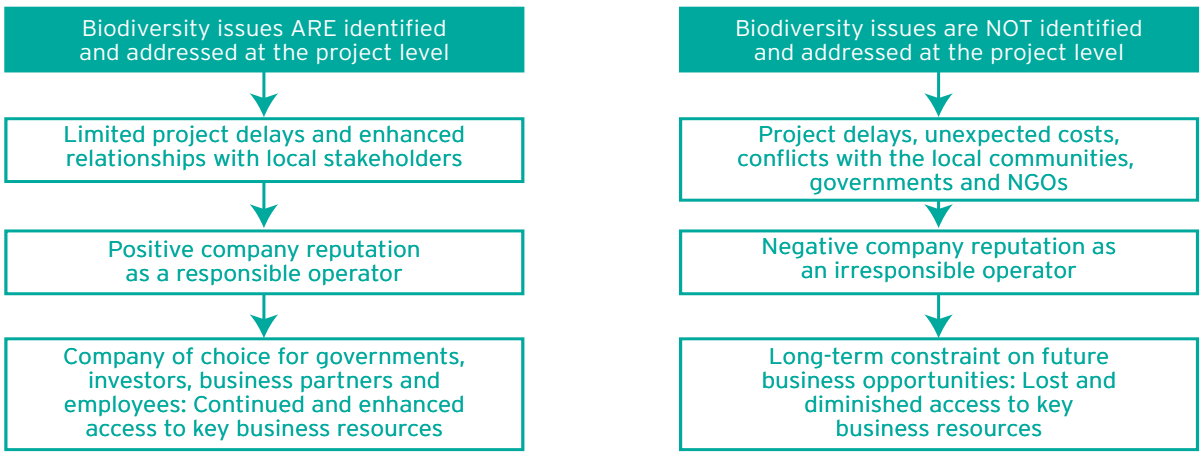
Performance at the project level can affect a company's corporate reputation. The value of a company's reputation and leadership image is difficult to quantify, but nevertheless it plays an important role in a company's competitive strategy. A recent study by Interbrand and Citibank estimated that intangible assets, such as brand, reputation and goodwill, account for two-thirds of the value of the FTSE 100 companies and 75 percent of the value of top U.S. companies. Increasingly, society is becoming more aware of and concerned about threats to biodiversity and societal expectations for good performance on this issue are growing.

"Protecting and sustaining the vitality of the earth is an obligation shared by all that live on this planet. Natural resource based companies, so closely linked to the earth and her bounty, have the opportunity and the obligation to continuously reduce their impact on the earth. Those companies that lead the way by both employing good practices and investing in targeted conservation actions will be rewarded by customer appreciation and increased operating efficiencies."

– Peter Seligmann, Chairman and CEO
Conservation International

A company that is known for effectively preventing and mitigating biodiversity impacts at project sites, for having company management systems and policies that address biodiversity considerations, and for making positive contributions to conservation enhances its ability over time to develop a reputation as a good performer, attracting loyal customers and employees, and enhancing its brand image. Companies seen as leaders on social and environmental issues can benefit from positive public relations opportunities, better relationships with stakeholders, a "bank of goodwill"

FIGURE 3. INTEGRATING BIODIVERSITY CONSIDERATIONS INTO COMPANY POLICY, OPERATIONS AND MANAGEMENT SYSTEMS: TWO POSSIBLE PATHS



among the public and positive media coverage. Conversely, accumulated problems at project sites and publicity about conflicts with communities or NGOs can negatively affect a company's image, leading to a reputation as an irresponsible operator. Citizens' campaigns, lawsuits and other negative publicity may affect the viability of other projects. With increased access to global information technology, a community near a new or proposed project may cite poor performance elsewhere as a reason for opposing the new project.

Boycotts, lawsuits or other negative publicity may also have an impact on a company's market value. For example, in 1995, Shell's plans to decommission its Brent Spar oil storage buoy by sinking it in the North Atlantic Ocean met with severe resistance from Greenpeace, which subsequently launched an international campaign against the company. Despite extensive research that indicated that sinking the buoy was the most ecologically sound disposal method available, a boycott led to a temporary decrease in Shell's sales in some European countries.

2.3 REPUTATION AFFECTS ACCESS TO BUSINESS RESOURCES

A company's track record for performance on biodiversity – and other social and environmental issues – can in turn affect its global competitiveness, in terms of access to key business resources, including land, oil and gas resources, capital and labor. A company with a positive reputation for responsibly addressing and preventing biodiversity impacts may become a company of choice for governments, investors, business partners and employees. In contrast, not managing biodiversity properly can be a long-term constraint on business and limit opportunities for future activity.

"Shell believes that customers, governments and other stakeholders want to do business with companies that are developing imaginative and positive approaches to biodiversity – companies that are part of the solution, not the problem."

– Sir Philip Watts, Chairman
Royal Dutch/Shell Group

2.3.1 Access to land and potential oil and gas resources

Companies need to maintain broad access to concessions and potential oil and gas resources in order to capitalize on the best investments and opportunities for future business development. Being aware of the potential biodiversity value of an area can save time and money during the pre-bid process, as governments may subsequently choose to limit access to resources in an area identified as having high biodiversity value.

If a government does allow access to an area of high biodiversity value, a company with proven experience and success in using technology and practices to minimize the impacts of its operations may be a more attractive option as an operator. Once a project has begun, good performance in relation to biodiversity will make it more likely that future expansion plans or project proposals in another part of the country will be approved.

"At ChevronTexaco, Protecting People and the Environment is a core value. Our goal is to be admired worldwide for excellence in this area. We recognize biodiversity conservation is an important environmental and social concern, and we accept the challenge and opportunity to show we can protect biodiversity while providing the energy resources the world needs. As a company, we are committed to demonstrate we can achieve those goals through our performance and partnerships."

– David J. O'Reilly, CEO
ChevronTexaco

Furthermore, governments often respond to pressure from citizens who do not approve of a company's activities, and a company with a poor performance record or reputation may lose existing permits or find itself with limited access to future concession areas.

Additionally, anticipating the role of biodiversity in future regulations and decisions on access to land may help a company be more competitive and avoid being hurt by public policy changes that might affect future competitiveness. Choosing not to address biodiversity in

company processes and practices may make a company less competitive in the face of new environmental regulations than a company that proactively invests in biodiversity issues.

Demonstrating that exploration and production activities can be conducted in an environmentally responsible manner may also help to stave off future restrictions on access to areas with high biodiversity values. A 2002 study by the World Resources Institute demonstrated that companies with a large portion of their operations in or near areas of high biodiversity value may suffer a disproportionately large loss of shareholder value if restrictions on access to future oil and gas resources are increased. This is particularly the case for smaller companies.

In addition to ensuring access to land and potential oil and gas resources through official government processes, companies need to preserve a more informal type of access – a "societal license to operate." This license to operate goes beyond obtaining legal permission from a government agency to operate in a certain area and involves ensuring the acceptance and trust of stakeholders and society at large, both at specific new and ongoing project sites and for the company's activities in general. Such a license is earned through a company's positive performance and the health of its relationships and reputation with customers, regulators, the media and civil society.

2.3.2 Access to capital

Large multinational oil and gas companies tend to finance their projects internally, but access to capital and investors remains a priority for smaller and medium-sized companies and in-country joint venture partners. A poor environmental performance record may affect a company's ability to access capital or increase the cost of capital. Shareholders may divest their holdings in the company or initiate shareholder resolutions on company performance. On the contrary, a good environmental record may mean that a company can attract and retain new investors, customers or business partners.

Companies that incorporate better biodiversity practices into their operations may have greater access to capital

BOX 7. CONDITIONS ON PRIVATE CAPITAL

The Equator Principles

The Equator Principles are a broad set of voluntary environmental and social guidelines for lending, adopted in June 2003 by ten of the world's major private banks, including ABN Amro Bank, N.V., Barclays PLC, Citigroup, Inc., Credit Lyonnais, Credit Suisse Group, HVB Group, Rabobank, Royal Bank of Scotland, WestLB AG, and Westpac Banking Corporation. The ten banks together represent nearly one-third of the world's project lending, with total project loans in 2002 of $14.5 billion. Under the Principles, which were developed in collaboration with the International Finance Corporation (IFC), the private-sector investment arm of the World Bank, the banks agree to adopt the IFC's and World Bank's social and environmental guidelines for sustainable development. The Principles, which explicitly state that the banks will not provide financing to projects where the borrower will not or is unable to comply with environmental and social policies and processes, are designed to ensure that the projects they finance "are developed in a manner that is socially responsible and reflect sound environmental management practices." The guidelines include guidance on impact assessment, requirements for consultation with affected parties, including indigenous people and local NGOs, reporting and monitoring.

ABN Amro's Forestry Policy

In late 2001, ABN Amro, one of the largest Dutch banks, released a new policy governing its investment in forestry projects. The policy was developed in cooperation with NGOs and other stakeholders, in direct response to accusations that ABN Amro and other Dutch banks were financing destructive oil palm plantations in Indonesia. The policy states that the bank will "no longer finance projects or operations that will result in resource extraction from or the clearing of high conservation value forests." Other conditions for financing include compliance with international environmental agreements and respect for human and indigenous rights. The bank is now developing sector-specific policies for the mining and oil and gas sectors.

from private financial institutions and multilateral development banks (MDBs) that are increasingly emphasizing good environmental performance in their screening practices and conditionalities for lending (see Box 7). A number of MDBs and other public financial institutions, including the World Bank, the International Finance Corporation (IFC) and the Overseas Private Investment Corporation (OPIC), have safeguard policies, guidelines and compliance requirements on environmental and social issues, several of which relate to biodiversity conservation. (See: World Bank Safeguard Polices at http://lnweb18.worldbank.org/ESSD/essdext.nsf/52ByDocName/SafeguardPolicies; IFC Environmental and Social Safeguard Policies at http://www.ifc.org/enviro/EnvSoc/Safeguard/safeguard.htm; and OPIC Environmental Handbook, Appendix F, at www.opic.gov) Loss of public financing may force a company to seek more expensive private financing.

In addition, with the growing popularity of socially responsible investment (SRI), companies with good environmental performance records may have an advantage. SRI portfolios typically exclude corporate securities in investment portfolios if a company's average of past years' environmental and social records do not meet pre-determined standards. Biodiversity is beginning to be an explicit component of the evaluation criteria for SRI. The Ethical Investment Research Service (EIRIS) has developed a set of biodiversity criteria, in consultation with English Nature and the Earthwatch Institute, that focuses on policy and management systems. Companies' biodiversity policies are graded as good, moderate or basic, based on whether there is a group-wide biodiversity policy or strategy covering all relevant operations or sites, whether site-based Biodiversity Action Plans are implemented and contribute to local or national conservation objectives, and whether conservation or wildlife groups are involved in the drafting of the biodiversity policy or action plans. In its 2001 survey, Business in the Environment, an organization that publishes an annual Index of Corporate Environmental Engagement, included questions on management of biodiversity issues for the first time. Questions included assessments of companies' measurement and reporting on biodiversity issues, quality and scope of information used to measure performance, targets and policies regarding impact on biodiversity and recent improvements in performance on biodiversity issues.

Besides SRI funds, some mainstream investment companies are beginning to adopt policies and guidelines on biodiversity. Insight Investment, a British investment manager with more than £64 billion (US$111.2 billion) in assets under management launched an Investor Responsibility Service in late 2002. Biodiversity is one of several initiatives under that program, with an objective of encouraging companies to "minimize impact on biodiversity and support implementation of the Convention on Biological Diversity."

2.3.3 Access to human and intellectual capital

Among a company's most valuable assets are its employees and the intellectual capital built into a business. Leadership companies have long had a recognized advantage in attracting, retaining and motivating top talent. As more young people are becoming aware of environmental issues, a company's track record on treatment of biodiversity may be one factor influencing the perceptions, decisions and motivations of new recruits.

2.4 A NEED FOR FURTHER STUDY

Increasingly, companies are recognizing that there are moral and ethical, as well as financial and economic reasons for including biodiversity considerations in decision-making as part of the company's broader approach to environmental and social performance. Yet, while it is recognized that there are both tangible and intangible benefits to being a responsible operator and a company that cares about biodiversity, there is very little documented evidence of how these values translate into benefits to a company's bottom line. There is thus a real need for companies, conservation organizations and other interested parties to document and share information to quantify and demonstrate the specific business values of integrating biodiversity conservation into company policies and management systems.

INTEGRATING BIODIVERSITY INTO THE BUSINESS CASE: SOURCES OF FURTHER INFORMATION

The following publications discuss in more detail the rationale for integrating biodiversity into business decisions and operations:

- **Business & Biodiversity – A Handbook for Corporate Action.** 2002. Earthwatch Institute (Europe), International Union for Conservation of Nature and Natural Resources, and World Business Council for Sustainable Development. Available at: http://www.businessandbiodiversity.org/publications/index.html

- Duncan Austin and Amanda Sauer. 2002. **Changing Oil: Emerging Environmental Risks and Shareholder Value in the Oil and Gas Industry**. World Resources Institute. Available at: http://pubs.wri.org/pubs_description.cfm?PubID=3719

3. INTEGRATING BIODIVERSITY INTO MANAGEMENT SYSTEMS AND OPERATIONS

How can companies integrate biodiversity considerations into their management systems and operations?

In order to effectively integrate biodiversity considerations into its decision-making and activities, a company does not need to adopt an entirely new suite of systems or practices. The ideas in this report and its accompanying products are most likely to be adopted and used systematically if they can be integrated into a company's ongoing management systems and operations. Thus, the products of the EBI are designed to build on systems already widely used within the industry, as the basis for improvement of performance wherever oil and gas operations take place.

The basic core process with which leading companies in the energy industry currently manage environmental issues is either an Environmental Management System (EMS) or an integrated Health, Safety and Environmental Management System (HSEMS). Within this system, one of the most important tools for understanding and addressing actual or potential impacts to biodiversity, particularly for new projects, is the Environmental and Social Impact Assessment (ESIA) process. Both the EMS/HSEMS and ESIA are dynamic processes that evolve through the different stages of each project's lifecycle. Although not all companies have such systems in place, they are recognized industry good practice and a desired goal for responsible management of environmental issues.

This section and its related EBI products offer suggestions for ways that a company can integrate biodiversity considerations into its EMS at both a company and project level, as well as into its ESIA process. Although biodiversity should be a part of any EMS or ESIA, actions and activities to manage and conserve biodiversity should be based on a valid and transparent risk assessment process – only in those cases where there are significant biodiversity issues will many of the actions in the following sections be necessary (see Box 8).

3.1 INTEGRATING BIODIVERSITY INTO ENVIRONMENTAL MANAGEMENT SYSTEMS

There are two principal templates for environmental management within the oil and gas sector. One template is based on the International Organization for Standardization's *Environmental Management Systems – Specification with Guidance for Use* (ISO 14001), published in 1996. The other is based on the *Guidelines for the Development and Application of Health, Safety and Environmental Management Systems*, published by the E&P Forum (now named the International Oil and Gas Producers Association, or OGP) in 1994.

While these are the most commonly used systems, the suggestions offered here and in the related EBI guide

BOX 8. THE IMPORTANCE OF RISK ASSESSMENT

Energy companies make operational and policy decisions in the context of a broad-based risk management system that evaluates the costs and benefits of different options, based on financial, operational, strategic and reputational criteria, as well as risks to wider society and the environment. Consideration and implementation of the actions and practices outlined in each section of this document should be based on the results of a comprehensive risk assessment process that considers the level of risk to biodiversity, operations and company reputation from different courses of action. Only in those cases where there are significant risks to biodiversity or to the company and potential negative impacts will many of the in-depth biodiversity management practices discussed in this document and its accompanying tools be necessary. The criteria for determining whether a risk or an impact is significant will vary from location to location and project to project. Each company has its own definition of significance and its own level of risk threshold, based on values, experiences and company processes. Likewise, each conservation organization has its own definition of significance and its own level of risk threshold, independent of its association with energy companies.

are also applicable to other EMS templates, which are increasingly based upon, or linked to, the ISO standards. No matter which system it is based on, a company's EMS is likely to have been modified in some way, and it is thus important to adapt these ideas to a specific company system. Within the overall structure of the EMS, there may be many ways to achieve the desired outcomes, and success in integrating biodiversity should be measured by performance, rather than strict adherence to a narrowly defined process.

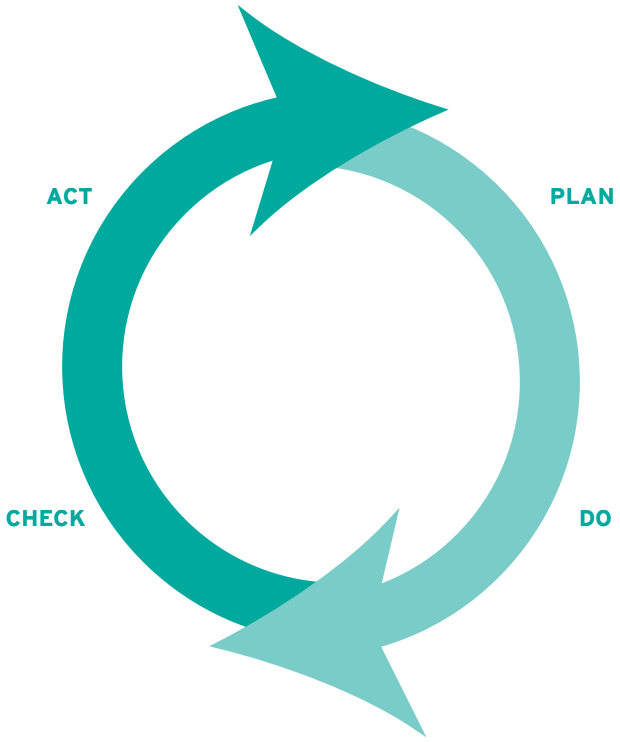
3.1.1 Integrating biodiversity into an ISO 14001-based EMS

ISO 14001 requirements for an EMS are designed to allow an organization to formulate a policy and objectives based on legislative requirements and information about significant environmental impacts. The system considers only those environmental aspects that the organization can control and over which it can be expected to have an influence. The ISO standards do not state specific environmental performance criteria.

The ISO 14001 requirements are comprised of five main categories for ensuring that environmental issues are effectively addressed in project and company activities and operations: Environmental Policy, Planning, Implementation and Operations, Checking and Corrective Action, and Management Review. At each of these stages, it is possible to integrate biodiversity considerations to more fully address the potential biodiversity impacts of oil and gas development (see Table 1 for a summary of the relationship between EBI products and the ISO 14001 EMS process). Although these five steps are often represented in a linear sequence, many of them will be conducted simultaneously and in an iterative manner. The following are examples of ways to adapt standard environmental activities to include biodiversity considerations:

- *Environmental Policy:* At the project level, a biodiversity policy statement could fully acknowledge the potential for impacts, including secondary impacts, and describe opportunities to benefit biodiversity. At the company level, as part of an overall corporate social responsibility strategy, a company may recognize the central role of biodiversity conservation in sustainable development, the benefits of investing in biodiversity conservation, and the business value of integrating biodiversity considerations into activities and decisions (see Box 9).

FIGURE 4:
THE ISO 14001 MANAGEMENT CYCLE



- *Planning:* When planning for environmental management, operators can specifically identify activities, products or services that might have an impact on biodiversity, identify relevant national or international legal or other requirements related to biodiversity, determine the protected-area status of the site and identify potential partners for biodiversity conservation activities. Where significant impacts are predicted, the operator should set biodiversity-specific objectives and targets through stakeholder engagement, and design and implement a biodiversity management program as part of a wider environmental management program.

- *Implementation and Operations:* Companies can acquire and/or retain biodiversity expertise by developing internal staff capacity, establishing links to external organizations and including biodiversity issues in training and awareness programs (see Box 10). Companies may wish to appoint a biodiversity "champion" with a clearly defined role and responsibility relating to corporate biodiversity policy and strategy. Companies can also engage stakeholders at an early stage on biodiversity issues and develop biodiversity-specific requirements for suppliers and contractors. Development of emergency and

contingency measures for any significant potential biodiversity impacts is also important.

- *Checking and Corrective Action:* At both the project and company level, companies can develop and use a system of biodiversity indicators for monitoring impacts and company actions on biodiversity (see Section 6). Where monitoring indicates that performance is not at a suitable level to ensure objectives will be met, corrective action can then be taken and activities and responsibilities amended accordingly. Project-level audit teams can include biodiversity expertise if there are predicted significant impacts, and company audits can ensure that any company biodiversity policy is visible, understood and implemented.

- *Management Review:* Where biodiversity is a significant aspect of one or more projects, companies can incorporate biodiversity criteria into existing performance contracts to emphasize that focus within line management.

TABLE 1. RELATIONSHIP BETWEEN EBI PRODUCTS AND THE ISO 14001 EMS PROCESS

EBI PRODUCT		ISO 14001 ACTIVITY				
		ENVIRONMENTAL POLICY	PLANNING	IMPLEMENTATION & OPERATIONS	CHECKING & CORRECTIVE ACTION	MANAGEMENT REVIEW
REPORT	Integrating Biodiversity Conservation into Oil and Gas Development	Section 2	Box 5	Box 5		
GUIDES	Integrating Biodiversity into Environmental Management Systems					
	Integrating Biodiversity into Environmental and Social Impact Assessment Processes					
	Framework for Integrating Biodiversity into the Site Selection Process					
	Biodiversity Indicators for Monitoring Impacts and Conservation Actions					
DISCUSSION PAPERS	Negative Secondary Impacts from Oil and Gas Development					
	Opportunities for Benefiting Biodiversity Conservation					
RESOURCES	Good Practice in the Prevention and Mitigation of Primary and Secondary Biodiversity Impacts					
	Online Biodiversity Information Sources					
	International Conventions					

Note: More detail on when to use EBI products in the ISO 14001 EMS process is provided in **Integrating Biodiversity into Environmental Management Systems**.

3.1.2 Integrating biodiversity issues into an OGP-based HSEMS

The OGP Guidelines have been developed to integrate relevant health, safety and environmental concerns in a single approach and guideline, while remaining sufficiently generic to be readily adapted to different companies and their organizational cultures. The Guidelines also recognize, and are applicable to, the role of contractors and sub-contractors. The OGP Guidelines' principal difference with respect to the ISO 14001 EMS standard is the joint consideration and integration of health and safety and environmental matters. The Guidelines describe the main elements necessary to develop, implement and maintain an HSEMS, but do not prescribe specific performance requirements,

BOX 9. CORPORATE BIODIVERSITY POLICIES

The Shell Group Biodiversity Standard

In the Group, we recognize the importance of biodiversity. We are committed to:

- Work with others to maintain ecosystems.
- Respect the basic concept of protected areas.
- Seek partnerships to enable the Group to make a positive contribution towards the conservation of global biodiversity.

Shell companies will:

- Conduct environmental assessments, which include the potential impacts on biodiversity, prior to all new activities and significant modifications of existing ones, and
- Bring focused attention to the management of activities in internationally recognized "hot spots," including the identification of, and early consultation with, key stakeholders.

The BP Biodiversity Strategy

The key themes of our biodiversity strategy are:

- Responsible Operations - to understand our direct and indirect impacts on biodiversity and demonstrate continual improvement in our performance;
- Public Policy - to contribute constructively to the public policy debate on biodiversity;
- Conservation Projects - to create collaborative partnerships, fund and contribute to conservation activities aligned with local, national, regional and global priorities;
- Research, Education and Awareness - to make a positive contribution to biodiversity research and education; to raise awareness and understanding of our employees, people we work with and our customers; and
- External Relations - to understand what is important to people; forming partnerships to develop solutions to biodiversity issues.

Statoil's Environmental Policy

In May 2003, Statoil adopted a new environmental policy that has as its goal "zero harm to the environment." This objective is defined as conserving biodiversity, limiting emissions and discharges and limiting land use. Specifically related to biodiversity, the company's goals include:

- No habitat destruction;
- No introduction of foreign species; and
- No effects on population levels.

The definition of zero harm to the environment is followed by a series of policy statements, several of which relate to biodiversity, including:

- We will act according to the precautionary principle.
- We will comply with applicable legislation and regulations.
- We will set specific targets and implement measures based on relevant knowledge of the area affected, and by applying risk analysis to assess environmental and health effects.
- We will consult and cooperate with relevant stakeholders and strive for solutions acceptable to all affected parties.

instead recommending that companies set policies and objectives that consider the significant hazards and environmental effects of their operations.

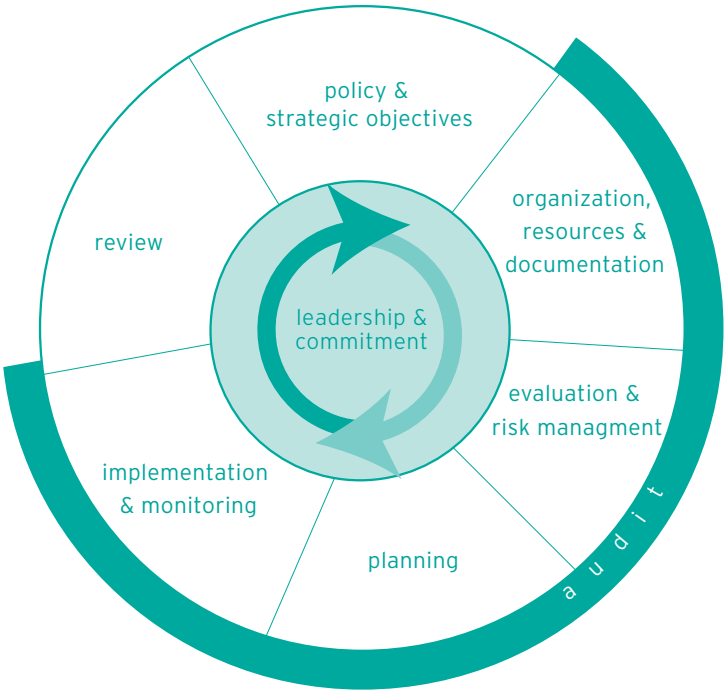
The OGP guidelines include seven main categories for addressing environmental issues in project and company activities and operations: Leadership and Commitment; Policy and Strategic Objectives; Organization, Resources and Documentation; Evaluation and Risk Management; Planning; Implementation and Monitoring; and Auditing and Review. At each of these stages, it is possible to integrate biodiversity considerations to more explicitly address the potential biodiversity impacts of oil and gas development (see Table 2 for a summary of the relationship between EBI products and the OGP Guidelines). As with the ISO requirements, many of these steps will be addressed simultaneously, or revisited at different times, rather than in a linear sequence. The following are examples of ways to adapt standard environmental activities to include biodiversity considerations:

- *Leadership and Commitment:* A company can appoint biodiversity "champions" at both the company and project level, to guide the integration of biodiversity into the EMS and ensure that biodiversity conservation is fully considered when relevant.

- *Policy and Strategic Objectives:* At the project level, a biodiversity policy statement could fully acknowledge the potential for impacts, including secondary impacts, and describe opportunities to benefit biodiversity. At the company level, as part of an overall corporate social responsibility strategy, a company may recognize the central role of biodiversity conservation in sustainable development, the benefits of investing in biodiversity conservation, and the business value of integrating biodiversity considerations into activities and decisions (see Box 9). The corporate policy and objectives might also include references to how biodiversity will be considered in the absence of local laws and regulations and provisions for continuous improvement of biodiversity conservation at specific sites and across the overall company.

- *Organization, Resources and Documentation:* A company can define, document and communicate the roles, responsibilities, authorities, accountabilities and interrelations necessary to integrate biodiversity into its EMS, assign representatives at the project level to address relevant aspects of biodiversity and allocate appropriate resources to biodiversity conservation

FIGURE 5: THE OGP MODEL HSEMS



Source: E&P Forum (now named the International Association of Oil and Gas Producers Association, or OGP). Guidelines for the Development and Application of Health, Safety and Environmental Management Systems. 1994. Adapted from this document with kind permission of OGP.

measures in accordance with risk assessment results. Companies can select and train appropriate biodiversity staff as required and update training and awareness materials to reflect biodiversity issues (see Box 10). Biodiversity-related requirements for contractors can be included as part of their overall environmental requirements, and stakeholders can be engaged at an early stage on biodiversity issues.

- *Evaluation and Risk Management:* A company can use an ESIA process to predict and evaluate impacts, indicators to monitor predicted potential impacts on biodiversity (see Section 6) and good practice to reduce the risks of those impacts (see *Good Practice in the Prevention and Mitigation of Primary and Secondary Impacts*). Where significant biodiversity impacts are predicted, project managers can develop project-level objectives and targets relevant to biodiversity. Company objectives may also include opportunities to support biodiversity conservation (see Section 7).

- *Planning:* Companies can clearly describe biodiversity-related objectives, designate responsibilities for setting and achieving those objectives and performance criteria for each relevant

function and level in the organization, and state how objectives will be met and the resources and time required to meet them. Effective and tested emergency preparedness and contingency plans for significant biodiversity impacts are also important.

- *Implementation and Monitoring:* A company can develop and use biodiversity indicators to monitor impacts and conservation actions at both the project and company level (see Section 6).

- *Auditing and Review:* Where significant impacts to biodiversity are predicted, companies can acquire or retain biodiversity expertise within audit teams, ensure that biodiversity issues identified in the ESIA process are included in audit and review programs and incorporate biodiversity criteria into existing performance contracts, to emphasize that focus within line management.

TABLE 2. RELATIONSHIP BETWEEN EBI PRODUCTS AND THE OGP HSEMS PROCESS

EBI PRODUCT		OGP HSEMS ACTIVITY						
		LEADERSHIP & COMMITMENT	POLICY & STRATEGIC OBJECTIVES	ORGANIZATION, RESOURCES & DOCUMENTATION	EVALULUATION & RISK MANAGEMENT	PLANNING	IMPLEMENTATION & MONITORING	AUDITING & REVIEW
REPORT	Integrating Biodiversity Conservation into Oil and Gas Development		Section 2	Box 5	Box 5			
GUIDES	Integrating Biodiversity into Environmental Management Systems							
	Integrating Biodiversity into Environmental and Social Impact Assessment Processes							
	Framework for Integrating Biodiversity into the Site Selection Process							
	Biodiversity Indicators for Monitoring Impacts and Conservation Actions							
DISCUSSION PAPERS	Negative Secondary Impacts from Oil and Gas Development							
	Opportunities for Benefiting Biodiversity Conservation							
RESOURCES	Good Practice in the Prevention and Mitigation of Primary and Secondary Biodiversity Impacts							
	Online Biodiversity Information Sources							
	International Conventions							

Note: More detail on when to use EBI products in the OGP HSEMS process is provided in **Integrating Biodiversity into Environmental Management Systems**.

BOX 10. POTENTIAL BIODIVERSITY ISSUES TO BE INCLUDED IN TRAINING AND AWARENESS PROGRAMS

- General introduction to ecology and the term biodiversity.
- Presentation of company policy, objectives and targets.
- Presentation of expected benefits gained by high-profile biodiversity awareness.
- Specific biodiversity procedures in the EMS.
- Responsibility structure within the company.
- Biodiversity issues in areas where the company operates.
- Examples of good and bad practice.
- Examples of projects where use of the management system has resulted in obtained objectives and targets for biodiversity issues, including specific analysis of "success factors."
- Overview of conservation organizations with which the company cooperates, and details of those projects.
- Information on designation of international and national protected areas.

3.2 INTEGRATING BIODIVERSITY INTO ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT PROCESSES

Oil and gas companies traditionally use Environmental Impact Assessments (EIAs) to identify and address the potentially significant environmental effects and risks associated with a project. In many cases, companies have also begun to use Social Impact Assessments (SIAs) to understand their potential impact on surrounding communities. Recently, some companies have begun to address environmental and social impacts in a single assessment process, an Environmental and Social Impact Assessment (ESIA). This increasing integration of the two processes has resulted from the recognition that environmental and social impacts are often inextricably linked, particularly related to issues such as the health impacts of pollution or traditional use of ecological resources by indigenous and rural communities.

In most countries, EIAs are part of the legislative framework for environmental policy. In some cases, such as regulatory requirements under the U.S. National Environmental Policy Act, the EIA process is managed by government agencies. In other cases, national legislative frameworks place primary responsibility for EIA development with the private sector. The EBI ESIA recommendations will be primarily useful where a company is responsible for completing the ESIA process. They may also be useful to companies providing input to a government-led ESIA process and to governments seeking to better integrate biodiversity into their ESIA processes.

Some national legislative frameworks require that EIAs be aligned with objectives in National Biodiversity Strategies and Action Plans (NBSAPs), as detailed by the Convention on Biological Diversity. In April 2002, the Conference of the Parties (COP) of the CBD endorsed a set of draft guidelines for incorporating biodiversity-related issues in EIAs. That decision recommended that impacts be evaluated at the genetic, species/community and ecosystem/habitat levels, and also in terms of ecosystem structure and function. It further noted that the ecosystem approach should encompass the appropriate temporal and spatial scales of the potential impacts, as well as the functions of biodiversity and its tangible and intangible values for affected people, the type of adaptive mitigation measures required, and the need for stakeholder participation in decision-making.

Any ESIA will need to address the existing set of applicable government standards and requirements relating to biodiversity or the protection of biological resources. How effectively a government protects biodiversity depends on the combination of applicable standards, enforcement and ESIAs, rather than the ESIA process alone. In some cases, that combination will help to ensure that impacts on biodiversity from a new oil or gas project will be reduced to an acceptable level. In other cases, it will not. An ESIA is essentially a procedural standard and does not guarantee high performance in regard to the management of biodiversity issues. Furthermore, and more importantly, the fact that an ESIA is completed by a company or government for a project does not necessarily mean that the level of impact will be acceptable. The recommendations of an ESIA should be open to challenge by all stakeholders, ideally through an independent judiciary. In all cases, the

BOX 11. THE IMPORTANCE OF STAKEHOLDER ENGAGEMENT

Ensuring the long-term success and sustainability of programs or activities designed to integrate biodiversity conservation into project operations requires more than just an understanding of the biological and ecological features of a concession area or host country. It is equally important to understand the interactions and characteristics of the human and institutional environment in the area – the stakeholders in a project.

Stakeholders include all those who are affected by, interested in or have the capacity to influence a project. For an oil or gas development, stakeholders might include national government departments or agencies, regional and local government authorities, local communities, citizens' groups, conservation organizations, multilateral or bilateral development agencies, other oil and gas companies or other relevant private sector actors, such as timber concessionaires. There will be multiple, possibly conflicting, issues and priorities among stakeholders, sometimes even within the same group. Because of the diverse nature of potential stakeholders, companies may need to work with external experts to identify the most significant stakeholder groups and to act as independent mediators and facilitators during discussions.

A stakeholder engagement plan, detailing a process of stakeholder identification, consultation and participation should be an integral part of the project development process, beginning at the earliest stages of involvement. The effective implementation of such a plan can help a company build trust, manage expectations and earn a "social license to operate," a tacit agreement that is based on the good will of communities and officials. This informal license allows companies to enjoy a better working environment, avoid conflict, foresee and prevent potential problems, forge local partnerships and improve their global business reputations. While earning such a license does not require companies to acquiesce to every demand made by external stakeholders, or to make unlimited attempts to engage those stakeholders who plainly are not willing to enter into dialogue, it does require them to enter into a genuinely participatory process.

While stakeholder engagement is an important part of overall planning and activity on any issue and for any component of a project, there are some topics specifically related to biodiversity that should be included in an engagement process. Among these topics, one of the most significant is local knowledge and use of biodiversity. The specific role and place of indigenous people as rights holders on their traditional lands and in relation to customarily used resources will be an important part of stakeholder engagement in certain situations.

The Convention on Biological Diversity's Article 8(j), In-situ Conservation, instructs parties to "respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge, innovations and practices." Article 10(c), Sustainable Use of Components of Biodiversity, further elaborates on this topic, instructing parties to "protect and encourage customary use of biological resources in accordance with traditional cultural practices that are compatible with conservation or sustainable use requirements."

Other important biodiversity-related topics for stakeholder engagement include local communities' dependence on ecological resources for food, water, livelihoods and aesthetic well-being, the potential human health impacts of degradation of ecological resources, and the likelihood and potential consequences of secondary impacts to biodiversity for local populations.

More ideas about methods and good practice for stakeholder engagement can be found in:

- The Participation and Civic Engagement Group of the World Bank: http://www.worldbank.org/participation
- IFC Guidance for Preparation of a Public Consultation and Disclosure Plan: http://www.ifc.org/enviro/EnvSoc/ESRP/Guidance/GuidanceF/guidancef.htm
- The Canadian International Development Agency's Policy on Consultation with Canadian (Civil Society) Stakeholders: http://www.acdi-cida.gc.ca/cida_ind.nsf/vLUallDocByIDEn/BD2CC0BD195D66E8852563FF0049F7F6?OpenDocument

commitment of an energy company to a high standard of environmental management will play an important role in determining the final, long-term effect on biodiversity from the operation.

Further information on stakeholder engagement can be found in: **Integrating Biodiversity into Environmental Management Systems**, **Integrating Biodiversity into Environmental and Social Impact Assessment Processes**, **Framework for Integrating Biodiversity into the Site Selection Process**, and **Biodiversity Indicators for Monitoring Impacts and Conservation Action.**

An appropriately comprehensive environmental and social risk or impacts assessment should be completed at the earliest possible stage in project planning, to avoid unforeseen negative impacts and to identify and implement necessary mitigation. In some cases this will be a full ESIA, in other cases something less detailed, such as a preliminary risk assessment. Further full or partial ESIAs may be required at later stages in the project lifecycle, for example during full field development, as available information and circumstances change.

One of the most effective ways to ensure that an ESIA process is fair and credible is through full and public stakeholder engagement, with all affected and interested parties (see Box 11). While stakeholder involvement in some form may occur throughout the ESIA process, it tends to be focused on the scoping and review steps (see Section 3.2.1). Depending on the project, engagement at the local, regional and/or international level may be appropriate. Stakeholder engagement can help to identify additional, unofficial sources of biodiversity information and ensure that all biodiversity concerns are noted. This is particularly important where biological resources have both functional and cultural importance for local people. Local communities often have knowledge and expertise that is extremely valuable in project planning and implementation. Indigenous communities in particular may have specific and detailed knowledge of the properties of plants and animals, the functioning of ecosystems, and techniques for using and managing them.

3.2.1 Biodiversity issues at each step of the ESIA process

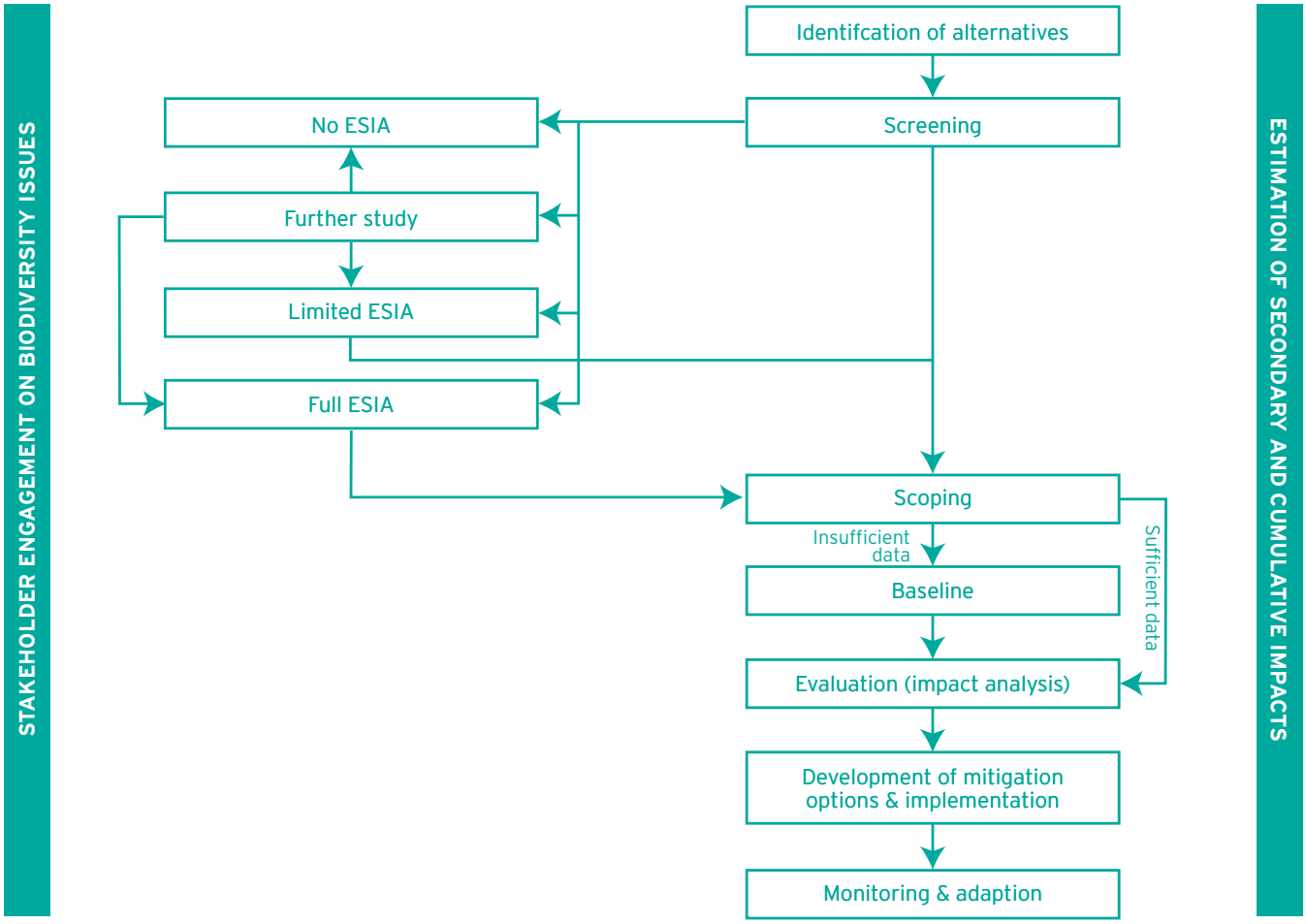
While it might be argued that standard ESIAs include biodiversity issues, these assessments are normally focused only on primary rather than secondary impacts, and concerned only with selected species and habitats within the project boundary. A full integration of environmental and social issues that encompasses biodiversity concerns will look beyond the project's boundaries and lifetime, to include the wider, cumulative impacts of a project over a broader ecosystem area (see Section 4 for more information on secondary impacts). It is important to examine these effects over the long term, as seemingly small or gradual changes may have a very significant cumulative impact. Often, the holders of traditional knowledge of an area may have important insight into the potential for such changes. In some cases, a Strategic Impact Assessment may be required to assess cumulative impacts, by assessing impact over a larger area and during a longer period of time, considering impacts due to interactions with other projects and activities and evaluating significance in terms of different spatial or temporal scales.

The following is a brief discussion of where and how biodiversity can be integrated into the major stages of a typical ESIA process. This information should be adapted to the specific design and implementation of individual ESIAs. Steps that do not specifically require consideration of biodiversity beyond the standard approach taken for other environmental issues are not included, e.g. preparation of an Environmental Impact Statement and reporting (see Figure 6 for an overview of the principal stages of an ESIA relevant to biodiversity).

1. *Identification of alternatives:* This stage (which may also take place during the scoping phase) assesses the proposed action and reasonable alternatives to it (including a "no action" or "no project" alternative). This assessment can apply to both the overall project and discrete elements within it. Knowledge on biodiversity can feed into alternative identification, for example in determining pipeline corridor or facility locations with full consideration of areas of high biodiversity value, weather windows for construction and restoration issues. Stakeholders can provide local context at this stage and indicate which aspects of biodiversity are particularly important to them.

2. *Screening:* Screening is a high-level review used to determine whether or not a project should be subject to a full or partial ESIA process and, if so, how detailed that process should be. In some cases, a company may decline to proceed further with a business opportunity, based on the results of initial information. In many countries, the first criterion

FIGURE 6. OVERVIEW OF THE PRINCIPAL STAGES OF AN ESIA RELEVANT TO BIODIVERSITY



in assessing the need for an ESIA is protected area status or the presence of protected species. However, because not all legally protected areas necessarily have high biodiversity values, nor do all areas with biodiversity value necessarily have protection, it is important to independently verify the biodiversity characteristics of the area (see Section 5 for more information on decision-making during the pre-bid stage).

3. *Scoping:* Scoping is used to identify key issues and impacts that are likely to require further investigation, establish the appropriate time and space boundaries of the study and determine the information necessary for decision-making. In addition to identifying issues that are most likely to be important during the ESIA process, scoping also eliminates those that are of little concern, to ensure that studies are cost-effective and focus only on significant impacts. Public input is valuable during this phase to ensure that important issues are not overlooked. If the project is located in an area of high biodiversity value, this phase should involve ecological and biological experts to identify the most likely and significant potential impacts. It is critical that longer-term temporal and wider spatial issues that may lead to secondary impacts are considered, as well as immediate and nearby issues. If gaps in biodiversity data are identified, additional surveys may be needed where there are significant potential risks to biodiversity.

4. *Baseline establishment:* Understanding the potential effects of identified significant biodiversity impacts

requires a set of reference conditions to provide a baseline against which to measure the direction and scale of change and consequent impacts. Before activity begins, a biodiversity baseline study may be required to provide the necessary information on the site-specific environmental setting of the project and the components of biodiversity that may be affected. Ideally, field surveys should be designed to yield information about ecosystem or species functioning, and record the habitats and species in the area. Because biodiversity field surveys may require significant time and resources, it may be most effective to combine them with other project surveys. The results of the baseline surveys should be shared with stakeholders, to obtain feedback and identify the extent and nature of any further work that might be required.

5. *Evaluation (impact analysis):* Evaluation is used to assess the significance of any potential predicted primary or secondary impacts to biodiversity and their effects over time. Changes may not be immediate, but can be either the result of single or cumulative impacts, typically when a threshold is exceeded. In evaluating the overall significance of an impact, it is necessary to consider the biodiversity value of the affected area or resource and the magnitude of the impact. Biodiversity should be considered at three levels: ecosystem/habitat, species and genetic. There is also a social change component to consider, and it is therefore important to predict and assess impact on biodiversity in terms of both conservation and the sustainable use of biodiversity resources. At this stage, engagement with key stakeholders is vital in determining significance of potential impacts, as many of the ecological functions that make an ecosystem or species important are related to the environmental, economic or cultural values and services of that ecosystem or species to human populations.

6. *Development of mitigation options and implementation:* Once a thorough impact evaluation has been completed, a checklist of mitigation options can be developed, using the hierarchy of avoid – reduce – remedy – compensate to rank options in order of preference. The purpose of mitigation is to identify measures that safeguard the environment and affected communities. Mitigation measures might include avoiding siting facilities in areas of high biodiversity value, reducing land take to the minimum practicable, implementing waste treatment methods to reduce impact on biodiversity, restoring impacted areas using native species and in ways that are compatible with local ecology, or offsetting impacts by creating or managing equal (in size, quality and function) habitats. Because secondary impacts may be difficult to address unilaterally, companies should ensure early and active involvement of stakeholders in mitigation plans and may consider participating in government-led regional planning exercises. To be most effective, mitigation measures must be translated into action in the correct way and at the right time, a process called impact management that takes place during project implementation. Because there are usually several options for mitigation of impacts, selection of measures should consider the present and future equity of impacts and benefits from the chosen course of action. Social mitigation measures may be seen as a social investment that leads to increased cooperation between stakeholders and project proponents, while at the same time potentially reducing risks. As with any mitigation measure, government and regulatory agency agreement may be important, particularly where the government is a project partner and a stakeholder in the long-term success of the action. It is also desirable to have full company management support of mitigation measures to facilitate integration of mitigation efforts as part of daily management expectations and provide support for funding and implementation programs.

7. *Monitoring and adaptation:* This stage in the process is used to monitor impacts on biodiversity at relevant stages throughout the life of a project, ensure compliance with terms and conditions of approval, monitor the impacts of development and the effectiveness of mitigation measures, take any actions necessary to ameliorate problems, and provide feedback to improve future applications of the ESIA process. A biodiversity monitoring program that systematically compares and assesses changes to biodiversity against baseline data can allow a company to evaluate its level of impact and adapt its behavior accordingly (see Section 6 for more information on using biodiversity indicators to monitor impact). Monitoring also provides a way to evaluate the accuracy of impact predictions and the degree of success of mitigation measures. This stage provides one of the best opportunities for involvement with other stakeholders, and in particular the development of partnerships.

INTEGRATING BIODIVERSITY INTO MANAGEMENT SYSTEMS AND OPERATIONS: RELATED EBI PRODUCTS

- **Integrating Biodiversity into Environmental Management Systems:** A detailed discussion of how biodiversity considerations can be integrated into specific components and steps of both the ISO 14001 guidelines for EMS and the OGP Guidelines for HSEMS.

- **Integrating Biodiversity into Environmental and Social Impact Assessment Processes:** A discussion of the methodology for conducting an integrated Environmental and Social Impact Assessment and ways to include biodiversity considerations at each stage of the process.

4. MITIGATING IMPACTS

What are the potential negative impacts on biodiversity from oil and gas development, and what practices can companies adopt at their operational sites that will mitigate these impacts?

Once a company is convinced of the benefits of integrating biodiversity considerations into decision-making, management systems and operations, the question arises as to what are those considerations? In order to measure, evaluate and act on a project's potential impact on biodiversity, it is first important to know what those impacts might be and how to address them. Impacts – changes in the quality and quantity of biodiversity in a physical environment – can be roughly divided into primary and secondary impacts (see Box 12). While impacts can be both positive and negative, this section focuses on understanding and addressing negative impacts (see Section 7 for more information about promoting positive impacts to biodiversity).

4.1 PRIMARY VS. SECONDARY IMPACTS

Both primary and secondary negative impacts to biodiversity can mean habitat conversion, degradation and fragmentation; wildlife disturbance and loss of species; air, water and soil pollution; deforestation; soil erosion and sedimentation of waterways; soil compaction; contamination from improper waste disposal or oil spills; and loss of productive capacity and degradation of ecosystem functions – offshore as well as onshore. The principal differences between the two types of impact relate to cause, scope, scale, intensity and boundaries of responsibilities, all of which can sometimes produce gray areas with impacts that are difficult to define as one or the other (see Box 13 for an example of one cause of both primary and secondary negative impacts).

In general, primary impacts result specifically from project activities. These are the impacts that will be most familiar to project managers and which may be included in a standard ESIA. Primary impacts are normally limited to the geographical area of influence of the project and can often be alleviated when projects incorporate sound operational management, impact mitigation and biodiversity conservation practices from the earliest stages of design.

Secondary impacts, on the other hand, usually do not result directly from project activities but instead are triggered by the project's presence. These impacts may reach outside project or even concession boundaries and begin or endure far beyond a project's life cycle. Secondary impacts are often the result of government decisions or indecision and the actions and practices of nearby communities in response to a project's presence, rather than from the operational decisions and activities of project personnel. Thus, it may be difficult to identify who is responsible for addressing such impacts.

Secondary impacts are most commonly caused by human population changes in an area and new or additional economic activities resulting from project infrastructure such as roads, ports and towns. These impacts are particularly pronounced in previously undeveloped and

BOX 12. USE OF THE TERM "SECONDARY"

This document uses the terms *primary* and *secondary* to describe the different causes and scales of potential impacts to biodiversity from oil and gas development. There are a number of other terms that can and have been used to describe similar concepts. Primary impacts are often called *direct* impacts, while secondary impacts are referred to as *indirect* or *induced* impacts. Although we have chosen to use the term secondary in this document and throughout related products of the EBI, it is not meant to imply secondary importance or secondary significance as an issue for the oil and gas industry. Rather, secondary refers to timing and scope of these impacts. In fact, in many cases, the effects on biodiversity from secondary impacts are much more significant than those of primary impacts and represent an important priority for the industry to understand and effectively address.

remote areas. Oil or gas operations are often magnets for people hoping to find employment with the project or to take advantage of additional business opportunities created by the project's need for goods and services. In some cases, this in-migration is encouraged by local or national governments, making secondary impacts a particularly sensitive political issue.

For example, in Gabon, Shell's operations have been the catalyst for the establishment and development of Gamba, a town of currently about 6-7,000 people, many of whom work directly or indirectly for Shell. The presence of these workers, some of whom are second generation, has had an impact on the surrounding biodiversity through limited agricultural activities and hunting of bushmeat (recognizing that this is allowed within the local law as long as it is for local consumption and not trade). Shell has no direct control over Gamba, as it is a town with its own governance, but where Shell does have direct control, such as the Gamba terminal or the infield Rabi oilfield, it has put strict management controls in place, including controlling development, prohibiting hunting, limiting driving speeds and times, and managing emissions to minimize its impacts on biodiversity.

As local population increases, demand for housing, food and other goods will grow, putting additional pressure

BOX 13. INTRODUCTION OF NON-NATIVE SPECIES

The introduction of non-native species to an area is a growing concern for scientists and conservation organizations. Species that are moved to areas outside their natural distribution may establish viable populations in a short period of time, consuming or displacing populations of native species in the new habitat. While the majority of introduced non-native species will not become invasive or aggressive, those that do may proliferate and can have devastating consequences. This can be a significant problem on islands, where species may have evolved or thrived because of a lack of predators or competitor species.

The effects of non-native species can be considered both a primary and secondary impact of oil and gas operations. Non-native soil, seeds, insects and other animals may be directly introduced to an area through the transportation of equipment, materials and supplies, or through revegetation programs. Similarly, people who move into a project area may bring with them non-native plants and animals. In addition, the problem of "edge effects" can arise when land-clearing allows plant species to spread into and colonize areas that were previously inaccessible to them.

Non-native species are often introduced along pipeline corridors, either through poor selection of reseeding programs for erosion control or reforestation, or through human activity and disturbances. In the Northwest Territories of Canada, the 869-km (540-mile) Norman Wells Pipeline, which was constructed about 20 years ago, has caused major disturbance to its surrounding boreal forests. Although the pipeline was buried and revegetation was attempted with native species, follow-up surveys have shown that 34 non-native plant species had established themselves in the area as a direct result of pipeline construction and reseeding activities. The replanting program also heavily contaminated the soils with head smut fungus (*Ustilago Bullata Beck*), which was previously uncommon in the area.

The potential for negative impacts from non-native species can be minimized and avoided by using native species in revegetation programs, keeping equipment clean and free of unwanted plant and animal species, and using quarantine and monitoring programs to reduce the transport of non-native species.

ChevronTexaco has been producing oil on Barrow Island, off Western Australia, for more than 35 years. The island, which is designated as an IUCN Category I(a) Strict Nature Reserve for the protection of flora and fauna is home to hundreds of plant and animal species, many of which are rare or extinct on the mainland but have all survived on Barrow Island because of the absence of introduced predators and competitor species. This is in part due to ChevronTexaco's Quarantine Procedure, which involves control of access to the island and rigorous monitoring of all cargo landings to minimize the risk of pests being inadvertently transferred to the island, and to maximize the likelihood of detecting and eradicating any pests that do arrive. In nearly four decades of oil exploration and production and more than 10,000 cargo shipments, no exotic species have successfully colonized the island.

on natural resources such as timber, land, water and wildlife. An oil or gas operation may also provide access to an undeveloped area for people who are interested in using previously inaccessible land or resources for purposes unrelated to the project. For example, building or upgrading roads or pipelines into areas that have previously been inaccessible for development can facilitate settlement, agricultural colonization, logging, hunting and other pressures on natural resources (see Figure 7).

Public reaction to both primary and secondary impacts may disrupt or even halt a project and damage a company's reputation. Thus, the link between project activities, negative impacts, and the boundaries of company responsibility or ability to manage impacts needs to be defined, in part through stakeholder engagement, before a decision is made to execute the project, to reduce the risks to a company's operations and reputation. In some cases, primary or secondary impacts that are difficult or impossible to avoid or mitigate will be so significant, in terms of risks to the project and company investment as well as risks to biodiversity, that a company will decide not to proceed with the investment. It is best to make this decision as early as possible.

"Statoil recognizes that secondary impacts may, in general, have more significant effects on biodiversity than the primary impacts from oil and gas activities. Such secondary impacts may be more difficult to manage than the primary impacts, and it may be questioned whether it is the responsibility of an oil and gas company to manage secondary impacts. However, ignoring secondary impacts may pose risks to both operations and our reputation. Accepting a social responsibility implies that we need to work with others in seeking to minimize negative impacts, whether they are directly caused by our operations or not, and strive towards contributing to overall positive and sustainable development wherever we operate."

- Steinar Eldøy, Senior Discipline Advisor
Environmental Technology, Statoil

4.2 MANAGING IMPACTS

A broad-based ESIA that explicitly includes biodiversity considerations will be the primary tool for a company to predict potential impacts to biodiversity and determine ways to mitigate those impacts (see Section 3 for more information on ESIAs). However, the potential for secondary impacts may not be identified or realized until much later in the project cycle. Furthermore, while primary impacts can often be mitigated and even eliminated with familiar technologies or management practices, secondary impacts tend to arise from complex interrelationships among social, economic and environmental factors in a local area. In some cases, they will result from company activities that contribute positively to economic development, such as road-building or local employment. Their solutions are thus more difficult to identify and implement, and a company may be unable to fully address and prevent such impacts on its own. Nevertheless, failure to manage such impacts can have huge negative consequences for a company's project success and overall company reputation.

BP IN TANGGUH, INDONESIA

BP is developing its Tangguh LNG project in Berau-Bintuni Bay in Papua, Indonesia, a delicate ecosystem with high levels of endemic species. The area cannot environmentally or economically support large levels of in-migration. To understand and prevent potential secondary impacts from in-migration, BP has worked with local governments and other stakeholders to develop a Distributed Growth Strategy through capacity-building partnerships. The strategy, which is built upon the recognition that the urbanization of the immediate project area is neither sustainable nor desirable, promotes project-related and other economic activities in major towns throughout the local area that have sufficient supporting infrastructure.

Figure 7 shows land clearing in Laguna del Tigre National Park, in the northern Guatemalan department of Petén. Annual deforestation rates in the park averaged about 805 hectares (1,989 acres), or 0.28 percent of the park area, between 1993 and 1995. This rate more than doubled to 1,626 hectares (4,017 acres), or 0.57 percent of the park area, per year in the period from 1995 to 1997. Nearly all of the newly cleared land radiates from

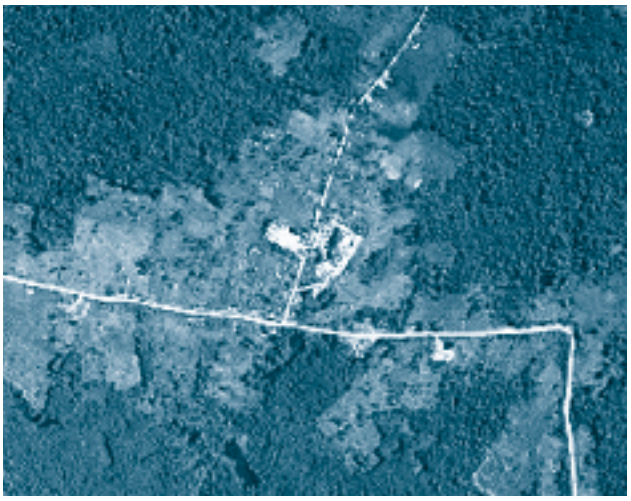
a road and pipeline right-of-way built for access to an oil operation inside the reserve or from the river. Failure of both Guatemalan park authorities and Basic, the company operating in the reserve, to implement an effective access control plan led to the road, pipeline and river becoming access routes into the reserve.

Just as negative secondary impacts are usually caused by a wide range of stakeholders, their solutions will also require cooperation among many parties. Early and active engagement with all relevant stakeholders, from local communities, to government officials, to national and international conservation organizations, can help to identify potential environmental and social conflicts, build trust, identify boundaries of responsibility and promote cooperation among all parties in addressing and preventing secondary impacts (see Box 11). For example, if a company wants to control access along a project road or pipeline path, support by the authorities and adequate financing to monitor access will be critical factors in their success. Sometimes there will be conflicts between conservation and development goals that make resolving the issue of secondary impacts even more complicated and beyond a company's sole ability to manage – for example if a local community is in favor of a road that the conservation community opposes.

One of the most important ways that companies can contribute to resolving such conflicts and addressing the challenge of secondary impacts is by encouraging and participating very early on in regional planning exercises in the areas where they work or plan to work.

See **Framework for Integrating Biodiversity into the Site Selection Process** for more information on this issue.

FIGURE 7. DEFORESTATION ALONG AN OIL ROAD AND PIPELINE PATH IN GUATEMALA



(Source: Sader, S.A., et al. Time-series tropical forest change detection for The Maya Biosphere Reserve: Updated Estimates for 1995 to 1997. Maine Image Analysis Laboratory, University of Maine, Department of Forest Management.)

These exercises should be led by governments but involve all key stakeholders. Based on the interests of the authorities, the general public and the private sector, regional plans can help establish priorities and conditions for economic activities, community development and biodiversity conservation. Proceeding with project development in the context of a general plan for conservation and sustainable development on a regional scale will help a company ensure that its field operations are managed in a strategic way, to promote sustainable development and conservation and to avoid the potential for unforeseen issues that might lead to extensive secondary impacts.

IDENTIFYING AND MITIGATING IMPACTS: RELATED EBI PRODUCTS

- **Good Practice in the Prevention and Mitigation of Primary and Secondary Biodiversity Impacts:** A detailed compilation of the range of potential primary and secondary impacts to biodiversity from oil and gas development, both onshore and offshore, and a summary of practices that can be used to mitigate or avoid those impacts.
- **Negative Secondary Impacts from Oil and Gas Development:** A discussion paper on the factors that lead to negative secondary impacts to biodiversity from oil and gas development, the key challenges in understanding and addressing such impacts, and ways that companies can contribute to mitigating secondary impacts and their causes.

5. DECIDING WHERE TO WORK

How can companies factor biodiversity criteria into their decisions about where they will work?

For an energy company potentially interested in exploring for and developing hydrocarbon resources in an area that may also have high biodiversity values, the first question to ask is whether or not it should pursue that interest. To support its choice, a company needs a decision-support framework that can allow it to identify and prioritize the risks and benefits of working in a certain area and guide choices about whether to pursue specific business opportunities.

This framework should be relevant and useful in the very earliest stages of business development, before a concession is acquired and when a company's interest in an area may still be subject to confidentiality constraints. While governments ultimately make decisions about development in areas under their control, energy companies must determine whether the inherent risks of operating in certain areas – both with respect to biodiversity and in terms of the company's project risk and/or reputation – are unacceptably high. Energy companies engaged in the selection of new sites for exploration and development – or trying to decide whether to acquire fully or partially developed sites – must find ways to balance the benefits of entry against the potential risks involved, in terms of environment, community, cost and company business and reputation.

"There are some areas of the world we believe are just too sensitive to enter. These are defined on a case-by-case basis through a process of Environmental and Social Impact Assessments, stakeholder consultations and risk assessments. We have a commitment to respect protected areas."

- Sir Philip Watts, Chairman
Royal Dutch/Shell Group

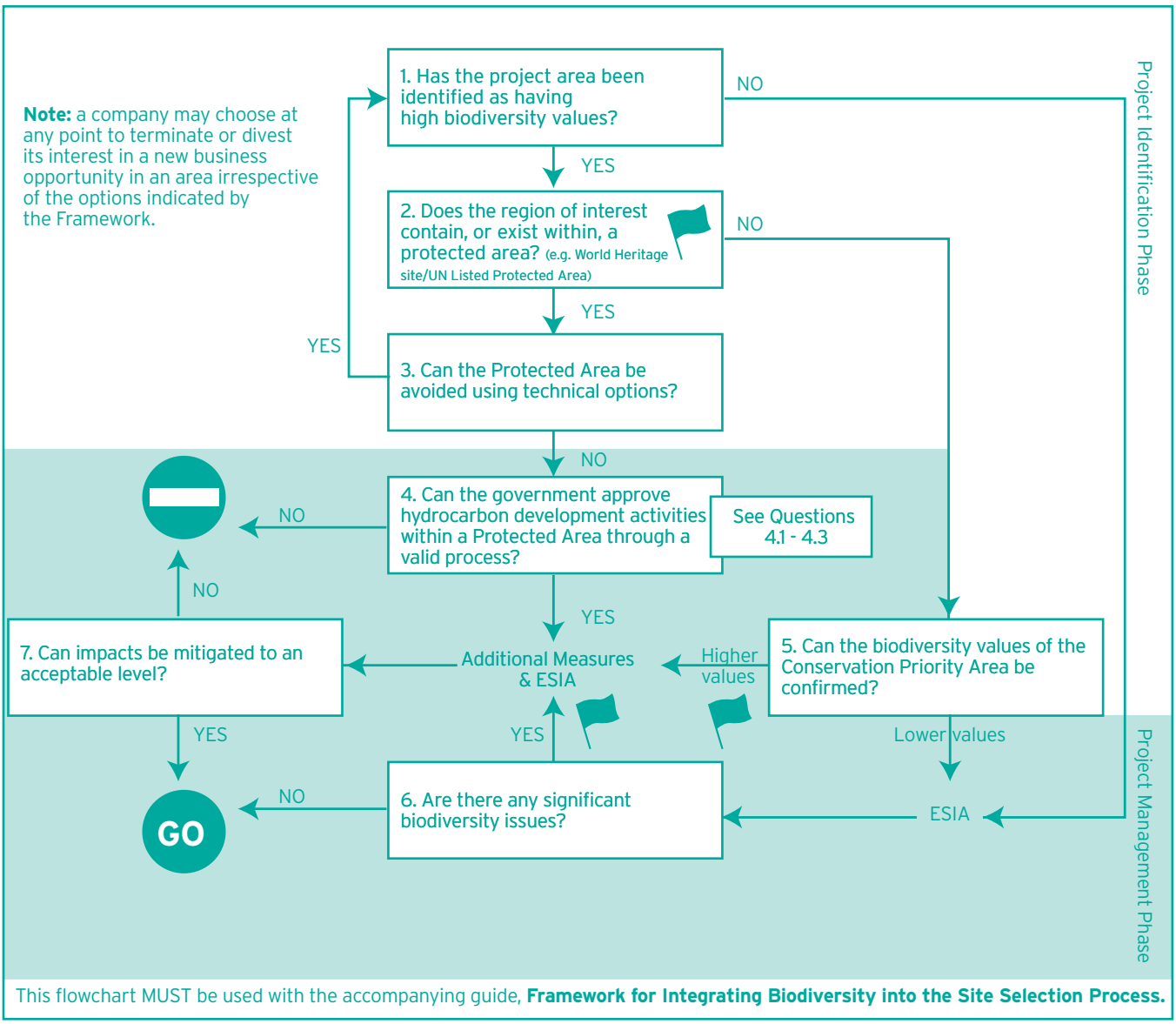
5.1 BIODIVERSITY CONSIDERATIONS AND RISK MANAGEMENT

The consideration of biodiversity issues in determining whether to proceed with a project opportunity is a process of risk identification, assessment and management. The main factor in selection of a site or project for oil and gas development is the potential to find and economically develop hydrocarbon accumulations. However, many other issues, including biodiversity, will affect the technical and economic feasibility of development and may ultimately result in a decision not to proceed with a project. An effective decision-support framework will allow companies to identify areas of particularly high biodiversity value and determine where a more comprehensive set of management responses is likely to be needed to conserve those values (see Figure 8). The framework outlined in the flow chart in Figure 8 is a simplified representation of the full process laid out in the accompanying guide, *Framework for Integrating Biodiversity into the Site Selection Process*. It is presented here for illustration purposes only and should be used with caution and only with the full text of the guide.

To be most effective, this framework should be integrated with other approaches to environmental management and biodiversity conservation, such as an EMS and an ESIA (see Section 3 for more information on EMS and ESIA), and used as part of a wider, multi-layered risk-assessment and decision-making process that evaluates risks and benefits across a broad range of perspectives. It may also be used in conjunction with regional planning exercises that can help identify where oil and gas development and other economic activities are appropriate. At any point in the decision-making process, a company may choose to terminate its interest in a new business opportunity in an area of high biodiversity value, irrespective of the options indicated by the framework.

While biodiversity may be an issue of concern in the selection of any site, its degree of relevance will depend on both the potential project impacts and the biodiversity values at and around the region of interest (which

FIGURE 8. INTEGRATING BIODIVERSITY INTO THE SITE SELECTION PROCESS: A DECISION-SUPPORT FRAMEWORK



may include a concession, pipeline route or planned construction). The first consideration in analyzing the value of biodiversity in a region of interest is whether the area has been identified as having particularly high biodiversity value, as a result of either legal designation as a protected area, or classification as important for biodiversity conservation by a government, international convention body, conservation organization or the scientific community.

5.1.1 Protected Areas

Areas legally designated for protection include local, regional and national parks and other protected areas, such as World Heritage sites, U.N. Biosphere Reserves or Ramsar wetlands of international importance. Protected areas indicate an area of high biodiversity and/or societal value and they are often related to the provision of important environmental services and products. Knowing where protected areas are in relation to planned operations can give a company an idea of where it may or may not be allowed to work, as certain activities may be restricted by law, and what the potential risks to its reputation may be (see Box 14).

See **International Conventions** for more information on protected areas.

"Our activities do sometimes touch on very ecologically sensitive areas. Our stated goal is 'no damage to the natural environment.' We're determined to keep to that commitment and we will only work in areas where we're absolutely convinced we can do so. Whether such sensitive areas are open to activity or not is a matter for governments to decide on the basis of the democratic will. Some areas no doubt will be put off limits and we must and will respect those decisions. And if areas are open, we will only work in them if we're convinced, after taking the very best scientific advice, that we can fulfill our policy standards – including the protection of biodiversity. We fully accept that means that there will be areas which we have to rule out."

– The Lord Browne of Madingley, FREng
Group Chief Executive, BP

As a basic premise, companies should seek to avoid protected areas, by examining alternate locations, routes or technical solutions (see Box 15). While hydrocarbon exploration and development are prohibited by law in many kinds of local, regional or national protected areas, oil and gas operations may be allowed in some protected areas, if permitted in law or approved by the government through a valid and transparent process. However, even if it is legally possible to undertake an oil or gas operation within a protected area, it is very important to carefully assess the magnitude of potential impacts on biodiversity. Those potential impacts may be so significant that the biodiversity values of the area would be compromised, presenting a reputational risk to the company, regardless of the legality of its actions. In all cases, it is important to fully understand the implications of relevant laws and policies and to establish credibility with stakeholders to help avoid unnecessary costs and project delays. In recent years, Shell has made a number of decisions to change plans for development because of biodiversity reasons. For example, an Omani joint-venture exploration and production company in which Shell has an interest decided to limit operations in the country's Arabian Oryx sanctuary, which overlapped the company's concession area, and to work with the Omani Government to place a moratorium on drilling in the sanctuary's "core zone." Two other examples include the decision not to operate in the Sunderbans Reserved

BOX 14. RESTRICTING DEVELOPMENT IN PROTECTED AREAS

In October 2002, in Amman, Jordan, the World Conservation Congress (WCC) adopted Recommendation 2.82 relating to the "protection and conservation of biological diversity of protected areas from the negative impacts of mining and exploration." The WCC is the key gathering for conservation organizations (governmental and NGO) and is part of the governing system of the World Conservation Union (IUCN), where its members approve the IUCN program of work and propose resolutions and recommendations to be implemented as part of that program. The IUCN has a membership of about 80 States, 110 government agencies and 750 NGOs, including those represented in the EBI.

Recommendation 2.82 "invites all governments and corporations to promote and implement best practice in all aspects of mining and mineral extraction," and calls on all IUCN State members to prohibit by law all exploration and extraction of mineral resources in protected areas corresponding to IUCN Categories I to IV (see Box 3). It also urges that any proposed changes to the boundaries of protected areas, or to their categorization, to allow for mineral exploration or extraction should be "subject to procedures at least as rigorous as those involved in the establishment of the protected area in the first place." Although specifically targeted at mining, Recommendation 2.82 could also be extended to include oil and gas operations.

Most conservation organizations, including the five that are members of the EBI, feel that it is inappropriate that developments should be allowed that cause significant damage to areas of high biodiversity value, whether they occur inside or outside of formally protected areas. Furthermore, it is presumed that, where areas have been formally designated for biodiversity conservation, governments would not authorize activities that would compromise their ecological integrity or biodiversity values.

Forest in Bangladesh, which had been included in the company's concession license, and the redrawing of the boundaries of Shell's Camisea concession license in Peru to exclude Manu National Park.

5.1.2 Conservation priority areas

Just as important in terms of biodiversity conservation are areas that are not yet officially designated for protection, but have been identified as having a high biodiversity value, by governments, international convention bodies, conservation organizations or the scientific community (see Box 4). Such conservation priority areas are sometimes very large, for example an entire country or region of the world. The challenges here are to understand the criteria used in making the designation, confirm local biodiversity values and determine which specific parts of those areas are the highest priorities for conservation, by desk studies and communications with governments, conservation organizations or scientists. It is also important to examine the social and economic aspects of biodiversity (for example, the value of a certain species or area as a local source of food or income).

5.1.3 Confirming biodiversity values and determining appropriate responses

If a region of interest has neither been legally designated for protection nor identified as having high biodiversity values by another party, it is still important to be aware of the value of biodiversity in the area. In all new

BOX 15. RE-ROUTING PIPELINES TO CONSERVE BIODIVERSITY

Oil and gas pipelines can stretch for thousands of miles across several different ecosystem types and have the potential to cause damage to biodiversity either through the primary impacts of their construction and use or through the secondary impacts caused by people using the pipeline right-of-way to gain access to previously inaccessible ecosystems. Recognizing this risk, several companies altered the planned routes of new pipelines to avoid areas of high biodiversity value.

In building the West to East pipeline in China, Shell worked with Petrochina and the Wild Camel Foundation to re-route the pipeline path from the core of the Lop Nur wild camel reserve to the reserve's buffer zone. Although Shell is not yet part of the project, it has been working with its potential joint-venture partners to raise issues of biodiversity management and other HSE concerns.

Statoil has modified several pipeline routes off the coast of Norway, to protect the reef-building cold-water corals (Lophelia pertusa) that are found there. Statoil found the first cold-water coral reef in 1982 and has since cooperated with the Norwegian Institute of Marine Research (IMR) to identify several more reefs and collect biodiversity data. As a result of this work, an inshore coral reef in the Trondheim fjord was preliminarily protected as the first Norwegian marine nature reserve in 2000. When planning the underwater Haltenpipe gas pipeline off the coast of Norway, Statoil found a number of reefs along the intended pipeline corridor. The company surveyed the area in cooperation with IMR and modified the pipeline route to avoid the Trondheim fjord reserve and other reefs.

BP is managing the development and operation of the Baku-Tblisi-Ceyhan (BTC) pipeline, which will export crude oil from the Caspian Sea to the Mediterranean, through Azerbaijan, Georgia and Turkey. An intensive investigation was carried out to refine the exact course the pipeline should take. Different constraints were weighed, including environmental and social issues, the nature of the terrain, safety (both during and after construction), technical feasibility, cost, schedule and ultimate operability. Although the pipeline route passes through a region internationally renowned for its biodiversity, great care has been taken to ensure that the pipeline construction route has minimized effects on ecologically sensitive areas. The primary mechanism for this has been re-routing. For example, in Azerbaijan, the route was designed to avoid two protected areas: the Shamkir State Forbidden Area and the Korchay Forbidden Area. In Georgia, the route was amended to avoid primary forest at Tetritskaro in the east and Tori in the west and the Narianis Veli and Ktsia valley wetlands. In Turkey, re-routing was done to avoid wetlands and the habitat of the endangered Great Snipe bird.

projects, regardless of whether or not they are in areas that have been recognized as having high biodiversity value, an ESIA process that includes biodiversity should be conducted, to assess the nature, type and likely magnitude of potential primary and secondary impacts on biodiversity. This will help to determine the ability of the ecosystem, habitat or species to recover, local values and roles of biodiversity, and the significance of the area's biodiversity. The process will also allow the company to take steps to manage potential impacts, identify what the residual impacts might be and determine what the necessary mitigation or compensatory measures might be.

The final question a company should ask to help it determine whether or not it should proceed is whether impacts can be minimized and mitigated to acceptable levels and if the residual impacts are acceptable, given the biodiversity values of the area and proposed mitigation measures. Technical feasibility, construction issues, operability and stakeholder consultation all factor into determining mitigation strategies and acceptable levels of impact.

If, after using this framework, a company decides to proceed in an area where potential risks to biodiversity exist, it may be necessary for the company to go beyond any minimum legal requirements for biodiversity conservation and incorporate a more comprehensive set of management actions, including mitigation, compensatory measures and investments in biodiversity conservation (see Section 7 for more information on opportunities to benefit biodiversity conservation). Such a program will demonstrate to stakeholders that a company is operating responsibly and managing risks. It may also have the added benefit of reducing potential future liability and safeguarding the company's reputation.

DECIDING WHERE TO WORK: RELATED EBI PRODUCT

- **Framework for Integrating Biodiversity into the Site Selection Process:** This decision-support framework is intended to assist companies in the specific analysis of biodiversity issues in a region of interest at the earliest stages of project development, to determine whether to proceed with a project and, if so, where and how.

6. MEASURING IMPACTS AND ACTIONS ON BIODIVERSITY

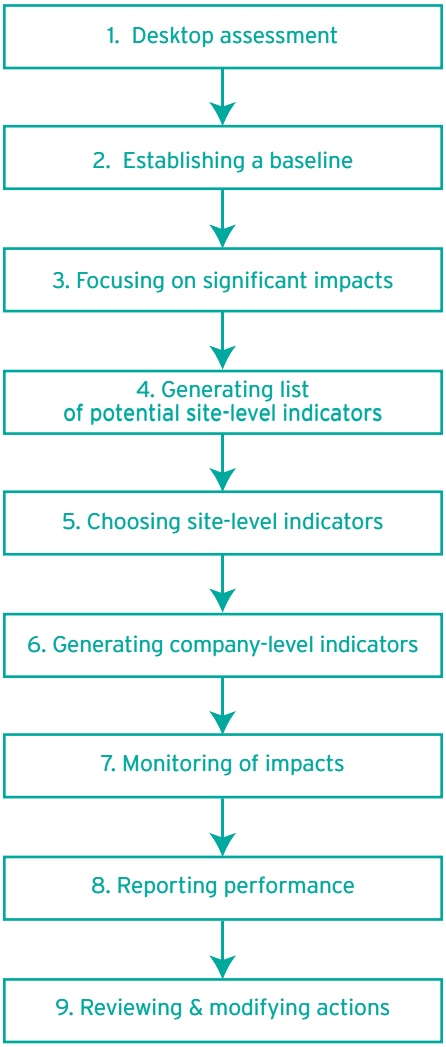
How can a company measure a specific project's impact on biodiversity and its company-wide performance in relation to biodiversity?

A formalized system to measure and monitor the effects of activities on biodiversity can allow companies – as well as regulators and civil society – to more easily understand, predict, minimize and prevent impacts; manage activities; and develop, monitor and refine management practices and eventually company policies. Establishing a system for reporting on impacts can also help the company to provide assurance and transparency about its performance and progress on conservation issues.

Impacts to biodiversity can be measured using biodiversity indicators. Indicators are a way of presenting and managing complex information in a simple and clear manner that can form the basis for future action and can be readily communicated to internal or external stakeholders as needed. Designed to provide an indication of something desirable or undesirable happening in the surrounding environment, indicators can be used to evaluate many things, from pressures on biodiversity to changes in the state of biodiversity to how a company has responded to biodiversity issues. The key value of indicators depends on how they are used. The collection and analysis of information on indicators is not an end in itself, but rather an input to management feedback loops that adapt behavior based on the results of monitoring and evaluation.

There is no one single all-purpose measure for biodiversity. The complex and dynamic nature of biodiversity and the general lack of knowledge about many of its aspects make understanding, predicting and managing impacts on such systems and the collection of relevant information very challenging. The different ways that stakeholders perceive the value of biodiversity and the location-specific nature of many potential impacts means that a suite of indicators may need to be developed for each individual project. Furthermore, in some cases, biodiversity indicators may not be relevant. As with any other system to integrate biodiversity into operations, the determination of whether a company needs to develop and use indicators for a particular project will depend on a risk assessment process that identifies the value of biodiversity at a particular site and the need for specific monitoring and measurement of predicted significant biodiversity impacts.

FIGURE 9: METHODOLOGY FOR DEVELOPING PROJECT-LEVEL AND COMPANY-LEVEL BIODIVERSITY INDICATORS



Because indicators will vary from project to project and company to company, the focus of this section and its related EBI guide, *Biodiversity Indicators for Monitoring Impacts and Conservation Actions*, is on a methodology for

deriving site-level and company-level indicators, rather than on the indicators themselves (see Figure 9). The use of "off-the-shelf" indicators without first taking the steps identified here may lead to important site-specific factors being ignored or misjudged, with subsequent unwanted impacts on biodiversity and company reputation.

6.1 TYPES OF INDICATORS

A company can develop indicators for both site-level and company-level performance. Each set of indicators should focus on those factors that may have the greatest impacts on biodiversity and are most critical for risk management and stakeholder perceptions, based on the results of ESIA and stakeholder engagement processes. Indicators should be developed not only for negative impacts, but also for positive contributions to conservation efforts, such as outreach programs, education, research and proactive conservation actions (see Section 7 for more information on opportunities to benefit biodiversity).

Site-level indicators are used for measuring impact at and around a project site and reporting on the management approach to biodiversity conservation and performance at that site. Typically, this may require monitoring of the factor or parameter that is causing the primary or secondary impact and the chosen response to mitigate or prevent the impact. While these measures can be quantitative or qualitative, there is a general emphasis on quantitative measures of impacts. At the company-level, measurements are more often process indicators that relate to the way in which the company has considered the concept of biodiversity and is seeking to reflect this in the way it operates. Such indicators will likely focus not on actual detailed impacts, but on such things as the scale and location of operations, policy information about approaches to managing biodiversity, case studies or information on compliance with policies and processes. Some company-level indicators may be derived from an aggregation of project-level measures (see Table 3 for some examples of possible site- and company-level indicators).

Although individual indicators will vary for each project or company, a general set of criteria holds true for most indicators. "Good" indicators should follow the SMART philosophy (Specific, Measurable, Achievable, Relevant and Timely) and be sufficiently sensitive to provide a warning of change before irreversible damage occurs.

Ideally, a system of indicators should be used within a formal EMS, as much of the information and data required to produce indicators will already exist in completed research and monitoring studies, including company ESIAs, licensing studies and company reports, as well as conservation assessments and biodiversity strategies developed by governmental and non-governmental organizations (see Section 3 for more on EMS). Just as the required information and chosen indicators may differ from project to project, the needs,

TABLE 3. EXAMPLE INDICATORS

SPECIES	HABITAT	COMPANY MANAGEMENT
• Globally threatened and data-deficient species in area. • Restricted-range species. • Invasive non-native species that are threatening to ecosystems, habitats or species • Species used by local populations	• Operational site overlap with conservation priority areas containing globally threatened or restricted-range species. • Amount of land within the operational site that has a management plan with a biodiversity conservation focus. • Contribution to habitat conservation.	• Is there a clear policy written into the site-management plan that outlines explicitly how biodiversity will be managed in the area, and is there evidence from past projects that management has committed itself to these policies? • Biodiversity elements included in management system. • Corporate/business unit budget allocation for biodiversity. • Sites with biodiversity action plans. • Ongoing biodiversity conservation projects, either at site or collaborations at company level.

BOX 16. DEVELOPING BIODIVERSITY INDICATORS: A HYPOTHETICAL EXAMPLE

The following is an example of the application of the nine-step methodology for developing biodiversity indicators discussed in this section:

1. Desktop assessment: The principal stakeholders have been clearly identified for the consultation process. Biodiversity values have been established through discussions with local indigenous people and academics and through a review of published literature. Based on a desktop risk assessment and available literature, the company decides that indicators are required to monitor impact and actions and draws up a list of potential impacts. Major pathways linking the operation to the habitat have been identified as air, surface water, noise, vibration and possible disposal and subsequent dispersal of solid wastes.

2. Establishing a baseline: Habitat quality and species in the area that local indigenous people say has been affected by the oil operation are compared with that in another, similar area that is remote from the operation and human influence. This second area is used as a baseline. Studies by external experts and information from local people indicate that there is no significant difference with respect to habitat quality between the two areas, but there is a significant decrease in animal numbers in the area adjacent to the operation.

3. Focusing on significant impacts: The baseline studies indicate that only land-based animals appear to be affected, so the process focuses in on air, noise, vibration and dispersion of wastes, rather than water-based pathways. Further studies indicate that there is no significant air or soil pollution but that there is significant noise and vibration within one mile of the project boundary. Relevant experts conclude from existing studies that although noise is unlikely to affect the animals, the vibration may deter the presence of certain species, leading to reduced mating and reproduction. Based on this information, the company sets a preliminary target of returning populations of affected species to 90 percent of the baseline recorded in the control area within six months.

4. Generating a list of site-level indicators: The company determines that potential biodiversity indicators include ratio of species numbers per hectare and ratio of mating pairs in both the affected area and baseline area for each impacted species. However, because it might take longer than six months to collect the relevant data, the company also chooses additional indirect indicators – percentage decline in vibration magnitude at the site boundary and one mile into the affected area – to use in the short term.

5. Choosing site-level indicators: Based on consultations with local communities, the company determines that the most appropriate indicator is the ratio of species numbers per hectare, rather than the ratio of mating pairs. It also agrees with the community to use the indirect indicator of vibration magnitude to begin immediately modifying its activities and reduce impacts on affected species.

6. Generating company-level indicators: The outcome of the process of indicator generation and activity modification is integrated into an overall assessment of performance at this specific site.

7. Monitoring of impacts: The company monitors vibration frequency and magnitude at the site boundary and one mile into the affected area and compares data with targets set in step 4 for the first eight months, after which it has acquired sufficient monitoring capacity and data to switch to the direct indicator.

8. Reporting performance: The company uses indirect and direct indicators to report against targets internally, to determine progress and modifications required for remedial and preventative measures to achieve those targets. At 12 months, the indicators are also used to formally report to the local community.

9. Reviewing and modifying: Within the first three months the company begins to modify its activities, resulting in a reduction of vibration by 65 percent (just below the three-month target of 70 percent). Within the following three months, further work to reduce vibration enables it to meet its overall target of 85-percent reduction at six months. At the same time, the company begins to develop and implement the capacity to monitor species numbers and, by 12 months, monitoring reveals that the population in the affected area has recovered to 95 percent of that in the control area.

questions, audiences and information may differ at each stage in the lifecycle of an individual project, allowing project managers to increase their understanding of impacts and the success of actions taken to address those impacts. For example, while data gathered during pre-bid will normally be based on existing information and surveys, new studies may be required during development and operations.

6.2 METHODOLOGY FOR DEVELOPING INDICATORS

The following is a brief summary of a nine-step sequence for developing site-level and company-level indicators. A hypothetical example of the application of this process is illustrated in Box 16. At several points in this process, if risk assessment indicates that there are no significant predicted impacts to biodiversity, a company may choose to exit the indicator generation process. However, it should be noted that, although the scientific process may not indicate the presence of significant impacts, stakeholders may disagree with that assessment and there may still be the need to address perceived impacts through the generation of indicators.

1. *Desktop assessment of biodiversity values and potential biodiversity impacts:* The first step in developing indicators is an assessment of the biodiversity value of the site and associated area and any potential biodiversity impacts, to produce a comprehensive assessment and list of relevant potential impacts on biodiversity.

2. *Establishing a baseline:* If the first step indicates the potential for biodiversity impacts, creating a biodiversity baseline provides a useful record against which any changes in biodiversity status can be compared.

3. *Focusing on significant impacts:* At this stage, the full list of potential impacts must be narrowed to a smaller group of those that are expected to be significant in the context of the operation and the surrounding environment.

4. *Generating a list of potential site-level indicators:* Each significant impact on biodiversity identified in the previous step may generate one or more potential indicators.

5. *Choosing site-level indicators:* The list of potential indicators generated in step 4 must now be reduced to a smaller number of the most appropriate indicators. Chosen indicators should be based on suitability and ability to monitor the results of modifying activities.

6. *Generating company-level indicators:* Company-level indicators may be derived by the aggregation of site-level indicators, provided they have the same unit of measurement, relate to the same biodiversity impact and add value at the company level. Alternatively, company-level indicators can be generated to measure some of the responses that a company has taken.

7. *Monitoring of impacts and conservation actions:* Monitoring is used to check that objectives and targets have been achieved, to identify new issues and potential impacts and as a feedback mechanism to modify and improve conservation practices. This stage can also verify that the correct indicators have been chosen to measure actions and assess objectives.

8. *Reporting performance:* Whether legally required or voluntary, communicating and reporting performance to both internal and external stakeholders is an integral part of ensuring understanding and transparency of impacts and actions taken to address those impacts.

9. *Reviewing and modifying actions:* A clear feedback loop should be established to assess the success of actions and indicators put in place. If reporting indicates that performance is not in line with targets, then site- and company-level activities should be modified as appropriate.

MEASURING IMPACTS AND ACTIONS ON BIODIVERSITY: RELATED EBI PRODUCT

- **Biodiversity Indicators for Monitoring Impacts and Conservation Actions:** This document offers both a methodology and factors to consider when establishing appropriate indicators for measuring performance related to biodiversity, at both the site and company level. The guide also includes a listing of example indicators, with rationale for use and limitations.

7. BENEFITING BIODIVERSITY CONSERVATION

How can companies go beyond minimizing impacts and take actions that benefit biodiversity?

For companies operating in areas with high biodiversity values, integrating biodiversity considerations into decision-making is no longer just about mitigating the negative impacts of their presence. Acting on increased public pressure and their own sense of corporate responsibility, some companies are going beyond mitigation to take advantage of opportunities to benefit biodiversity conservation. Such action can be particularly important in countries where capacity and resources for protecting the environment are limited.

Opportunities for benefiting biodiversity are actions that allow a company to contribute to improving the status of biodiversity and the capacity to conserve it, at a local, regional or national level. Companies may find that pursuing efforts to improve the state of biodiversity conservation in an area will deliver tangible business value as well, including links to corporate social responsibility. Such activities go beyond offsets, which are intended to reduce or compensate for the negative impacts of a project, to ensure no net loss of biodiversity (see Box 17).

> *"Our conclusion is that we can have a real, measurable and positive impact on the biodiversity of the world."*
>
> – The Lord Browne of Madingley, FREng
> Group Chief Executive, BP

Companies can make investments in biodiversity conservation at both a project level and a company level. At the project level, such activities will be strongly driven by the results of a project ESIA and any determined need for actions beyond mitigation. At the company level, opportunities to benefit biodiversity conservation can be a key part of an overall corporate

BOX 17. OFFSETS VS. OPPORTUNITIES

Opportunities to benefit biodiversity should be seen as measures to complement, rather than replace, any voluntary or required investment in conservation offsets. An offset is typically a measure taken to reduce the negative impacts of a project, both primary and secondary, and to help achieve no net loss of biodiversity at a project site. The objective of an offset is that, by the end of a project, the status of biodiversity in a particular area is comparatively as well off overall as before the project began. Use of offsets for this purpose should be the minimum expected standard by which all companies operate. While legal requirements for offsets and compensation vary from country to country, some sites require companies to implement offset and compensation measures if impacts occur. Offset or compensation measures might include placing property into protected status, buying land for new protected areas, enhancing or restoring degraded land or supporting research or capacity-building for protected areas management.

In 1994 Statoil began construction on the Europipe natural gas pipeline, which begins in the North Sea off of Norway and comes ashore in Germany's Lower Saxony Waddensea National Park. Finding an acceptable landfall for the pipeline to come ashore in the park was a major challenge. After a lengthy planning process and consideration of ten possible landfalls, a route that includes a tunnel under the tidal flats was chosen for crossing the park. The route was expected to have temporary, but still significant, impacts on the environment. To offset the effects, Statoil, in keeping with German law, constructed a 42-acre (17-hectare) biotope with ponds and sand dunes close to the pipeline metering station, on land that was previously an extensively used agricultural field with a relatively poor flora and fauna. The area, which has since received official protected status, is now a habitat for a number of rare and threatened species.

TABLE 4. OPTIONS FOR BENEFITING BIODIVERSITY CONSERVATION

MOST OUTSTANDING BIODIVERSITY NEEDS/CHALLENGES	POSSIBLE OPPORTUNITIES FOR BENEFITING BIODIVERSITY CONSERVATION
Lack of resources/structure to manage protected areas	• Trust fund, financial contribution to protected areas management • Support for creation of a new protected area
Important, threatened and unprotected ecosystems or species	• Manage concession as protected area • Sponsor campaign to protect ecosystem by using charismatic, endangered flagship species • Support conservation easements
Lack of government/scientific capacity to study and manage biodiversity	• Support for scientific research and analysis • Support for technical capacity-building and training • Support for managerial capacity-building in government agencies
Lack of public awareness of, or involvement in, conservation	• Support for environmental education and awareness building • Support for integrated conservation and development

social responsibility strategy that recognizes the role of biodiversity conservation in sustainable development and the business value of a positive public reputation on biodiversity issues.

Determining what are the most feasible opportunities to generate substantive long-term conservation benefits in an area will require consideration of many factors, including local, regional and national conservation priorities, risks and benefits to the company, the availability of local partners, the biodiversity richness of an area, the degree of threat and pressure from human activities on biodiversity, the expected impact or scope of the project, the status of the host country's protected areas system, and the host government's technical and management capacity to conserve biodiversity. To be effective, an investment in biodiversity conservation typically will need to be long-term. Because this may increase a project's costs and exposure to risks, choices about opportunities should be factored into early analyses of financial, operational and reputational risks and benefits. It can be very costly to reputation to stop a project after it has been started, if it cannot be sustained.

Companies should work closely with government officials and other local stakeholders to carefully evaluate the local economic, environmental and social situation in a project area, in order to identify and develop the most effective programs and strategies for benefiting biodiversity conservation. For example, in an industrialized, developed country, the problem for biodiversity may be lack of habitat, and the best conservation opportunities may involve returning agricultural or other lands to nature. In a developing country, the major threat to biodiversity may be poaching or illegal cutting and burning of forests. In this case, the most effective conservation opportunities might involve habitat protection, support of park management or identification of social and economic alternatives to destructive activities.

7.1 TYPES OF CONSERVATION PROGRAMS

There are many ways that a company can invest in opportunities to benefit biodiversity near a project site, or even at the regional or national level, based on the most outstanding needs and problems related to biodiversity conservation in the area (see Table 4). Investment possibilities include:

- *Strengthening protected areas:*
    - *Support for existing protected areas:* Such contributions can be made by establishing a trust fund, making contributions to an existing fund through direct annual payments or lump sums, or through strategic in-kind contributions, such as patrol vehicles or park infrastructure.

- *Support for the creation of new protected areas:* When important and unprotected ecosystems are identified near a project site, companies can work with local stakeholders to promote government creation of a new addition to the country's protected area system.
- *Management of a concession as a protected area:* If a concession contains ecosystems determined to be important areas for conservation, the portion not needed for operations can be managed as a formal or de facto protected area, either directly by the company or in partnership with government agencies, conservation organizations or local communities. In some cases, biodiversity inside the boundaries of a company's concession may be healthier than that outside the boundaries, because of the company's ability to prevent human incursion and activities that lead to environmental degradation.

MOBIL IN TAMBOPATA, PERU

In 1996, Mobil acquired an exploratory oil concession in the Tambopata Candamo Reserve Zone (TCRZ) in Peru. The 1.5 million-hectare rain forest ecosystem holds some of the most pristine and unspoiled ecosystems of Amazonia. In 1998, Mobil decided to end exploration activities and leave the area. Before exiting, the company worked with the Peruvian Government and Conservation International to add the TCRZ to the existing Bahuaja-Sonene National Park, doubling the park's size to 1.1 million hectares and leading to the creation of the Tambopata National Reserve and adjacent buffer zones.

- *Campaigns to save endangered species:* Companies can identify threatened or endangered species located near a project site or in another part of the country, and contribute to efforts to protect them. It is important that such efforts focus on protecting not only individuals of the species, but also the critical habitats upon which they rely for survival.
- *Support for scientific research and analysis:* Providing support for biodiversity research, scientific training and information sharing can make an important contribution to local and national scientific capacity to protect biodiversity.

SHELL IN GABON

Shell Gabon is working with the Smithsonian Institution to improve knowledge and management of biodiversity within the Gamba Complex in Gabon. The partnership includes biodiversity research, assessment and monitoring; promotion of links among stakeholders, scientists and industry in Gabon; technical training to increase in-country capacity for biodiversity assessment; and dissemination of scientific information generated from the assessments.

- *Support for environmental education and awareness building:* In areas where knowledge of biodiversity or protected areas is poor, support for public education and awareness campaigns can promote understanding and support among populations that may have previously been hostile or indifferent to the issue.

BP IN AZERBAIJAN

In April 2001, BP sponsored an Environmental Awareness Week to raise awareness among young people in Azerbaijan. Implemented in partnership with local environmental organizations, the week aimed to highlight current international environmental problems and encouraged citizens to take more responsibility for environmental challenges. A number of leading Azerbaijani environmental scientists from the Caspian Environmental Laboratory, which is now operated by BP, taught classes and took children on field excursions.

- *Sharing of information on biodiversity:* Private sector companies hold enormous amounts of biodiversity data within their archives – data that could be valuable for the wider scientific and biodiversity research community. Much of this data is generated during the preparation of ESIAs and during biodiversity monitoring throughout the life of a project. Making this information available and accessible can greatly contribute to existing and future efforts to understand and conserve biodiversity.
- *Support for capacity-building in government agencies:* Skill sharing, technology transfer, training and

education can increase the ability of government representatives to manage protected areas and design and implement environmental policies and legislation.

- *Support for conservation easements:* In some countries, a company interested in benefiting biodiversity may be able to purchase the rights to a logging or agricultural concession, provide funding to compensate the government, and choose not to develop the land but rather manage it to conserve biodiversity in partnership with local communities, NGOs or other stakeholders.

- *Support for integrated conservation and development:* Working with communities and government officials in the design and implementation of economic development activities at the appropriate regional scale (i.e. through regional land-use planning) can help promote development without threatening biodiversity.

CHEVRONTEXACO IN PAPUA NEW GUINEA

At its Kutubu joint venture oil development in the highlands of Papua New Guinea, ChevronTexaco is partnering with the Worldwide Fund for Nature (WWF), national and provincial governments and local landowners to implement the Kikori Integrated Conservation and Development Plan. The initiative, which began in 1994, includes a major biodiversity study of the region, development of pilot ecoforestry and ecotourism projects to lessen pressure on the standing forest, raising community awareness about the negative impacts of industrial-scale logging, and conservation training for government officials and community members. The Community Development Initiative Foundation was launched in 2001 to support sustainable social and economic development in surrounding rural communities while protecting biodiversity.

BENEFITING BIODIVERSITY CONSERVATION: RELATED EBI PRODUCT

- **Opportunities for Benefiting Biodiversity Conservation:** A discussion paper on how companies can assess the most appropriate opportunities for benefiting biodiversity conservation at or near a project site. The document includes a survey of various types of conservation opportunities and presents examples of companies that have implemented such programs.

8. CONCLUSION

Ensuring that oil and gas exploration and production activities proceed in a manner that is compatible with biodiversity conservation and responsible business practice will require a reassessment of business management systems and decision-making frameworks, within the context of an increasing focus on sustainable development. Only by thoroughly integrating biodiversity considerations into policies, systems, operations and decision-making frameworks will biodiversity become a regular part of business risk assessments, in much the same way that issues such as safety or emissions control are familiar and accepted factors today.

The EBI believes it is in the interests of the energy industry and society to continually work toward achieving this integration. Each company has a different set of values, principles and policies, each is at a different point along the path of integrating biodiversity into its systems and operations, and each will progress at a different rate toward achieving effective consideration of biodiversity issues. Companies also operate in different parts of the world and encounter a wide range of approaches to regulating the environmental impacts of oil and gas development. Thus, each company will need to adapt its existing business procedures, based on a process of prioritization of needs and potential risks and benefits. This includes the EBI companies, for whom this is also still a "work in progress." Each is starting from a different point in developing its internal biodiversity policies and programs. As such, each company has different needs and priorities for addressing the individual recommendations below, and none is necessarily likely to fully implement them all.

The path toward achieving this integration should be a joint effort among companies, conservation organizations, governments, communities and other stakeholders. Energy companies can mobilize considerable corporate expertise, influence and resources for biodiversity conservation, but they cannot and should not be expected to take all the necessary actions on their own. Rather, companies, governments, conservation organizations and communities can work together to develop tools, resources, guidelines and case studies that will further promote full consideration of biodiversity conservation issues wherever oil and gas resources are developed.

8.1 RECOMMENDATIONS

To encourage progress in integrating biodiversity conservation into upstream oil and gas development, the EBI recommends that:

1. Companies and conservation organizations view biodiversity conservation as an integral part of sustainable development.

2. Energy companies are familiar with the Convention on Biological Diversity, understand its implications for their industry, and contribute to its implementation.

3. Energy companies and conservation organizations work together in partnership to integrate biodiversity conservation into upstream oil and gas development.

4. Energy companies and conservation organizations share information on biodiversity and make that information available in the public domain, whenever possible.

5. Stakeholder engagement that includes biodiversity considerations begins as early as possible and continues throughout the project lifecycle. Engagement is particularly important during impact assessment, indicator development and evaluation of opportunities to benefit biodiversity conservation.

6. Where project development proceeds, it does so, where possible, in the context of a general plan for conservation and sustainable development on an appropriate geographic scale. Energy companies and conservation organizations participate with other key stakeholders in government-led spatial/regional land-use planning processes to map out priorities for biodiversity conservation and sustainable economic development.

7. Energy companies integrate biodiversity considerations into their Environmental Management Systems.

8. Integrated environmental and social impact assessment (ESIA) processes are carried out for any new major development project. Potential impacts on biodiversity are fully assessed and analyzed when preliminary screening and scoping or subsequent review steps determine that the project may have significant impacts on biodiversity. An ESIA process:

   - Begins as early as possible and continues in an iterative manner throughout the project lifecycle.
   - Looks at all relevant levels of biodiversity.
   - Addresses both primary and secondary impacts by considering ecological, social and economic changes.
   - Analyzes and responds to the interaction between environmental and social issues.

9. Companies recognize the integrity of protected areas. They understand that, while some governments may permit oil and gas development in certain protected areas, this can present significant risks to biodiversity. When operating in such areas, companies first take action to avoid impacts from their operations, and then mitigate or, where appropriate, offset any unavoidable impacts.

10. Companies recognize that areas of high biodiversity value exist both in and outside of protected areas. When considering whether to operate in such areas, companies evaluate alternate locations, routes and technical solutions. If they do choose to operate in areas of high biodiversity value, companies employ a comprehensive set of management actions, including mitigation, compensatory measures and investments in opportunities to benefit biodiversity conservation.

11. While biodiversity indicators may not be necessary for every project or activity, companies develop and use biodiversity indicators at appropriate organizational levels.

12. Companies seek opportunities to make positive contributions to conservation.

This document and its associated guides, discussion papers and resources provide guidance for how to achieve the integration of biodiversity considerations into upstream oil and gas development. This guidance represents the results of the EBI work thus far. The products have still to be tested within the participating companies and organizations and in the field. As part of this testing, the EBI will be establishing close links with the Biodiversity Working Group jointly established by two global industry trade associations, the International Petroleum Industry Environmental Conservation Association (IPIECA) and the International Association of Oil and Gas Producers (OGP). EBI will work with the working group to promote and increase awareness of the EBI and its products, and encourage the use, testing and refinement of these products within the industry, to further the goal of integrating biodiversity conservation into company decision-making, operations and management systems.

GLOSSARY

BIOLOGICAL DIVERSITY (often shortened as 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 *(U.N. Convention on Biological Diversity, Article 2).*

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 utilization, restoration and enhancement of the natural environment.

ECOLOGICAL FOOTPRINT: The area of direct environmental impact of an industrial operation on the land.

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.

ENDANGERED SPECIES: A species facing a very high risk of extinction in the wild in the near future.

ENDEMIC: Native to, and restricted to, a particular geographical region. Highly endemic species, those with very restricted natural ranges, are especially vulnerable to extinction if their natural habitat is eliminated or significantly disturbed.

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 organizational capacity, plans, procedures, resources, policies and standards used by energy and other companies to manage their environmental programs.

EXTINCTION: An irreversible process whereby a species or distinct biological population forever ceases to exist.

FRAGMENTATION: The breaking up of a habitat, ecosystem or land-use type into smaller, often isolated, parcels, thereby reducing the number of species that the habitat, ecosystem or land-use type can support.

GENES: Elements in all living things that carry hereditary characteristics, which, when expressed, make each individual different from all others.

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

HYDROCARBONS: Organic compounds of hydrogen and carbon whose densities, boiling points and freezing points increase as their molecular weights increase. Although composed of only two elements, hydrocarbons exist in a variety of compounds, because of the strong affinity of the carbon atom for other atoms and for itself. Petroleum is a mixture of many different hydrocarbons.

INDIGENOUS PEOPLE: No definition of indigenous people 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 recognized by international law and by some states as autonomous seats of power within the state, and exercise collective rights as groups.

JOINT VENTURE: A group of companies that share the cost and rewards of exploring for and producing oil or gas from a concession.

LIFECYCLE (INDUSTRIAL): The entire sequence of activity relating to an industrial operation, from beginning to end.

LOCAL COMMUNITY: Any community that is adjacent to and/or impacted by oil and gas development and transmission.

MITIGATION: Measures and actions taken to avoid, minimize, reduce, rectify and/or compensate for the adverse impacts of development.

NATIVE SPECIES (indigenous species): A species, subspecies or lower taxon living within its natural range (past or present), including the area which it can reach and occupy using its own legs, wings, wind/water-borne or other dispersal systems, even if it is seldom found there.

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.

NON-NATIVE SPECIES: A species, subspecies or lower taxon introduced outside its normal past or present distribution; includes any parts, gametes, seeds, eggs or propagules of such species that might survive and subsequently reproduce.

OPERATOR: The company that has the right to apply its own technical policies in conducting exploration and production programs in a concession on behalf of the other equity holders.

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

POLLUTION: The contamination of an ecosystem, especially with reference to human activities.

PRODUCTION WELL: Also called development well. A well drilled specifically into a previously discovered and appraised field for the purpose of producing oil or gas.

PROTECTED AREA: A geographically defined area that is designated or regulated and managed to achieve specific conservation objectives *(U.N. 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)*.

SEISMIC SURVEY: An exploration method in which strong, low-frequency sound waves are generated on the surface or in the water to find subsurface rock structures that may contain hydrocarbons. Interpretation of the record can reveal possible hydrocarbon-bearing formations.

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 sub-species or populations.

SPECIES RICHNESS: The number of species in a given site.

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 (E&P) and gas processing activities.

WETLANDS: Transitional areas between terrestrial and aquatic systems in which the water table is usually at or near the surface or the land is covered by shallow water. Under the Ramsar Convention, wetlands can include tidal mudflats, natural ponds, marshes, potholes, wet meadows, bogs, peatlands, freshwater swamps, mangroves, lakes, rivers and even some coral reefs.

WILDLIFE: Living things that are neither human nor domesticated.

ACRONYMS

CBD: Convention on Biological Diversity

EBI: Energy and Biodiversity Initiative

EHS: Environment, Health and Safety

EIA: Environmental Impact Assessment

EMS: Environmental Management System

ESIA: Environmental and Social Impact Assessment

HSEMS: Health, Safety and Environmental Management System

IFC: International Finance Corporation

IPIECA: International Petroleum Industry Environmental Conservation Association

ISO: International Organization for Standardization

MDB: Multilateral Development Bank

NBSAP: National Biodiversity Strategy and Action Plan

NGO: Non-governmental Organization

OGP: International Association of Oil and Gas Producers

OPIC: Overseas Private Investment Corporation

SIA: Social Impact Assessment

WCPA: World Commission on Protected Areas

APPENDIX A.
PARTICIPATING COMPANIES AND ORGANIZATIONS*

BP

With a long history in oil and natural gas, petrochemicals and, more recently, in renewable energy technologies, BP plays a leading role in meeting the world's growing need for energy without damaging the environment. As one of the world's largest energy companies, HSE management is a core commitment within BP's business policies. Other policies focus on ethical conduct, relationships, control and finance, and employees. BP employs more than 110,000 people and has well-established operations in Europe, North and South America, the Middle East and Caspian, Asia, Australasia and Africa.

BP has made a public commitment to make a real, measurable and positive impact on biodiversity. The core elements of BP's biodiversity strategy include responsible operations, conservation projects, public policy, external relations, and research, education and awareness.

Representatives from BP: Louise Johnson, Caroline Mitchell and Kathryn Shanks

ChevronTexaco

ChevronTexaco, one of the world's largest integrated energy companies, is active in more than 180 countries and employs more than 50,000 people. We are involved in every aspect of the energy industry, from oil and gas exploration and production to transportation, refining and retail marketing, as well as chemicals manufacturing and sales and power production. ChevronTexaco is committed to operate with the highest standards of responsible corporate citizenship, including ethical behavior, environmental stewardship and benefiting the communities where we work. Building productive and collaborative partnerships is a cornerstone of our business.

Representatives from ChevronTexaco: Kit Armstrong and Pat O'Brien

Conservation International

Established in 1987, Conservation International (CI) is an environmental organization working in more than 30 countries around the globe to protect biodiversity and to demonstrate that human societies can live harmoniously with nature. CI works to conserve the Earth's living heritage, our global biodiversity, by concentrating its efforts on the biodiversity hotspots, wilderness areas, and key marine ecosystems.

The Center for Environmental Leadership in Business provides a new forum for collaboration between the private sector and the environmental community. Created in a partnership between CI and Ford Motor Company, the Center operates as a division of CI and is governed by a distinct executive board of leaders from the business and environmental communities. The Center engages the private sector worldwide in creating solutions to critical global environmental problems in which industry plays a defining role.

Representatives from CI: Marielle Canter, Assheton Carter, Greg Love, Glenn Prickett and Amy Skoczlas

Fauna & Flora International

Founded in 1903, Fauna & Flora International (FFI) is the world's oldest established international conservation body. FFI acts to conserve threatened species and ecosystems world-wide, providing support to more than 100 conservation initiatives in more than 60 countries. Their work encompasses strategic planning, capacity building and training, management of endangered species and protected areas, and scientific research in support of biodiversity conservation. FFI's Global Business Partnership aims to work with leading multinationals in commercial and industrial sectors that are particularly relevant to biodiversity conservation.

Representatives from FFI: Martin Hollands and Tim Reed

**Until December 2001, Enron was also a member of the Initiative.*

IUCN – The World Conservation Union

Founded in 1948, IUCN – The World Conservation Union brings together about 80 States, 110 government agencies and 750 NGOs in a unique world partnership across some 141 countries. It is supported by a network of some 10,000 scientists and experts from 181 countries organized in six Commissions. As a Union, IUCN seeks to influence, encourage and assist societies throughout the world to conserve the integrity and diversity of nature and to ensure that any use of natural resources is equitable and ecologically sustainable. A central secretariat coordinates the IUCN program and serves the Union membership, representing their views on the world stage and providing them with the strategies, services, scientific knowledge and technical support they need to achieve their goals. Operations are increasingly decentralized and carried forward by an expanding network of regional and country offices, located primarily in developing countries.

Representatives from IUCN: Andrea Athanas and Jeff McNeely

The Nature Conservancy

The Nature Conservancy is a leading international, non-profit organization that preserves plants, animals and natural communities representing the diversity of life on Earth by protecting the lands and waters they need to survive. The Conservancy works in all 50 states in the U.S. and in 30 countries around the world. To date, the Conservancy and its more than one million members have been responsible for the protection of more than 14 million acres in the United States and have helped preserve more than 102 million acres in Latin America, the Caribbean, Asia and the Pacific. For more information, visit us on the web at nature.org.

Representatives from The Nature Conservancy: Nigel Homer and Greg Miller

Royal Dutch/Shell Group of Companies

The objectives of the Royal Dutch/Shell Group of Companies are to engage efficiently, responsibly and profitably in the oil, gas, power, chemicals, renewables and other selected business sectors and participate in the research and development of other sources of energy. Operating across the globe, in more than 130 countries and with more than 90,000 staff, Shell companies are committed to contributing to sustainable development and to delivering energy in an ever cleaner and more socially responsible way.

Representatives from Shell: Sachin Kapila and Richard Sykes

Smithsonian Institution

The Smithsonian Institution was established in 1846 with funds bequeathed to the United States by James Smithson. Holding more than 140 million artifacts and specimens in its trust for the increase and diffusion of knowledge, the Institution is a center for research dedicated to public education, national service and scholarship in the arts, sciences and history. The Smithsonian is composed of sixteen museums and galleries and the National Zoo and numerous research facilities in the United States and abroad.

Representatives from Smithsonian: Alfonso Alonso, Jim Comiskey and Francisco Dallmeier

Statoil

Statoil ASA is an international integrated oil and gas company with a strong focus on upstream activities. It has 16,686 employees and operations in 25 countries. Statoil is the leading oil and gas company on the Norwegian continental shelf, and its international upstream activities have gradually expanded in recent years. Statoil is one of the world's largest net sellers of crude oil, a substantial supplier of natural gas to Europe and a leading Scandinavian retailer of gasoline and other oil products. The company also operates growing downstream businesses in Poland, the Baltic States and Ireland. Statoil was established in 1972 as the national oil company of Norway, and was partially privatized in June 2001 and listed on the Oslo and New York stock exchanges.

Representatives from Statoil: Steinar Eldøy and Bjørn Kristoffersen

APPENDIX B.
THE STORY OF THE EBI

The EBI grew out of numerous conversations between Conservation International (CI) and a number of energy companies with existing or proposed operations in areas recognized for their biodiversity values. CI realized that something unique could be achieved by bringing together several companies and conservation organizations in a single forum to develop and promote ways to integrate biodiversity conservation into oil and gas development.

Initially, CI's Center for Environmental Leadership in Business (CELB) approached companies that had expressed an interest in making a commitment to biodiversity conservation in their operations, as well as fellow international conservation organizations that had previously worked in partnership with industry in the field to improve the environmental performance of the sector. After more than a year of preliminary discussion, the ten original EBI members met in January 2001 to agree on a structure and workplan for the next two years. The original membership included BP, ChevronTexaco, Enron, Shell and Statoil from the energy industry and CI, Fauna & Flora International, IUCN – The World Conservation Union, The Nature Conservancy and Smithsonian Institution from the environmental community. (In December 2001, Enron ceased to be a part of the Initiative.)

The EBI members met eight more times over the course of the following two years to share progress and continually shape the course of the Initiative's work. Several public forums, including a January 2002 stakeholder workshop in Washington, DC, and presentations at oil and gas industry conferences and meetings, allowed the Initiative members to share their work with interested parties and receive feedback on the direction of their research and conclusions.

To facilitate their activities, the EBI members divided themselves into four working groups, each of which focused on a specific topic related to energy and biodiversity: The Business Case, Biodiversity Conservation Practices, Site Selection, and Indicators. From this work, the EBI members have continued to refine and revise their work, culminating in an integrated set of products that includes this summary document and several guides, discussion papers and resources on how to effectively integrate biodiversity considerations into energy development.

From here, the EBI will enter a new phase of cooperation and coordination with the wider energy industry and environmental community, in order to test and refine the products. As part of this phase, the EBI will establish close links with the Biodiversity Working Group jointly established by the International Petroleum Industry Environmental Conservation Association (IPIECA) and the International Association of Oil and Gas Producers (OGP) to promote and increase awareness of the EBI and its products, and encourage the use, testing and refinement of these products within the industry.

The CD-ROM included with this document contains the full suite of EBI products.

For updated information on the EBI please visit www.TheEBI.org.

The Energy & Biodiversity Initiative

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