Biodiversity and the oil and gas industry

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Abstract

Throughout the globe, biodiversity has become depleted thereby threatening entire species, populations, habitats and ecosystems with extinction. The impending consequences have caught the attention of the world to the need for a sustainable solution to halt the irreversible outcomes of extinction. The adverse environmental and social consequences of excavating and consuming oil have been well documented by the media, pressure groups and communities. In an economy that exploits the environment for profits, maintaining biodiversity and ensuring business viability might seem as conflicting interests but more and more research[1] shows that the two seemingly antagonistic concepts are in fact reconcilable.

This article focuses on biodiversity as a resource that is under threat of being depleted. The article looks to raise awareness to the fact that status quo is far from ideal and if left unattended, disasters of catastrophic levels may result. Millennium Ecosystem Assessment studies have revealed shocking statistics of the rate of biodiversity depletion in Europe. Lobbyists and conservation organizations have come to realize how the presence of energy companies can provide influence, awareness, expertise and management capability, and revenues to support conservation activities. And have therefore chosen to approach energy companies and work together to conserve biodiversity and integrate biodiversity issues into oil and gas development.

This article looks at biodiversity in the oil and gas industry outlining the current trends, definition and international action. It then identifies key challenges of the oil and gas industry and finally looks at what other companies including MOL are doing to contribute to the conservation of biodiversity.

Background

Biodiversity is all around us, in the cities, our farmlands, the countryside; it is simply the variety of life on earth. It includes the species of plants and animals, including any genetic variations, and the complex ecosystems of which they are part. Humans are an integral part of biodiversity and have major influence over it because they have the ability to manipulate any ecosystem.

The Convention on Biological Diversity (CBD)[2] define biodiversity as: '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

1 EBI – Energy and Biodiversity Initiative, Integrating Biodiversity into Environmental and Social Impact Assessments
2 CBD - The Convention on Biological Diversity – Implementation in the European Union 2008

species, between species and of ecosystems (Article 2).'

Biodiversity matters for a variety of reasons:

- *aesthetically* – because it enhances beauty on the face of the planet thereby providing an emotional value;
- *economically* – because individuals, entire communities and nations depend on it for subsistence and trade;
- *environmentally* – humans have an ethical obligation to conserve biodiversity because failure to do so has major impacts on the environment as pointed out later in this report.

As such, protecting biodiversity becomes central to the health of our planet and our own wellbeing as a people.

Unfortunately due to factors that include ignorance, greed and mismanagement humanity has affected the current biodiversity with many species due extinction. The Millennium Ecosystem Assessment[3] shows that Europe's ecosystems have suffered more human induced fragmentation than any other continent. Built up areas have increased by 20% in the last 20 years as a result almost all of our wildlife is in serious decline and valuable ecosystems have become degraded undermining their capacity to deliver valuable eco-systemic services.

Hungary for instance has very little untouched habitat left because cultivation and forest management has produced secondary habitats like the hay meadows and alkaline grasslands. The rise in agriculture and the industrial development has caused a threat to the biota (including genetic, population, habitat and landscape)[4].

Why is biodiversity important?

Biodiversity provides the basis for ecosystems and the services they provide, upon which all people fundamentally depend. From an economic and environmental perspective, biodiversity actually boosts ecosystem productivity. The ecosystem provide us with services such as production of food, fuel, fiber and medicines, regulation of water, air and climate, maintenance of soil fertility, cycling of nutrients. These services have a big economical value and underpin not only the growth, jobs and wellbeing in EU, but also to meet the needs of the poor in developing countries.

Pressures and drivers causing biodiversity loss

Most of the current biodiversity loss can be attributed to the irresponsible actions of men stemming from the desire to satisfy secondary human needs. Factors such as habitat degradation, land use change, globalization, including European trade increases pressures on biodiversity and ecosystem services, increasing demands on natural resources, contributing to greenhouse gas emissions.

Climate change has become the biggest driver of biodiversity loss and is expected to exacerbate the current extinction rate. Species' distribution and relative abundances shift as their preferred climate move towards the poles and higher altitudes, leaving those endemic to polar and high regions most at risk[5]. Due to climate change the Earth now faces factors such as floods, droughts, and disease outbreaks that have our natural resources.

Studies such as the UK Climate Impacts Program (UKCIP0$_2$ climate change scenarios)[6] predicted that temperature and sea levels will continue to increase as well as an increase in the frequency of extreme weather events all these conditions will have an impact on biodiversity.

Biodiversity targets and trends

Currently, there is a sharp rise in the awareness of the world to the fact that natural resources are being depleted at an exponential extinction-threatening rate. Fortunately, more and more organizations and countries are committed to combat the problem. For example, the Convention on Biological Diversity (CBD), launched at the United Nations Conference on Environment and Development (the Rio Summit) in 1992. It consists

3 Ecosystems and Human Well-Being: Current State and Trends, Millennium Ecosystem Assessment
4 State of Environment and Biodiversity in Hungary, http://enrin.grida.no/biodiv/biodiv/national/hungary/index.htm
5 UNEP GEO-4 Report, fourth Global Environment Outlook: environment for development assessment
6 www.ukcip.co.uk

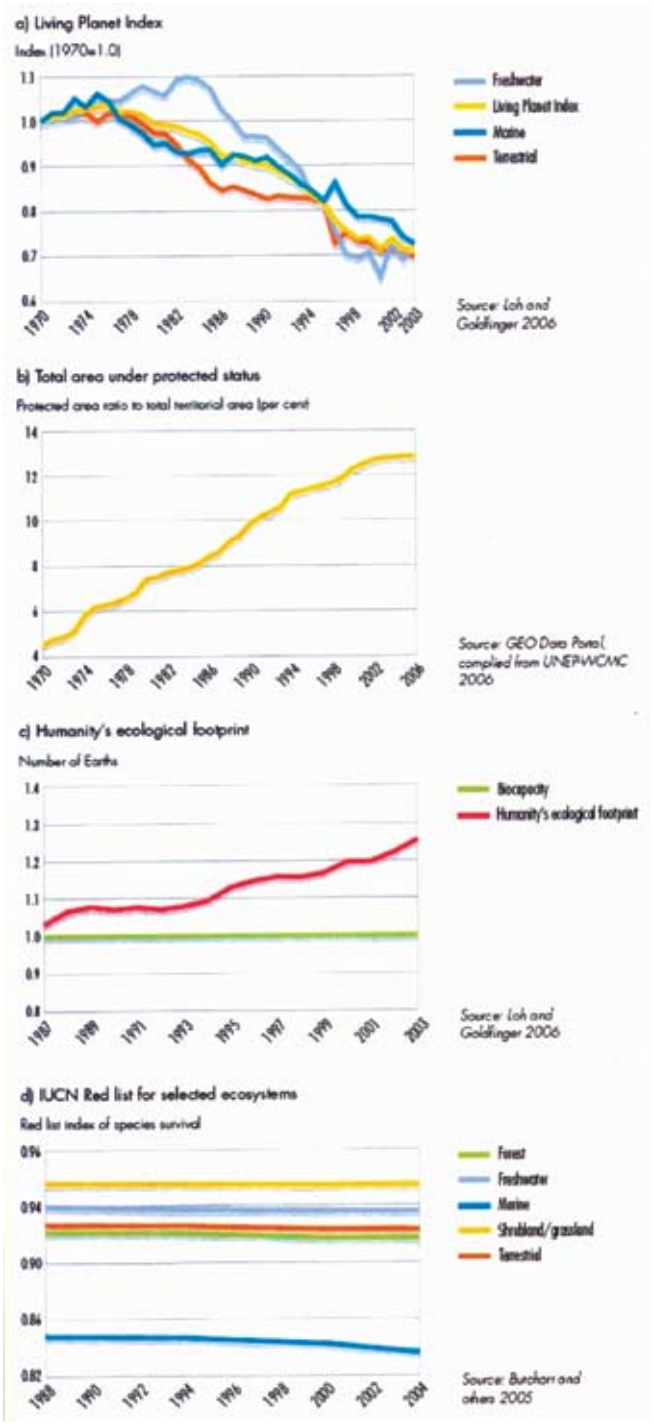

Figure 1. Examples of state, pressure and reponse indicators that have beeen adopted by the Convention on Biological Diversity measure progress towards the 2010 target

of 42 articles that state different objectives to preserve our biological diversity.

The CBD is an international environmental agreement principle targeted toward the conservation of biodiversity. More than 145 countries have either completed or drafted their National Biodiversity Strategies and Action Plans (NBSAPs), as detailed in the CBD[7].

The European community became a party to the Convention on Biological Diversity in 1993. **In 2001 the EU set itself the target of halting the loss of biodiversity by 2010[8].** Determining the impact of the action plan on Biodiversity is complex. In order to clarify this area **a set of 26 European 2010 biodiversity indicators** are being developed. In addition to the monitoring indicators a traffic light system is also being developed. The system will assess whether or not the 1,000 species and the 220 habitats protected under the Habitats and Birds Directives are well protected.

The CBD biodiversity indicators include (see Figure 1):

- The **Living Planet Index,** measuring the trends in abundance of species, showing that freshwater species population declines the fastest.
- The **Protected Areas Coverage** indicator demonstrates a promising trend in the form of a steady increase in the area under protection. However this can be misleading, as their establishment is not necessarily followed by effective management and enforcement of regulations.
- The **Ecological Footprint[9]** indicates that consumption is rapidly and unsustainably increasing
- The **IUCN Red List[10]** indicates trends in extinction risk, the conservation status of an entire species group assessed at regular intervals.

Results from one of the most comprehensive studies done on biodiversity shows over a million species will be lost in the coming 50 years. According to the Millennium Ecosystem Assessment released in 2005, the current pace of species loss is up to 1,000 times higher than the background rates typical over the earth's history (Figure 2).

These trends do not bode well for meeting the 2010 biodiversity target at a global scale. The target has seen some progress as the current rate of loss has slightly reduced but the overall

7 EBI, Integrating Biodiversity Conservation into Oil and Gas Development
8 The European Union's action on biodiversity action plan, 2008 (author: European Union)
9 Global Footprint Network, http://www.footprintnetwork.org/en/index.php/GFN/page/world_footprint
10 www.iucnredlist.org

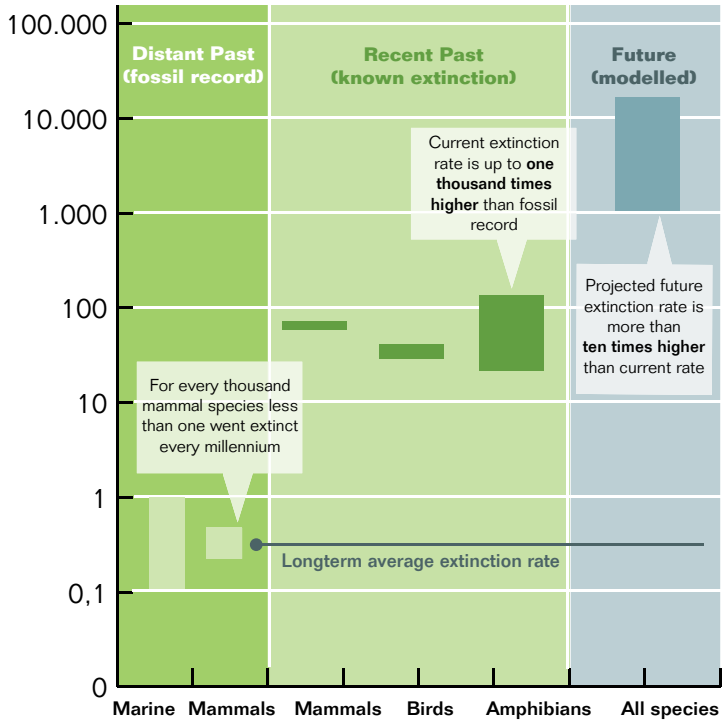

Figure 2. Extinctions per thousand species per millennium
(source: Building Biodiversity Business[11]; Redrawn with permission, based on an original figure prepared for the Millennium Ecosystem Assessment by Philippe Rekacewicz and Emmanuelle Bournay of UNEP / Grid-Arendal)

change is still not sufficient enough to meet the 2010 target. A new Biodiversity Action Plan was therefore launched in 2006 containing a detailed set of target driven objectives and actions.

Biodiversity: a risk and opportunity

Current energy consumption shows that the demand of global energy is expected to triple by the year 2050. This demanding increase will mean that oil and gas activities will grow posing a greater risk of depletion to biodiversity. The rapid increase in demand for energy has intense impacts on biodiversity at two levels:

- impacts from the production and distribution of energy, and
- impacts resulting from the use of energy.

The challenge that both society and the energy industry face is to meet the demand of consumers and minimize the damage to sensitive ecosystems that we all depend on. Such a demand calls for energy companies to curtail the impact of their drilling, excavating, refining and distribution operations on the environment. It has become vital for energy companies to demonstrate that they can be a positive force for conservation of biodiversity by integrating it into their sustainable development strategy.

In order to deal with the existing challenge of halting the loss of biodiversity nine of the leading energy and conservation organizations[12] have joined forces to form the **Energy and Biodiversity Initiative (EBI).** EBI was created to produce guidelines and endorse practices aimed at including biodiversity conservation strategies into upstream oil and gas development. This shows that the private sector is increasingly accepting its responsibilities as a steward of the environment. The effort to preserve biodiversity is not limited to EBI members but extends to the whole energy industry to collaborate on efforts to conserve biodiversity and integrate biodiversity issues into oil and gas development.

Biodiversity issues must be part of the environmental management systems of companies. Like in case of other environmental issues, the 'drivers' of the business case for biodiversity can be viewed in terms of risks and opportunities. By not addressing biodiversity adequately, a company's position in the marketplace – and indeed its profitability – can be threatened by such risks as:

- Challenges to its legal license to operate,
- Disruption of its supply chain,
- Damage to the brand image,
- Consumer boycotts and campaigns by environmental NGOs,
- Fines, third party claims for environmental damages and future environmental liabilities,

11 Building Biodiversity Business, by Joshua Bishop, Sachin Kapila, Frank Hicks, Paul Mitchell and Francis Vorhies
12 BP, Shell, ChevronTexaco, Statoil, Conservation International, IUCN, The Nature Conservancy, Smithsonian Institution, Fauna & Flora International

- Lower ratings in the financial markets, and
- Poor staff morale and reduced productivity.

Natural resource companies must demonstrate in most cases that they know how to extract the resource with the smallest possible footprint or impact on biodiversity. For their projects government permission have to be obtained (the 'license to operate'), and also an informal license needs to be obtained from stakeholders as well.

Energy companies have now realized that social issues have as much potential to harm their bottom line as financial issues. The competition between oil companies has increased so customers/clients have a choice of which company to use. This choice means that the power to determine how a business operates has been shifted towards the customers. Failing to address the impacts of biodiversity can have risks for a company's reputation and may cause constraints on future business opportunities such as land, oil and gas resources, capital, employees and damage public goodwill. Thus a poor reputation from just one project can threaten access to resources and markets around the world. Mismanagement of biodiversity issues may result in losing reputation and fighting to survive in competitive markets.

A failure to pay attention to biodiversity issues by energy companies can cause project delays and further problems. If these issues are addressed prior to operation, complications such as management costs, conflicts with local communities or government confrontation may be avoided. Other potential risks that a company may encounter include delays and disruptions at project sites, loss of a societal license to operate, and loss of access to business resources such as oil and gas resources, land, capital and employees.

Furthermore, the increasing government and public pressure has led multilateral financial institutions, international commercial and investment banks and export credit agencies to create standards and conditions for lending to large infrastructure developments, such as oil and gas projects. An example is the World Bank Group that has developed an independent review, the **Extractive Industries Review (EIR)**[13], to talk about its future role in the oil, gas and mining sectors with their stakeholders. This will let them determine whether or not they will collaborate with the energy sectors.

There are numerous examples of biodiversity risk, ranging from Shell's highly publicized row

with Greenpeace over the sinking of Brent Spar, an abandoned oil-rig, to the investment of the International Finance Corporation, the private arm of the World Bank Group, in a controversial mining project in Chile.

On the other hand, addressing biodiversity issues properly offers the companies opportunities to improve their financial performance and promote sustainability. When including biodiversity objectives early in the planning phase of new projects, this contributes to maintain the license to operate, and furthermore by monitoring change company can identify performance deterioration and address it in time. The general public responds more readily to evident biodiversity issues like wildlife conservations rather than to carbon dioxide emissions and ozone depletion with less tangible environmental impact. And a growing number of individual and institutional investors prefer to invest in socially responsible business, measured by several indexes, such as the Dow Jones Sustainability Index.

What are the impacts?

The presence of an oil and gas operation in an area has differing impacts to ecosystems and biodiversity; the magnitude and scale of the impacts will often vary and can be indirect or direct. Some of the impacts include "soil, air and water contamination, habitat fragmentation and conversion, deforestation, erosion and sedimentation of waterways."[14] Furthermore, since oil and gas exploration and production often operate in undeveloped areas, successful exploration expeditions can have negative economic and social impacts, including "migration, spontaneous settlement, agricultural conversion and infrastructure development" that can cause even more harm to biodiversity through secondary impacts.

Primary impacts are direct impacts that result from a project's presence in an area and should be considered as part of the project management during implementation and when implementing a standard environmental and social impact assessment. Primary impacts can be avoided or reduced if thorough operational management, impact mitigation and biodiversity conservation practices are implemented at the birth of a project.

Secondary impacts unlike primary ones are more difficult to control as they go beyond the scope of the project's presence. The main factors driving secondary impacts are government decisions, human population changes, new economical activities such as infrastructure e.g. roads, ports and towns but in most cases the responsible party is usually difficult to determine.

Talking about the energy sector, it is relatively easier to integrate biodiversity issues into new projects or operations than into existing ones. The business case for integrating biodiversity shall be less obvious for existing facilities.

Some companies are addressing aspects of biodiversity to maximize opportunities. Shell for example operates in Gabon where most of the population is employed directly or indirectly for Shell. Shell has no direct control over Gambia, but where Shell has control like the Gambia terminal; it has put strict control such as controlling development, stopping hunting, reducing driving speed and times and managing emissions. However the presence of the Shell workers has impacted the community's biodiversity through restricted agricultural activities and as the population will grow the demand for housing, food and other necessities will grow which will in turn increase the pressure on natural resource.

How can companies go beyond minimizing impacts?

Accepting social responsibility means that a company has to work with others in seeking to minimize negative impacts which in turn contribute to positive sustainable development. Incorporating biodiversity issues means implementing them as well, once a company decides to operate in an area that has a high risk, it ought to do more than just adhering to the legal requirements. To integrate biodiversity into a business case a company has to look at its own values and principles. It is also extremely important for a company to educate its employees and shareholders about the value of adding biodiversity as a factor in business decisions.

13 www.web.worldbank.org / Extractive Industries Review Reports
14 EBI, Integrating Biodiversity Conservation into Oil & Gas Development

There are a set of standards that a company can use once it chooses to integrate biodiversity into its environmental management system. The ISO standards are the most popular templates used to integrate biodiversity into an environmental and management system.

When operating in a sensitive ecosystem it is advisable to apply a set of management actions that may include mitigation, compensation and investments in opportunities to benefit biodiversity conservation. In order for an organization to understand the best way to preserve the biodiversity in the area where it will operate it ought to understand the laws and policies and also calculate the scale of impacts and act on any pressures imposed. Managing biodiversity entails working closely with stakeholders to assess the local economic, environmental and social situation in a project area.

What are other companies doing?

In 2001, **Shell** was the first company to implement a biodiversity standard; the company also published a report, with the International Union for Conservation of Nature (IUCN), which describes the benefits for business to include biodiversity conservation into their strategies[15].

Shell has a number of biodiversity projects that it has been working; in the Netherlands Shell has recently focused on **protecting the bird migration route[16].** Using its innovative techniques Shell has tried to minimize the impact of its operations on the millions of migratory birds that cross the North Sea twice each year. The Nederlandse Aardolie Maatschappij BV (NAM) has recently implemented measures such as dimmed lighting and reduced flaring to protect the birds. The North Sea is a migration route for over 50 million birds that include songbirds, waders, birds of prey and other bird species. These birds have in the past been drawn in the NAM flares during well testing and have been killed. When NAM learned of this occurrence it stopped constant flares and started testing during daylight hours instead. When testing at night NAM now uses a professional bird watcher and will even stop testing if necessary in order to prevent the attraction of birds.

Exxon Mobil in Peru

In 1996 Mobil operated in Tambopata Candamao Reserve Zone (TCRZ) in Peru, the 1.5 million hectare rain forest system is home to some of the most rare and pristine biodiversity of Amazonia. When Mobil decided to end their exploration activities in 1998 they collaborated with the Peruvian Government and Conservation International to add TCRZ the Bahuaja-Sonene National Park which is now the 1.1 million hectare Tambopata National Reserve.

BP's Deep-Sea Biodiversity Program

BP has also been active in implementing positive impacts on biodiversity; its latest project is the **Deep-Sea Biodiversity Program[17].** This program is a collaboration between a number of international marine science centers and BP.

The marine covers more than two thirds of the total surface area of the earth. The average depth of the oceans is almost 4 kilometer and is occupied by living organisms with more than half of them new to science. According to recent research the oceans may be more diverse than other environments accounting for about 10 million species or more. As very little is known about biodiversity in these deep water environments this project seeks to increase the knowledge of deep-sea science.

In order to show its commitment to improving knowledge of marine biodiversity BP is sponsoring two deep-sea biodiversity research fellowships, one at the Southampton Oceanography Centre, UK and the other at Texas A&M University, USA. The research fellows will collaborate for three years to research the seabed fauna in the deep Atlantic Ocean and the Gulf of Mexico.

15 Building Biodiversity Business, by Joshua Bishop, Sachin Kapila, Frank Hicks, Paul Mitchell and Francis Vorhies
16 http://www.shell.com/home/content/responsible_energy/environment/biodiversity/bio_case_studies/netherlands/netherlands.html
17 http://www.ipieca.org/activities/biodiversity/downloads/case_studies/BP_DeepSea.pdf

The ENI and Shell Italia Agro biodiversity

In 2003 Eni and Shell Italia started the **AgriBioDiversity project**[18] in the ecologically sensitive area of Val d'Agri, southern Italy. Val d'Agri has extensive biodiversity, the area consist of a national park with protected flora and fauna and important community EU sites. The project has two other partners that include the The Fauna and Flora International (FFI) and the University of Basilicata.

The project was launched with two objectives to fulfill:

- to develop a **biodiversity monitoring program** as a tool to assess and reduce or mitigate the impacts of E&P activities.
- to define **best practices for integrating biodiversity conservation** into environmental management systems and operations.

The multi-partner collaboration entails a share of responsibilities based on each of the company's strengths. Eni's has overall managerial responsibility for the project providing logistical support in the field and is also responsible for the integration of project partners. Shell is responsible for implementing the end results of the monitoring program into operations. The FFI is mainly involved in the stakeholder engagement process and the local scientific community where it provides strategic advice. The University of Basilicata oversees the fieldwork activities, being also responsible for the increasing the stakeholder engagement and examining the social context of the Basilicata region.

Chevron in San Joaquin Valley[19], California

Chevron has in the past been a representative for Western States Petroleum Association on the Steering Committee for the conservation plan for the protected habitat in the valley floor of Kern County. Chevron is now also developing and permitting its own conservation plan to protect approximately 13,500 acres of company land in the Lokern area of Kern County. The conservation plan will consists of a system of 'land permits' and 'habitat credits' that will only permit 10 percent use of the land whilst ensuring that the remaining area is offset for the resident listed species.

Conclusion

Ensuring access to energy while maintaining biodiversity and vital ecosystem services will require an integrated multi-sector approach that includes:

- an ecosystem approach to management of biodiversity and natural resources that ensures inclusion of lessons learned in ongoing management of natural resources affected by energy production and use;
- a major shift in environmental governance to incorporate policies and incentives promoting energy production and use that mainstreams action to address biodiversity concerns, especially with respect to climate change; and
- increasing partnership with the private sector, including extractive industries and the financial sector, to promote energy programs that internalize the full costs on biodiversity and livelihoods.

MOL Group needs to increase its involvement in biodiversity related issues, such as developing a biodiversity management framework with guidelines for operations and new projects. The work has already started with gathering the existing biodiversity case studies, that will be posted on MOL's website soon.

18 http://www.ipieca.org/activities/biodiversity/downloads/case_studies/agribiodiv.pdf
19 http://www.ipieca.org/activities/biodiversity/downloads/case_studies/Chevron_SanJoaquin.pdf