

Biodiversity and economic growth: A fusional relationship



Aude Brezac, Responsible Investment Analyst - AXA Investment Managers

Historically, preserving natural capital was only on the radar of governments and ecologists. Today, an increasing number of firms are aware of the relevance of biodiversity and looking to take it into account more systematically. And with good cause. Biodiversity and ecosystems are the source of a great many of the goods used by our societies - foodstuffs, wood, energy, drinking water and genetic resources, to name but a few. Any decline in the world's biodiversity or degradation of our ecosystems is a major threat to all those industries whose activities depend on accessing natural capital and ecosystemic services. These include the food and agriculture industry, pharmaceuticals, automobiles and more indirectly service industries such as tourism or even insurance. Finally, it is also a major challenge for industries which have a direct or indirect impact on biodiversity such as the energy, building, metals and mining industries.

This article highlights the value biodiversity represents for a large number of industries and service providers who are essential contributors to the engine of economic growth. It also pinpoints the risks and opportunities a decline in biodiversity and a breakdown in the supply of ecological services can generate. Finally, we will identify within each concerned industry the major threats and strategic priorities to put in place to meet these challenges - strategies which, in particular for those companies that implement them first, will contribute to their value added and growth.

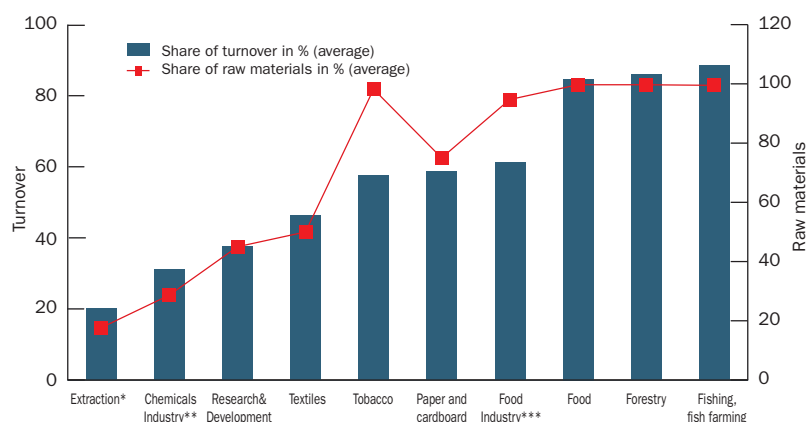


After climate, the other emergency

It is estimated that 40% of the world's economy - specifically the agricultural (including the food industry), pharmaceutical, forestry, tourism and drinking water industries - rely on biological products or processes (UNEP)¹.

But biodiversity is diminishing at an unprecedented speed. The current species extinction rate is thought to be a thousand times higher than what is estimated to be a "natural" rate of extinction⁷. So industries whose activities are intricately dependant on accessing natural capital (eg. raw materials) and vital services (eg. water quality) will find themselves facing a challenge, the complexity of which remains very difficult to grasp.

Exhibit 1: Proportion of revenues directly linked to biodiversity and ratio of raw materials which come from biodiversity



Source of data: *Incorporating biodiversity into business strategies, the biodiversity equation for organisations*, Orée, Fondation pour la Recherche sur la biodiversité, 2008

A study based on the INSEE statistics agency French Official Activity Terminology

* Coal, lignite and peat extraction

** Chemicals industry (including paint, varnish, pharmaceutical industry, soap, maintenance products, explosives, artificial fibres)

*** Food industry (including animal feed and alcoholic beverages)

FORESTS, THE RESERVOIR OF BIODIVERSITY

While forests, or rather their depletion, are one of the causes of global warming, they are also one of the main solutions available to us. According to several studies², a slowdown in deforestation - which is taking place mostly in developing countries - would contribute significantly to reducing GHG emissions. This could be achieved through, for example, the establishment of incentives to use land for other purposes, the introduction of better agricultural practices and the stimulation of natural carbon absorption through reforestation - and at a lesser cost than other options currently available to reduce the impact of GHGs.

The preservation of forests is also essential for those industries that depend on the richness of the former's biodiversity. Many hopes rely on the innovative approach of the REDD+ project³ which, unlike the Kyoto clean development mechanisms (CDM) which only award carbon credits for new plants, covers the avoidance of deforestation (preserving carbon), as well as the amount of CO₂ forests are able to capture - in other words, it takes into account sustainable forest management.

Yet the value that can be created through the efficient management of forests is largely under-leveraged, and it is a sector which is finding it hard to emerge as a key player in the regulated carbon markets. Carbon credits awarded for 'forestation'⁴ and 'reforestation' projects⁵ represent only 1% of all projects, while 60% have been for 'renewable energies', and 20% for projects to 'reduce methane, concrete and mines/coal seams'.⁶ This is why we have observed over the last few years an increase in credits being traded in voluntary (non-regulated) markets. These markets, however, are too small to cope with the scale of the challenges arising from climate change. REDD+ should contribute to giving sustainable forestry as much importance as the development of clean energies and clean technologies, making it the linchpin of future climate policies after the expiry of the Kyoto protocol in 2012.

60% of the services provided by the planet's ecosystems are already degraded, and this ecological damage is expected to gather pace with demographic growth, changing land use, economic development and climate change.

In March 2007, the G8+5 Environment Ministers backed a worldwide study on «The Economics of Ecosystems and Biodiversity»(EEB).⁸ Inspired by the Stern report which quantifies the cost of inaction with regards to climate change (loss of 5-20% of global GDP per year⁹), the EEB report¹⁰ is to estimate the cost of man's depletion of the world's biodiversity and ecosystems, and examine in great detail how to improve our economic models and policies. It already appears that the bill for degrading biodiversity will be €14,000 billion per year in 2050, or 7%

of global GDP. Phase I of the report was presented in 2008 at the CBD (Convention on Biological Diversity) Conference of the Parties (COP9). The conclusions of this first phase of the study are very enlightening: 60% of the services provided by the planet's ecosystems are already degraded, and this ecological damage is expected to gather pace with demographic growth, changing land use, economic development and climate change. Exhibit 2 illustrates both the dependence that a firm may have on 'inputs' - for example, fish, wood, plant foods, animals, water -, as well as its impact as it exploits this biodiversity and contaminates it.

By reducing both the direct and indirect impact of their activities on ecosystems,

and by evaluating and reducing their exposure to the threat of natural resource depletion, firms can minimise their 'biodiversity' risk - and even enter new markets. The substitution of some natural resources by 1) other resources such as by-products or even recyclable waste from other industries, or 2) the use of advanced techniques or technologies, are also solutions for firms to diversify and reduce their dependence on natural resources.

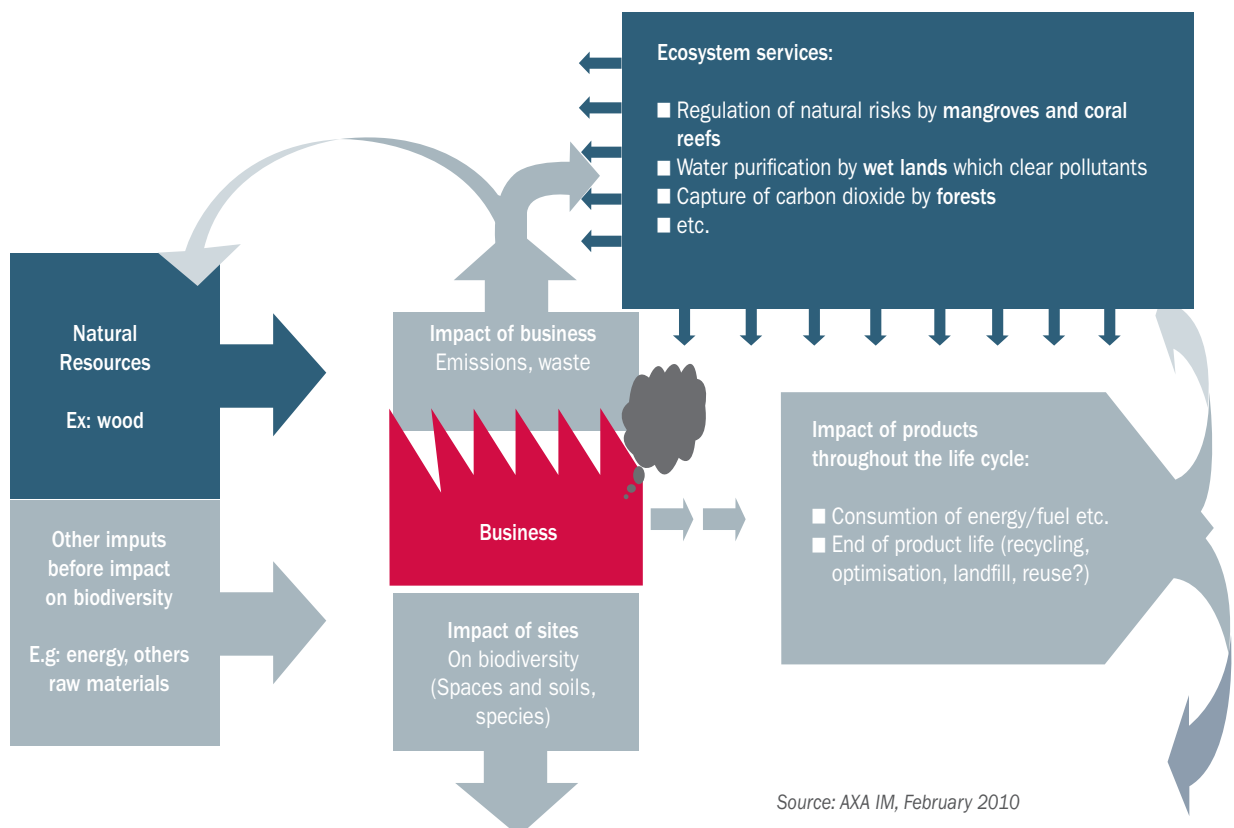
The new biodiversity market also includes eco-labelled products (eg. household, food) and services, (eg. tourist accommodation)¹¹ which have been developing in response to a growing demand - eco-certified maintenance products being the most developed eco-

labellised family with an annual average growth rate of 210% between 2004 and 2007.¹² In France, thanks to the «Grenelle de l'environnement» eco-certificate, the regulatory framework for environmental labelling should enable these markets to continue to gain market shares.

Mother nature: business' little helper

The link between nature and the profitability of businesses is not always well understood - and is often neglected. And yet several industries are strongly dependent on natural resources, entailing that the destruction of ecosystems and subsequent disappearance of the services they provided are a significant threat for the well-being of these industry players that they should be extremely aware of.

Exhibit 2: Interaction between business and biodiversity: dependency (inputs) & transformation (outputs)



To understand why the degradation of these services, commonly called «services rendered by biodiversity and ecosystems» can generate threats or conversely create opportunities for firms, the exact nature of the services needs to be described. The MEA classification¹³ distinguishes 4 major categories of services provided by ecosystems: «provisioning» services,

«regulating» services, «cultural» services, and «support services» whose role it is to ensure the other services are properly rendered.

Analysing the level of dependency of firms on these services, as well as the degree to which they influence the decline of biodiversity, leads to the identification of those industries which are at risk, as well

as to the establishment of a roadmap of opportunities which can – and should – be seized to reduce these vulnerabilities.

A diagnostic of biodiversity: What threats and opportunities are businesses faced with?

Table 2 sets out the threats companies can face as well as the opportunities

Table 1: The links between biodiversity and companies

Biodiversity and ecosystem services (BES)		Industries impacted by the loss of BESs and related Threats and Opportunities	
SUPPORT SERVICES Nutrients cycle Soil formation Primary production Water cycle	PROVISIONING SERVICES Food production Biofuels Fibre Wood Medicinal plants Drinking water Etc.	IMPACTED INDUSTRIES Resources: Mines Oil & Gas Community services: Electricity/water Staple industries: Chemicals Building & construction materials Forestry & paper Steel and other metals Discretionary consumer goods Textiles Non-discretionary consumer goods Agriculture and food Beverages Tobacco Health Hygiene, cosmetics and household goods Pharmaceuticals & biotechnology Discretionary services: Hotel & leisure Non-discretionary services: Distribution, food & pharmaceutical products Finance companies Real estate Financial services	THREATS & OPPORTUNITIES Regulatory and legal Operational Reputation and image Market share Material Financial / Access to capital
	REGULATING SERVICES Carbon lock-up Water cycle regulation Pollination Coastal protection Ecosystem resilience Health regulation Resilience to climate change Soil retention capacity Waste Treatment Etc.		
	CULTURAL SERVICES Recreational and cultural Educational services Spiritual benefits Aesthetic pleasure		

that are likely to present themselves. When analysing securities, this table can also be used to identify, within each relevant industry, the firms which are facing up to the major challenge of biodiversity depletion and developing strategies to reduce their risk and create value. When dealing with questions of biodiversity, the problem is often analysed – as is the case with environmental issues – through a risk/cost and therefore liability angle. And yet, it appears that there are many benefits

and competitive advantages to be gained from approaching the problem through investment perspective.

In those industries which are affected by the erosion of natural resources, biodiversity management strategies are currently better dealt with by larger firms which also have more transparent reporting processes

Biodiversity capital: Identifying winning strategies

If we are to identify winning business strategies, it is key to identify the various challenges industries are facing due to the increasing scarcity of natural resources and the breakdown in ecosystem services. There are often, within each industry, shared strategies to reduce firms' exposure to the growing impoverishment of ecosystems, or to turn these threats into opportunities by launching new products or services.

Table 2: Business Risks and Opportunities

Categories of threats and opportunities	Threats	Opportunities
Regulatory and legal	Laws are toughening up with regards to Biodiversity – eg. the Environmental Liability law, Natura 2000 etc. – thereby potentially affecting the profitability of firms involved in degrading biodiversity. Non-adherence to quotas, such as fishing quotas in Europe, fines and third-party claims, usage rights, suspension of permits or licences, refusals to grant licences, legal proceedings - the legal consequences of not observing nature conservation laws can have serious consequences for firms.	Conservation legislation which aims to preserve those resources which firms depend on as well as protect the latter from the threat of exhaustion or complete disappearance of those resources.
Operational	Raw materials sourced from biodiversity are endangered –fish, genetic resources and drinking water - and a fair number of ecosystem services that firms depend on are about to give in – pollination, water purification or erosion prevention. So unless a genuine protection and conservation strategy is found for those resources which are necessary to economic activity, firms may find their supply chain cut. Examples would be the extinction of an animal species at the top of the chain, or sudden rises in raw material prices such as wood or cotton, which might threaten continued production. In extreme cases it could even lead to them going out of business. The loss of the Masoala Forest in Madagascar resulted in a loss of \$1.5 billion for the pharmaceuticals industry, \$5 billion for tourism and \$4 billion for households ¹⁴ .	There is a variety of solutions for incorporating biodiversity protection into business strategies. Strategies for improving the quality of site management, investing in technologies for reducing consumption of those natural resources that are heavily used in a firm's production process, developing low impact industrial processes and reusing resources. All these solutions are also means by which firms can reinforce their supply chains, their productivity, their relations with various stakeholders, their entitlement to carry out their business and their credit ratings amongst other things.
Reputation and image	A real reputational risk arises from the pressure group campaigns or boycotts conducted by non-governmental organisations or consumers, which have a knock-on effect on other stakeholders such as customers, the general public, communities and shareholders. Furthermore, the poor management of regulatory risk that leads to legal proceedings for environmental liability can also have the further effect of tarnishing the brand image of the firms concerned. For example the Indian courts ruled against Vedanta Resources Plc, and it was also condemned by several NGOs, on a mining project in an area of very rich biodiversity preserved by local tribes.	Biodiversity is increasingly high on the political agenda and could become a part of firms' differentiation strategy. It may be that consumers who are expressing a growing interest in the traceability of the products they are buying will turn increasingly to firms which give meaning to the products being consumed. For example 85% of consumers would like to know more about the supply arrangements for natural ingredients in the cosmetics industry. ¹⁵ Biodiversity can also be a lever for attracting and retaining staff.

Table 2: Continued

Categories of threats and opportunities	Threats	Opportunities
Market share	In a society in which ecological, environmental and climatic problems feature ever larger in consumer purchasing decisions, a firm that does not take these imperatives into account may not be able to respond to changes in its customers' demands. The threat of seeing its customers disappear is even more crucial for a firm with an image that may already be suffering from disputes over biodiversity.	The exhaustion of ecosystem services must give way to innovation, and allow new products and services produced by firms to fill the gap left by the loss of natural resources. For example, faced with a growing scarcity of fresh water, desalination techniques are being developed. Ecotourism, organic food and FSC (Forest Stewardship Council) certified products are new businesses that have taken advantage of this niche.
Physical	Upsetting ecological balances affects the ability of ecosystems to protect firms from certain climatic upheavals such as floods and storms. For example, forests and coral reefs provide protection for coastal areas in which firms may be located.	The intrinsic qualities of ecosystem services to firms such as waste purification, coastal protection or attractiveness to tourists.
Finance and access to capital	All these threats - new regulation and compliance costs, supply chain interruptions, media pressure campaigns or natural catastrophes - can lead to financial losses for firms, thereby impacting cash flows, which can affect their credit rating, and therefore their ability to take on debt as well as their insurance costs.	Companies with no track record of degrading ecosystems - overexploitation, contamination, using uncertified resources etc - and which instead have strategies and techniques for limiting consumption, will find fewer constraints in accessing capital markets, and have lower insurance costs.

More generally, strategies for managing biodiversity can be broken down as follows:

■ Taking stock and carrying out an

impact study: measuring the firm's level of dependency and impact on its ecosystem in terms of inputs and outputs. An overall biodiversity assessment should include product and service life cycles. This enables firms to optimise the use of their products right from the design stage, to minimise its impact throughout its life-cycle and to take into account the end of its life (eg. recycling).

■ Setting targets and establishing measurement and evaluation tools:

Ambitious yet attainable targets, staff training, biodiversity monitoring and reporting metrics within internal or external applications.

■ Action points:

- ◆ Impact reduction: consumption - materials, water, energy; reuse - water for cooling or washing; recycling - water or waste treatment.
- ◆ Offsetting or remediation: offsetting a business' negative impact by preservation or remediation elsewhere (eg. reforestation or wetland restoration). In several countries, for instance the US, Australia, Brazil and South Africa, biodiversity offsetting is mandatory for some projects.¹⁶ We also talk about «no net loss» objectives or «net gain» targets.
- ◆ Integration/Innovation: developing technology and substitutes for natural resources, new designs for products or services. For example ecotourism spend

has increased by 20% and has grown six times faster than the general tourist industry¹⁷ (World Tourism Organisation).

■ Performance monitoring - and feedback

Transparency: an implementation driver

Biodiversity is not yet fully – in some cases even partially – incorporated in business strategies. However, within each industry, a few responsible fast learners particularly concerned or sensitive to the issue, are setting an example. We find that in those industries which are affected by the erosion of natural resources, biodiversity management strategies are currently better dealt with by larger firms which also have more transparent reporting processes.

FINANCE & BIODIVERSITY

Within the financial services industry, taking firms' biodiversity management into account is an important subject because of the threats - e.g. financing risky projects such as major infrastructure projects - and opportunities - e.g. new market shares and new business - it represents.

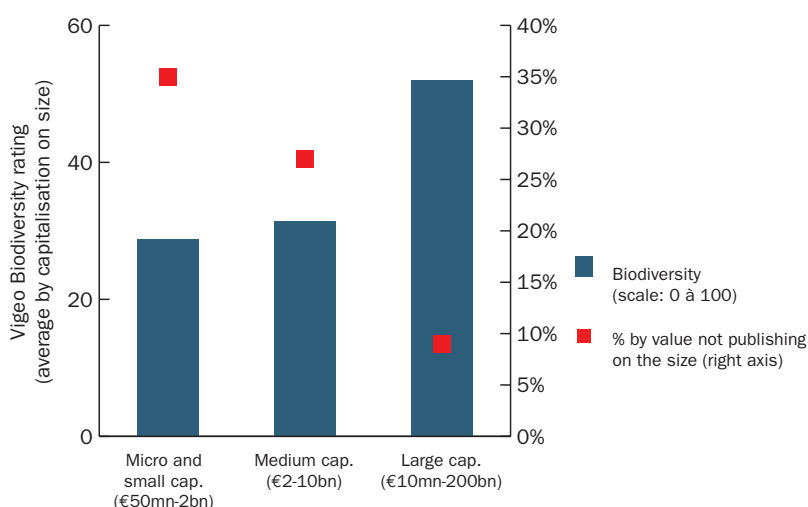
In the asset management industry, the valuation of assets associated with biodiversity (tangible goods derived from living things such as food) and of services rendered to firms by ecosystems (such as pollination) is a complex subject which the SRI approach can capture by analysing firms' strategies through an extra-financial lens (eg. evaluation of the costs of prevention, of restoration, of substitution etc). SRI also includes being an active shareholder, through direct dialogue and the exercise of voting rights, in order to support the firm in taking into account crucial issues such as for example its impact on biodiversity. In 2009, 68 shareholder resolutions were deposited at US and Canadian Shareholders General Meetings requesting more transparency on the part of directors with regards to their exposure to climate threats - as well as their envisaged strategic responses.¹⁸

Another example is the banking sector. Faced with the growing inclusion by banks of biodiversity conservation criteria in their lending decisions, some so-called sensitive projects can end up with more restrictive loan terms and higher costs of capital - or even be declined. The Equator Principles (a set of social and environmental evaluation criteria for selecting financing projects) laid down in 2003 have now been adopted by over 85%¹⁹ of players in the global finance industry.

With regards to the European insurance market, Germany, France and Spain have been the quickest to develop insurance products to cover for environmental liability risks to reimburse clients (particularly multinationals) for expenses incurred in prevention and remediation of damage.²⁰ This type of insurance is aligned with regulations (for instance the French Environmental Liability Law which enshrines the polluter/payer principle in law and recognises ecological prejudice) and requires the systematic analysis of environmental and biodiversity risks in order to calculate insurance premiums.

Finally, and as a demonstration of the advantages offered by biodiversity to certain industries, the last few years have seen the development of new financial offset markets. Some countries such as the US, Canada, Australia, Brazil and Switzerland authorise the financial compensation of damages caused. Offset banks in the US finance and ensure the management of one or more habitats and species. «Biodiversity developers» can transfer their obligations to offset their impact to a (compensation) bio-bank by purchasing «biodiversity credits»²¹ - a similar mechanism to the carbon trading market.

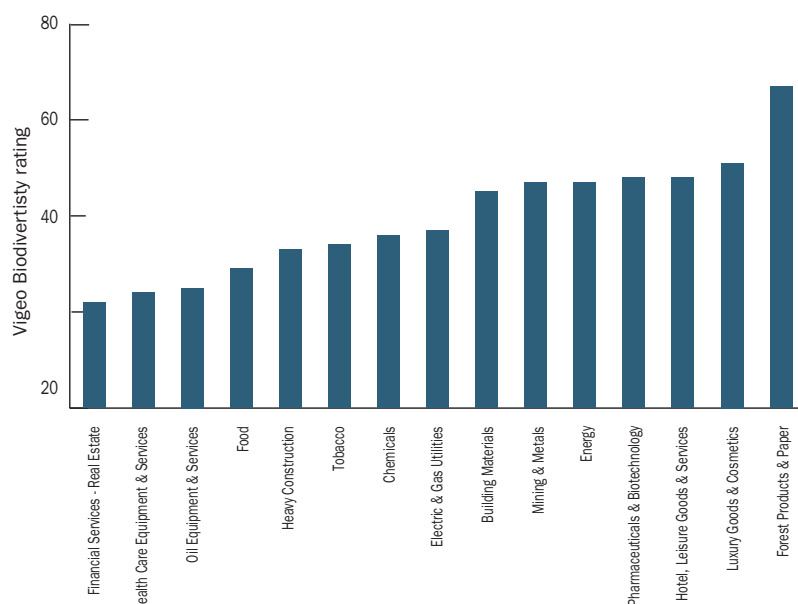
Exhibit 4: Quality of biodiversity management (rating and transparency) and market capitalisation



Sources: Vigeo, AXA IM December 2009

Industries: Construction materials, building, chemicals, gas and electricity, energy, mines and metals, financial services and real estate, food and agriculture, wood products and paper, tobacco, health equipment and services, pharmaceuticals and biotechnology, hotels/hotel services/entertainment, luxury goods and cosmetics (236 firms)

Within the various industries, the quality of the biodiversity strategies is not necessarily proportional to the industry's interdependence with biodiversity (eg. the food production industry). This being said, it is worth noting that amongst the least virtuous industries - those with the lowest biodiversity ratings - such as financial services, gas and electricity, or even construction, fewer firms fail to report on the subject, in contrast to the mining, hotel or catering industries in which few firms could be given ratings because they did not report the information. The pharmaceutical and «forest and paper» industries, which have strong links to biodiversity, have higher biodiversity ratings as well as excellent transparency levels.

Exhibit 5: Biodiversity rating (average, 1 to 100) by industry - Europe

Sources: Vigeo, AXA IM December 2009

Biodiversity and profitability

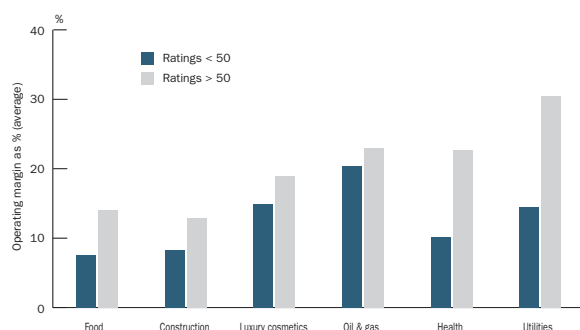
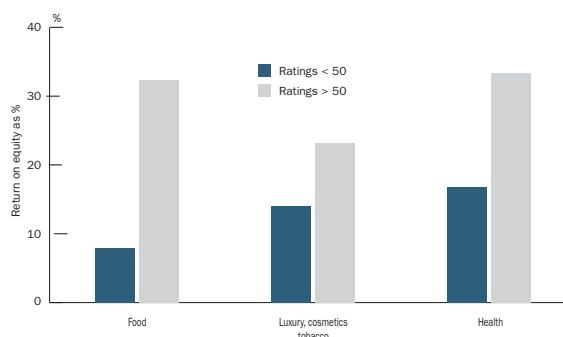
We find that within certain industries characterised by high dependency on biodiversity - particularly the health, food, cosmetics, tobacco, (luxury) textiles and utilities industries - there is a correlation between the quality of their biodiversity strategies and some of their fundamental financial indicators.

Indeed, those strategies - such as impact reduction, offsetting and innovation - which are truly taken into account from the outset and initially incorporated in the production process and/or project planning, improve productivity as well as the efficient use of resources. It is amongst the firms most highly rated in terms of biodiversity - ie. those that

manage and leverage their surrounding ecosystems the most efficiently thereby minimising the risk of disruption - that we find higher margins and rates of return. In these industries, maintaining and investing in natural resources (eg. genetic resources, forests or water) are mechanisms used to reduce production costs, control supply chain risks and sometimes turn out to be sources of growth.

It is here worth noting that the relationship between the quality of a biodiversity strategy and higher operating margins also works in industries whose underlying activities affect ecosystems (eg. the construction/construction materials as well as the oil and gas industries).

As is demonstrated by Exhibits 6 and 7, the best firms in terms of biodiversity in the Health and Food industries have strong key financial indicators (margins and ROE). It is in fact the management of the interactions between these industries and natural resources that is pivotal.

Exhibit 6: Operating margin and biodiversity**Exhibit 7: Return on equity and biodiversity**

Sources: Vigeo, Bloomberg, AXA IM, December 2009
European coverage



Sector zooms

The link between biodiversity and the pharmaceutical industry is clear:

20 - 25% of **pharmaceutical** products are derived from natural substances.²²

The relationship between medications and biodiversity is a fundamental issue for the industry both in terms of protection and of leveraging the value contained in new chemical substances and active ingredients. Telling examples are Taxotere, an anti-cancer drug derived from yew, Artesunate, an anti-malarial drug derived from Artemisia, Lovenox, an anticoagulant derived from animal extracts.²³ In 2002, China, Brazil, India and nine other countries (which together represent 70% of the world's biodiversity) formed a coalition against «bio piracy» to protect the rights of their populations over the genetic resources of their land. Pharmaceutical multinationals now have to respect the Convention on Biological Diversity which has laid down the principles for obtaining and using natural resources.

Agriculture is one of the industries most responsible for the loss of biodiversity through its transformation of natural and semi-natural ecosystems into agricultural land, with 24% of the Earth's surface covered by cultivation systems.²⁴ Agriculture is also responsible for 20% of GHG emissions caused by methane emissions (which arise from rice fields or cattle for example), by nitrous oxide (from fertilisers), and by the carbon dioxide of fires and agricultural operations – and also indirectly caused by the depletion of carbon reserves such as forests and peat bogs. Finally the agricultural industry consumes 70% of all freshwater used, an in-take level which has doubled since 1960²⁵.

The **food industry** is also dependent on the essential services freely provided by nature such as the flow and recycling of nutrients that contribute to soil fertility, the water cycle that is the basis for rainwater and irrigation, pollination, the control of pests and diseases, and erosion control. Furthermore, another issue is starting to appear, almost as an “extra difficulty” added to the already gruesome challenge of resource conservation: the world's population is expected to reach 9 billion by 2050. It is certain that global agricultural production will only cope if intensive agriculture is used. This must not fail to take sustainable agricultural planning principles strongly into account. Firms in the industry currently working on appropriate measures for the sensible and rational use of food, water, space, energy and biological resources are also contributing to their own financial longevity and creating value.

■ **It is amongst the firms most highly rated in terms of biodiversity – ie. those that manage and leverage their surrounding ecosystems the most efficiently thereby minimising the risk of disruption – that we find higher margins and rates of return**

Finally, it is essential to include the **construction and infrastructure** industry in this sectoral overview, a crucial industry in both the depletion and the preservation of biodiversity. Indeed urbanisation is a key driver in biodiversity depletion – be it through the transformation and fragmentation of ecosystems or the emission of GHGs, 25% of which this

industry is responsible for. Increasing urbanisation contributes to the over-exploitation of natural resources and the use of non-renewable materials, as well as the impact of extracting and producing them should not be overlooked.

Finally, with demand for technical skills – especially for agricultural, real estate and urban planning operations – growing, human capital is an increasingly key asset to be handled with care. Indeed, with the legal framework becoming increasingly demanding, the requirement for training in ecological engineering is becoming greater. Consultants specialising in impact studies are becoming more numerous and thousands of green jobs may be created over the next few years to safeguard biodiversity. Some 40,000 jobs should be created in France by 2020, 50% of which should be manual jobs maintaining land - managed by specialist engineers -, and to a lesser extent specialist jobs will be created within private firms.²⁶

Conclusion

The fight against climate change cannot be addressed without taking into account the depletion of natural resources and ecosystems. Up to 25% of greenhouse gas emissions could be cut if biodiversity depletion were halted.²⁷ It is essential to combine the two agendas because the responses to one can have unwanted effects on the other - as is the case for example with biofuel plantations involving the removal of areas rich in biodiversity or hydropower programs that deplete terrestrial and aquatic biodiversity.

As it is the case with climate change, impoverished populations are the most vulnerable to the loss of services provided by biodiversity and ecosystems. The challenge is therefore not only environmental, but also social. For some developing country populations living in rural areas, the degradation of biodiversity has a direct impact on the resources and services upon which they depend - agriculture, fishing, water, pasture, forest products. In the most arid areas of India for example, products from the wild provide 14 - 23% of the poor rural populations' income, a range that can grow to 42 - 57% in times of drought.²⁸

In the introduction, we stated that the loss of ecological services could represent up to 7% of global GDP by 2050. This in itself is a good - and sufficient - incentive for firms and politicians to review their accounting systems to ensure that they efficiently account for natural capital. Various workstreams are already underway, focussing on accounting systems with the ultimate goal of incorporating externalities and transforming biological diversity into a source of profit for the business community.

¹ United Nations Environment Programme (UNEP).

² Pathways to a low-carbon economy, McKinsey & Company, 2009 - Stern Review, The Economics of Stabilisation - Climate Change 2007 - IPCC (Intergovernmental Panel on Climate Change) Assessment Report

³ Reducing emissions from deforestation and forest degradation

⁴ Planting forest trees

⁵ Planting new trees on land that had been deforested

⁶ UNEP RISO Centre, CDM projects grounded in types, 1st January 2010

⁷ Ecosystems and human well-being, opportunities and challenges for business and industry, 2005.

⁸ Work initiated by Stravos Dimas, Commissioner for the Environment at the European Commission, and Sigmar Gabriel, the German Environment Minister. The Indian economist Pavan Sukhdev was appointed to undertake the task

⁹ Stern Review: The Economics of Climate Change

¹⁰ Phase I of the report was presented in 2008 with the larger phase II being presented in 2010

¹¹ They can also be products or services meeting ecological criteria to reduce their environmental impact, for example water, soil, air or raw materials from sustainably managed forests etc.,

¹² Ademe & Vous, Strategy & Research, The development of eco-aware products: a clear economic and environmental advantage, January 2010

¹³ Millennium Ecosystem Assessment (MEA): "Ecosystems and human well-being, opportunities and challenges for business and industry", 2005

¹⁴ What price nature, Novethic, June 2009

¹⁵ Ipsos and UEBT, press release, an emerging trend, 30 April 2009

¹⁶ Biodiversity and the private sector, UICN, WBCSD, 2008

¹⁷ Biodiversity and economic conservation methods, French Ministry of ecology, energy sustainable development and the sea, 11 December 2009

¹⁸ Investor Network on Climate Risk, Climate Resolution Toolkit 2009

¹⁹ The Equator Principles, greater responsibility in project finance

²⁰ Businesses for the Environment, Biodiversity: what values?

²¹ Sustainable finance for biodiversity by using market mechanisms?

²² Myriam Rondet, September 2006

²³ The Economics of Ecosystems & Biodiversity, November 2009

²⁴ Sustainable development report, Sanofi Aventis, 2008.

²⁵ World Health Organisation (WHO)

²⁶ Biodiversity and agriculture, Convention on biological diversity, 2008

²⁷ Biodiversity conservation, a burgeoning market, Les Echos, 27 January 2010

²⁸ TEEB Climate Issues Update 2009: 14; Nellemann and others 2009

²⁹ Biodiversity, climate change and poverty, an IIED (International Institute for Environment and Development) report, February 2008