Sustain

Issue 30 • October 2008
Special double issue

ecosystems + equity + economics = sustainable development

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World Business Council for
Sustainable Development

Sustain

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Making the case for ecosystems

The Prospectors and Developers Association of Canada has an e3 program – Environmental Excellence in Exploration. More information on this Internet-based toolkit on environmental and social responsibility in the minerals industry can be found at www.e3mining.com.

About the WBCSD

The World Business Council for Sustainable Development (WBCSD) brings together some 200 international companies in a shared commitment to sustainable development through economic growth, ecological balance and social progress. Our members are drawn from more than 30 countries and 20 major industrial sectors. We also benefit from a global network of about 60 national and regional business councils and partner organizations.

Our mission is to provide business leadership as a catalyst for change toward sustainable development, and to support the business license to operate, innovate and grow in a world increasingly shaped by sustainable development issues.

Our objectives include:

Business Leadership – to be a leading business advocate on sustainable development;

Policy Development – to help develop policies that create framework conditions for the business contribution to sustainable development;

The Business Case – to develop and promote the business case for sustainable development;

Best Practice – to demonstrate the business contribution to sustainable development and share best practices among members;

Global Outreach – to contribute to a sustainable future for developing nations and nations in transition.

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Sustain is published by the Communications Department of the WBCSD.
Printer: ATAR Roto Presse SA, Geneva
Paper: Containing 50% recycled content and 50% from mainly certified forests (FSC and PEFC). 100% Chlorine free. ISO 14001 certified mill.

ISBN: 978-3-940388-29-2
Picture credits: ICRC, Flickr (TheSysOp33, elorah, Hann The Netherlands, Liz Fairhurst, neus3, TerceraFundación, tk yeoh), iStockphoto, Wikipedia, WBCSD members, World Bank.

World Business Council for Sustainable Development
4, chemin de Conches • 1231 Conches-Geneva • Switzerland
Tel: +41 (0)22 839 31 00 • Fax: +41 (0)22 839 31 31 • Web: www.wbcsd.org

Foreword

Business and ecosystem services are inextricably linked

By Sam DiPiazza and Bob Elton*

Corporations affect ecosystems and the services they provide while at the same time relying on them. Agribusiness depends on nature's pollination, pest control and erosion regulation services. The insurance industry and infrastructure and plant asset owners benefit from the natural hazard protections that some ecosystems provide.

Because of these interrelationships, the trends and challenges identified by the Millennium Ecosystem Assessment in 2005 pose significant risks to companies (as well as to their suppliers, customers and investors), including increased scarcity and cost of raw materials such as freshwater, food and fiber. Being seen to damage ecosystems undermines corporate brands and image, can jeopardizes the license to operate and make it harder to raise capital.

At the same time, these challenges can create new business opportunities, including new technologies and products that will serve as substitutes, reduce degradation, restore ecosystems or increase the efficiency of ecosystem service use. They can create new markets such as water-quality trading, certified sustainable products, wetland banking and threatened species banking, and other ecosystem services such as carbon sequestration.

Most companies fail to recognize the links between healthy ecosystems and their business interests. They could better understand the risks and seize the opportunities by assessing impacts and dependence, reducing impacts and scaling up solutions, and exploring and pursuing new business opportunities. To this end, in March of this year the WBCSD, with WRI and the Meridian Institute, released the *Corporate Ecosystems Services Review Guidelines* (see page 28).

The value and sustainable management of ecosystems must become a more integral part of economic planning and decision-making by society; otherwise nature will always be treated as a second priority compared with social and economic development. Accordingly, valuation will be a key theme for the WBCSD's ecosystems work program for 2009.

The WBCSD has been working on business and ecosystem issues for over 10 years. We are pleased to be a major sponsor of the Barcelona Congress and to work with IUCN to improve and enhance engagement between the conservation and business communities during and beyond this gathering. The WBCSD's e3 Pavilion will be the centerpiece of our presence there, showing how Ecosystems + Equity + Economics = Sustainable Development. Our participation is based on a strong sense of shared common purpose built with IUCN to harness the role of markets and business to support ecosystems stewardship, biodiversity conservation and the sustainable use of ecosystem services. This common platform has been the basis of our Memorandum of Understanding with IUCN that developed following the 2004 Congress in Bangkok.

This special double issue of Sustain concentrates specifically on the ecosystems challenges and opportunities that are important to both business and the Congress, and our WBCSD member companies and partners that are making strides in addressing them.

Sam DiPiazza, global chief executive officer, PricewaterhouseCoopers, is chairman of the WBCSD.

Bob Elton, president & chief executive officer of BC Hydro, is former chair of WBCSD's Ecosystems Focus Area Core Team (FACT).

The partnership, as seen by its leaders

"When I was interviewed for my position, I asked if IUCN were going to be working seriously with business. They said yes. If they had said no, I would not be in this job," said Julia Marton-Lefèvre, who became director general of the International Union for Conservation of Nature (IUCN) on 1 January 2007.

"We and IUCN felt that the old model of treating the environment separate from economic decision-making did not work," said Björn Stigson, president of the WBCSD since 1995.

"We all must make economic decisions based on ecosystem realities. To put a value on ecosystem services is a way to create that link in decision-making, bringing us to truly integrated decision-making. We both came to the same conclusion. We are now pursuing the same goals, and recently did a joint report on the important roles markets can play in maintaining ecosystems."

Both were speaking about the partnership between the two organizations.

"It is terrific, great, that we were able to second someone to the WBCSD, and several from our staff wanted to take on that job," said Marton-Lefèvre.

"Our Ecosystems Focus Area came out of this cooperation with IUCN. They have seconded Mikkel Kallesoe to us for at least two years, but a number of our members have seconded people to IUCN, so the secondments are flowing in both directions," said Stigson.

Marton-Lefèvre noted that the similar interests of the two organizations go beyond the environment.

The Council and IUCN **leverage each other's work** very well. We help WBCSD members understand their dependence on ecosystems. They help us learn to engage with business.

We want to make the **IUCN/WBCSD** partnership **even stronger.**

"The Council is doing a lot of work on energy and climate change, but countries will have to adapt to climate change, and successful adaptation will require healthy and robust ecosystems," she said. "We are just as interested in livelihoods as we are in ecosystems. We cannot just say 'save the butterfly' and forget the people. We want business to improve livelihoods while preserving the ecosystems on which those livelihoods ultimately depend."

Stigson noted that though the formal partnership was only about three years old, he had been involved with IUCN since former IUCN director general Martin Holdgate advised Stigson's former company, ABB.

"Then I served on IUCN's short-lived private sector advisory board. Then when Achim Steiner (now executive director of the United Nations Environment Programme) was IUCN director general, we had quarterly WBCSD-IUCN meetings on management."

"IUCN set up a review committee and I was invited to join it, so you had a private sector guy reviewing the performance of both IUCN and its boss!" Stigson added. "My long engagement with the organization should tell you how much I respect it. IUCN is the leading umbrella organization on conservation, with a lot of credibility.

[The organization is] a very good partner with which to discuss issues like ecosystems and related matters. It is not an activist but more of a substance body, like us. We bring value to them and they to us."

Marton-Lefèvre noted: "The Council is the business face of the conservation movement. Its member companies are beginning to understand how they depend on ecosystems for their very existences. They see the business case and how they can turn ecosystem risks into business and ecosystem opportunities. The WBCSD membership is hands-on in determining their ecosystem impacts and dependence and in creating strategies to address risks and opportunities, for example, through carrying out corporate ecosystem services reviews."

"The Council and IUCN leverage each other's work very well. We help WBCSD members understand their dependence on ecosystems. They help us learn to engage with business. It is win-win," she added.

IUCN has had a long, not always smooth, relationship with the private sector. "In our over 60-year history the Union has passed 200 measures dealing with business," Marton-Lefèvre said. "But the 1996 congress asked us to engage with business to strengthen our mission."

"That mission is 'to influence, encourage and assist societies to conserve the integrity and diversity of nature and ensure that any use of natural resources is equitable and ecologically sustainable.' The private sector, being a vital part of society that uses and affects nature in multiple ways, simply cannot be left out of this equation."

She added: "We have 1,104 members; more than 800 of them are NGOs of all sizes, and the rest are government agencies and states representing countries in all parts of the world. We have more than 10,000 scientists and experts. So we naturally have a number who question the wisdom of our having a relationship with business – a number that is shrinking every year. To most of the skeptics I simply ask: 'Can you show me how business is not part of society?'"

"But we still must prove to all of our members that our relationship with business does not let companies 'greenwash' their operations. I am delighted that the WBCSD is sending such a strong contingent to our World Conservation Congress in Barcelona in October and hope they will talk to our members who wonder if the business commitment is for real," Marton-Lefèvre said.

Stigson said that the WBCSD has a long tradition of participating in the congresses, held every four years and now drawing more than 8,000 leaders from governments, NGOs, business, UN agencies, scientific domains and community groups. "It has been a focus of the work of our new Ecosystems Focus Area."

He continued: "After Barcelona, we want to make the IUCN/WBCSD partnership even stronger. We will be working together on a valuation project so that smart, sustainable companies can make good economic decisions mitigating their direct ecosystem impacts and developing new ecosystem-based business opportunities. We will also look at ecosystem regulatory frameworks to identify and mainstream best policy practice, including the use of market-based approaches when and where these makes sense."

"Over the past 18 or so years I have worn many different hats while Björn has kept on his WBCSD hat," said Marton-Lefèvre. "Back when I ran the International Council for Science, we would turn up at many of the same meetings. Now we seem to be turning up at even more of the same meetings!"

Fourteen companies are working with Fundación Entorno-BCSD Spain to explore how market approaches could be linked to conservation interests.

Natural assets:

Conservation instruments or instruments for change?

By Cristina García-Orcoyen, Chief Executive, Fundación Entorno-BCSD Spain

Nobody is surprised when their water is cut off if they haven't paid the bill. We admit that companies have to recoup their investments and maintain infrastructure (water withdrawal, treatment, distribution, etc.), on top of paying staff and suppliers.

Why don't we apply the same logic to the services offered by nature? The answer is simple: they are perceived to be free. Year after year, plant roots have acted as enormous filter systems and, in spite of not getting compensated, they have not stopped filtering.

Since ecosystem services are not valued as assets, they have little influence on political decision-making processes.

Since ecosystem services are not valued as assets, they have little influence on political decision-making processes, or on other decisions regarding funding, marketing of environmental products and services, and consumer preferences.

We are literally dismantling the machinery that supports life on the planet. Currently, a country that exhausts its forests and oceans is increasing its GDP without being able to control the decrease of those assets that are essential to guaranteeing the future well-being of its citizens.

The introduction of ecosystem services that are essential for life (soil fixation, nutrient cycles, carbon absorption, climate regulation, water supply, along with aesthetic, cultural and spiritual values) into market considerations would help to create a school of thought that is sensitive to conservation interests.

By doing so, new trading opportunities would emerge that build on the experience of carbon markets. Buyers and sellers would exchange environmental services with a net result that does not imply the loss of natural assets.

The European Union's Water Framework Directive is open to such an approach. From 2010, member states must ensure that water pricing policies provide adequate incentives for users to use water resources efficiently. In addition, each economic sector will have to contribute to the recovery of the costs of water

services, including environmental costs (related to ecosystem deterioration such as salinization or the deterioration of productive lands) as well as those costs associated with opportunities that others are missing.

Likewise, the Environmental Liability Directive includes complementary measures to compensate for the damage caused at different sites. Financial security instruments could be guaranteed by acquiring credits from an ecosystem bank before the damage is caused. The EC Habitats Directive and the Biodiversity Strategy embrace the principle of no net loss, setting the target of zero biodiversity loss by 2010.

The Spanish Ministry of Environment's WATER program has created water banks to alleviate the country's water resource problems. Centers for the exchange of water rights have been established in four river basins (Segura, Júcar, Guadalquivir and Guadiana).

Then there is "Natura 2000", Europe's network of protected natural areas, accounting for 29% of the continent's landmass, which obliges Spanish businesses to act in the fight against biodiversity loss. Some countries, such as the Netherlands, have addressed the issue by including environmental costs and the cost of depletion in the budgets of large public infrastructure.

The US has also joined in: in the 1990s the Clinton administration stimulated the creation of platforms for the exchange of environmental services by different agents operating in one territory.

Could such a thing be done at the European level? Indeed, but the challenge lies in finding credible and positive arguments for the different agents who have yet not identified their opportunities in this type of market.

Fundación Entorno-BCSD Spain has come together with 14 Spanish companies to explore how these market approaches could be set up. The positive outcomes of this initiative include:

- Promoting the sustainable use of ecosystem services by giving the owners of natural assets economic incentives to conserve them through compensation by those who demand them. These buyers will in turn be motivated to reduce the costs of buying these natural assets, by increasing the efficiency of their processes.
- Including environmental costs in accounting: The purchase and sale of natural assets will reflect their economic value, obliging finance departments to take them into consideration.
- Contributing to the development of a market for environmental services: the restoration and protection of natural assets together with technologies that increase process efficiency will be necessary in order to be competitive.
- Increasing financial capacity for ecosystem conservation and restoration: government financial capacity is clearly limited and private sector participation, which should be stimulated by profitable market conditions, becomes necessary.
- Promoting the growth of less developed economies and sectors, such as rural environments and agriculture. Both have big opportunities in this market.

The introduction of ecosystem services that are essential for life into market considerations would help to create a school of thought that is sensitive to conservation interests.

Some global needs can only be addressed by joint decisions at the international level.

Some global needs can only be addressed by joint decisions at the international level. Starting from a common position – ecosystem degradation has dangerous consequences on human well-being; we have common needs; we need more knowledge of the services that nature offers to us – we should be able to estimate the economic value and financial capacity needed for ecosystem conservation.

Participating companies:
Bancaja Hábitat, Campofrío, Cementos Portland Valderrivas, ELCOGAS, ENDESA, FCC Construcción, Grupo ENCE, Grupo Eroski, Holcim, Grupo OHL, Red Eléctrica de España, Repsol, Solvay, Tragsatec

Autovias

From highways to waterways

Autovias's Waterway Program decreases the need for road maintenance while helping to recharge one of Brazil's, and the planet's, most important aquifers.

Most problems occur during the rainy season when water gathers on roads and then runs off, causing erosion and road damage. So Autovias, a company belonging to the Spanish group Obrascon Huarte Lain S.A. (OHL), has developed an ambitious project that collects water on the highways' surfaces and directs it towards the Guarani aquifer recharge zone.

The company designed the program mainly to protect this vital water resource. Autovias earns no direct income from putting water into the aquifer, but the program helps decrease the need for road maintenance and prevents washouts, thus saving the company money.

Autovias has won a franchise to manage 316.5 km of highways in Brazil's São Paulo State. This involves a number of activities, including infrastructure construction, which often changes the landscape, modifying water dynamics within catchment areas. This can lead to erosion, settling, decreased groundwater infiltration, particularly in aquifer recharge capacity, and direct changes in the local hydrological cycle.

Autovias's environmental commitment to present and future generations is focused on guaranteeing the quality of the hydrological cycle, effectively using and recycling water resources, and developing public awareness of the correct use of water resources.

The Guarani aquifer, the world's largest known aquifer, covers an area of more than 1.2 million km^2 and is under all the highway the company manages. This mega-aquifer extends under Brazil, Paraguay, Uruguay and Argentina. It may contain over 40,000 km^3 of water, which is more than all the water contained in all of the Earth's rivers.

The Waterway Program consists of building rainwater containment dams along the highway grid managed by the company, particularly in the areas of public-supply springs, waterways and headwaters located within the drainage basins of the Sapucaí-Mirim, Pardo and Grande rivers.

Some 520 rainwater containment dams have been built, with an average capacity of 4,000 m^3, making possible a storage capacity of approximately 2 million m^3 of rainwater and rainwater runoff along the toll road network and adjacent areas during the rainy season. The contribution area of the basin extends to approximately 5,200 hectares.

These works store rainwater flowing from the highways and adjacent areas; slow the speed of the water, allowing it to recharge the aquifer, and prevent the water table from falling and the ground from eroding and being dislodged along drainage areas.

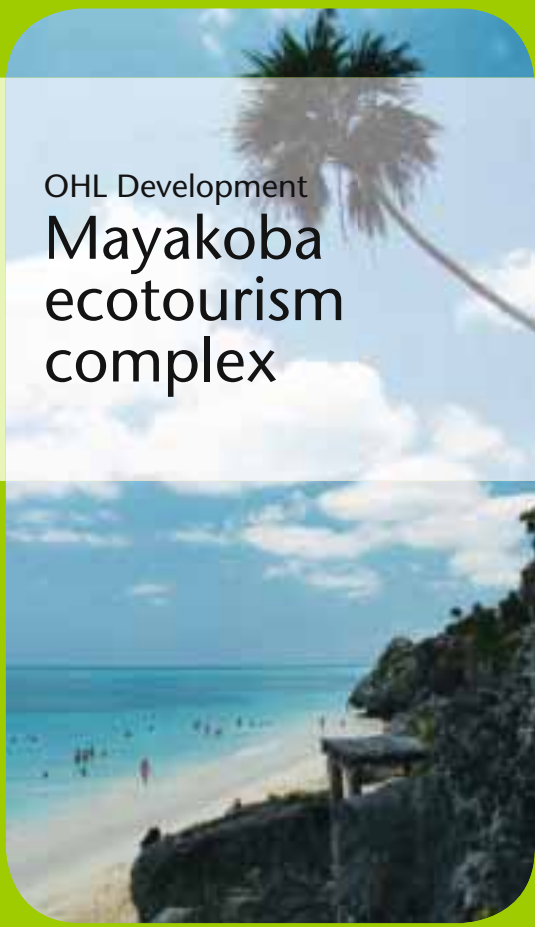
Find the full case study at www.wbcsd.org/web/casestudy.htm. This case study was provided by Fundaçion Entorno, BCSD Spain, a WBCSD Regional Network Partner.

ELCOGAS

Clean and efficient use of coal

OHL Development

Mayakoba ecotourism complex



ELCOGAS has built a coal plant in Spain that reduces CO_2 emissions by an average of 20% and other emissions by 50-80% compared to traditional coal plants.

The demonstration plant competes with other electricity companies and shows the technical, economic and commercial feasibility of the technology for cleaner and more efficient coal-based electric power production than traditional technologies could offer.

Because ELCOGAS believes that the environmental costs of making electricity through eco-markets, habitat banking, etc., will be progressively incorporated into the price of doing business, the company is helping accelerate this transition.

The Integrated Gasification Combined Cycle (IGCC) technology operated by ELCOGAS in its Puertollano (Ciudad Real, Spain), coal plant not only allows conventional emissions to be reduced to levels well below the strictest legislation, it also reduces CO_2 emissions by 20% compared to technologies presently in use.

The plant is in line with the European Commission's 2020 objective of increasing process efficiencies by 20%, a level that will permit a reduction of the CO_2 in the same proportion.

This technology can also be easily adapted to future CO_2 capture and storage projects, with the additional advantage of hydrogen production from the synthesis gas. ELCOGAS is developing a CO_2 capture pilot plant that will be operative in 2009.

Founded in 1992, ELCOGAS is carrying out the operation and marketing of the 335 megawatt IGCC plant.

The company wants to build on the Spanish national strategy to use coal cleanly and maintain the coal mining jobs in the Puertollano area, to develop a technology for clean coal-based electric power and to address strong public demand for the conservation of the environment.

The technology allows for complex substances that are difficult to treat in other power stations to be processed, such as petroleum coke and all types of biomass. Given the chemical synthesis capacity of the gas obtained in the gasification of all these carbonaceous substances, IGCC plants can also produce alternative products, including hydrogen, ammonia and methanol.

ELCOGAS also believes that there is a potential for carbon credits under the Kyoto Protocol's Clean Development Mechanism because the plant operates effectively as a substitution plant for coal or similar conventional plant by an IGCC plant, reducing CO_2 and other emissions by up to 90%, or even more in the case of biomass use.

Find the full case study at www.wbcsd.org/web/casestudy.htm. This case study was provided by Fundaçion Entorno, BCSD Spain, a WBCSD Regional Network Partner.

On Mexico's Mayan Riviera, OHL Development is creating an ecotourism complex, the financial viability of which depends directly on the quality, structure and functioning of the ecosystems on the property.

The company is thus using innovative approaches to placing infrastructure into the natural surroundings on the Caribbean coast while protecting ecosystems in and around the Mayakoba Complex.

The company wants to establish a new model for tourism development that aligns the goals of successful business with environmental conservation. It is a question of making the most of ecosystem services to meet the demands of high-end tourists who appreciate and are attracted by ecological quality.

Reefs, sea grasslands, dunes, mangrove swamps and jungle surround the Mayakoba Tourism Complex, an area of 650 hectares being developed in two phases.

Heavy infrastructure, lodging, services, commerce, etc. are located more than 500 meters from the coast, removed from the most critical ecosystems, such as the mangrove swamp, dune and beach. Light infrastructure located in the mangrove swamp facilitates the movement of water, tides and surface flows by means of pipes, bridges and overpasses.

The complex has 20 hectares of channels and lagoons, which make up the main routes of transport, with more than 10 kilometers that are navigable.

An 11-hectare system of wetlands has been incorporated into the landscape of the golf course as a complement to the water treatment plant, in order to recover water quality and decrease the risk of polluting the water table and the adjacent marine area.

Mayakoba is the first project on Mexico's Caribbean coast to conserve the previously existing ecosystems, placing big infrastructure away from sensitive ecosystems, creating (before construction) an ecological structure on which hotels can later be built, incorporating ecosystems into their design, and planning and creating a new ecosystem (lakes and channels) with both environmental and practical goals.

It is an interdisciplinary project with different areas at different stages of development; some hotels are under construction and some are fully occupied. The professional golf course has already hosted two major tournaments.

Find the full case study at www.wbcsd.org/web/casestudy.htm. This case study was provided by Fundaçion Entorno, BCSD Spain, a WBCSD Regional Network Partner.

Building biodiversity business: Notes from the cutting edge

In March 2008, Shell International Limited (Shell) and the International Union for Conservation of Nature (IUCN) jointly published their report *Building Biodiversity Business*.[1] The report makes the case for a new approach to conserving nature by harnessing the profit motive to conserve biodiversity and restore ecosystem health. It outlines the magnitude of the challenge and reviews the efforts to develop new business models for biodiversity conservation across a range of sectors and using a range of approaches – such as organic agriculture, certified forestry and fisheries, eco-tourism, bio-carbon offsets, etc. The report also analyses in detail the pre-requisites for taking biodiversity business to scale, including public policy and other enabling frameworks, technical assistance and finance.

By Josh Bishop, Senior Advisor for Economics and Environment, IUCN

Since publishing the report, Shell and IUCN have continued their collaboration to develop a set of pilot projects that can demonstrate the viability of biodiversity business in different contexts. The projects are in various stages of development and include:

- A pilot biodiversity offset in Qatar, designed to compensate for disturbance to marine and terrestrial habitats from oil and gas operations. This initiative forms part of a suite of pilot biodiversity offset projects under the Business and Biodiversity Offsets Program (BBOP);
- A feasibility study in the western US to assess the potential ecological and financial benefits that could be secured by improving the management of Shell's land holdings, particularly parcels not needed for current operations. Various state and federal regulations offer tax incentives as well as the opportunity to generate environmental credits for restoring wetlands or for securing the habitat of endangered species. In some cases, these credits may be "banked" against future environmental liabilities or sold to neighboring land developers who may be legally required to compensate for the adverse environmental impacts of their projects.
- One or more commercial conservation investments in southeast Asia that aim to demonstrate a "game-changing" approach that would increase the economic value of conserving natural forests in the context of growing pressures on forest land to meet rising demand for biofuels and other commodities. If successful, this initiative could lead to the establishment of new commercial conservation asset managers based on revenues from rapidly growing markets for ecosystem goods and services.

IUCN is involved in similar initiatives with several other major companies. For example, IUCN and Rio Tinto are jointly exploring opportunities to generate marketable ecosystem services on land owned or managed by the company. This includes potential biodiversity banks in Africa, as well as the opportunity to generate marketable carbon credits by restoring soils and natural vegetation or by preventing emissions from deforestation and degradation. Similarly, IUCN and Holcim are working together on a methodology to support development of biodiversity-friendly, small-scale enterprise in communities near Holcim facilities in the developing world. They aim to test the methodology in several countries in the near future.

Most of these pilot projects and feasibility studies are in the very early stages of development. Some of them may not proceed or succeed, at first. But IUCN and its corporate partners remain convinced that new ways of combing business and nature conservation can and must be found if the world is to have any chance of slowing, let alone halting, the accelerating loss of biological diversity around the world.

1. Available at http://earthmind.net/bbb.htm

Sappi

Proving best practice

Sometimes a company must work hard to show regulators that its own environmental solutions really are the best.

The international paper company Sappi has a mill in Ngodwana, South Africa, that produces market bleached pulp and unbleached pulp for the onsite manufacture of kraft linerboard; the mill also has a plant for converting ground wood to newsprint.

The mill generates about 27 million liters of wastewater daily, which the company treats by releasing it onto 400 hectares of grassland. The soil efficiently removes organic material almost completely; however, inorganic material leaches into the adjacent Elands River, causing slight salinization of the river.

National environmental regulators did not see this approach as an acceptable wastewater disposal practice and were pressuring the mill to cease irrigation. The company therefore studied the social, economic and ecological impacts of the management systems the government was proposing as better, more ecological alternatives.

By developing a detailed mass and contaminant balance study of the mill, Sappi could predict the flow and contaminants that would be released for each different effluent management technology, actual and potential. This information was fed into a three-dimensional groundwater model to predict the flow and contaminant load into the Elands River, and a hydrological model of the catchment was used to predict concentrations in the river for the various management scenarios.

Estimating some of the economic values of the ecosystem goods and services was not straightforward. A survey had to be conducted of the tourism industry in the region to determine how much people are willing to pay in order to visit the area and enjoy the benefits of the river. The study produced a model linking the ecology to the economy.

The process allowed Sappi to evaluate for each effluent management scenario the impacts on the ecology and the socio-economic values – all expressed in economic terms.

The results showed that none of the technologies to reduce the amount of effluent from the mill had a cost-benefit ratio better than present practice.

The current approach has a negligible impact on the ecology of the river system and downstream users, and implementing any of the proposed management technologies would have a significant negative impact on the regional economy.

As a result of this study, the regulators issued a long-term water use license to the mill. The study is the first of its kind in South Africa and is being applied at another Sappi mill.

The business benefits of biodiversity conservation

By Kerry ten Kate, Director, BBOP

While new construction and development are essential for economic growth, they are also a major cause of the current unprecedented loss of biodiversity. Many infrastructure projects have a significant, adverse impact on biodiversity and livelihoods by converting habitat and polluting soil, water and air. Standard corporate environmental management approaches such as the use of environmental impact assessments and environmental management systems generally involve measures to lessen a project's impact, but very often still result in a substantial residual impact on biodiversity.

In April 2002, the Parties to the Convention on Biological Diversity (CBD) committed "to achieve by 2010 a significant reduction of the current rate of biodiversity loss at the global, regional and national level as a contribution to poverty alleviation and to the benefit of all life on Earth." This target was endorsed by the World Summit on Sustainable Development and the United Nations General Assembly and incorporated as a new target under the Millennium Development Goals.

If civil society is to help governments achieve the 2010 target, we need to find ways to move well beyond such business as usual. Biodiversity offsets offer one response to the growing appetite for practical approaches to do so.

Biodiversity offsets are measurable conservation outcomes resulting from actions designed to compensate for significant residual adverse biodiversity impacts arising from project development and persisting after appropriate prevention and mitigation measures have been implemented. Their goal is to achieve no net loss, or preferably a net gain, of biodiversity.

In 2004, Insight Investment and the International Union for the Conservation of Nature (IUCN) interviewed some 50 representatives from companies, governments and NGOs worldwide on the topic of biodiversity offsets.[1] The interviewees saw the potential of biodiversity offsets to promote more and better conservation and to help companies manage their environmental liabilities, risks and business opportunities. Many companies are now seeking partnerships with governments and conservation groups to address the environmental impacts of their activities and to enhance their contribution to biodiversity conservation and sustainable development. The Business and Biodiversity Offsets Programme (BBOP) was established in 2004 to respond to the tremendous opportunity to secure biodiversity conservation and business benefits through the appropriate use of biodiversity offsets.

BBOP, managed jointly by Forest Trends, Conservation International and the Wildlife Conservation Society, is a partnership of some 40 companies, governments, conservation experts and financial institutions from different countries exploring and testing biodiversity offsets. Collectively, the BBOP partners bring together expertise in conservation policy and practice; systematics and the measurement and monitoring of biodiversity; bioregional and landscape-scale planning; working with local and indigenous communities; risk, project and biodiversity management in business operations; and environmental economics. Many have already assisted in the design and implementation of biodiversity offset projects and the development of public policy on biodiversity offsets in a range of contexts.

The BBOP team is just embarking on a broad consultation process, hoping to gather comments and suggestions from different interests and corners of the globe. BBOP is developing a set of principles on biodiversity offsets; methodologies and guidelines for their design and implementation; and coordinating a portfolio of biodiversity offset pilot projects around the world. In addition, a global "Learning Network" of over 600 individuals and organizations interested in biodiversity offsets participates in BBOP events and shares information and ideas.

1. ten Kate, K., J. Bishop, and R. Bayon. *Biodiversity offsets: Views, experience, and the business case.* IUCN, Gland, Switzerland and Cambridge, UK and Insight Investment, London, UK. 2004. www.insightinvestment.com/Documents/responsibility/Reports/Biodiversity_Offsets_Report.pdf

The 7 draft principles of biodiversity offsets

1. No net loss: A biodiversity offset should achieve measurable conservation outcomes that can reasonably be expected to result in no net loss of biodiversity.
2. Adherence to the mitigation hierarchy: Biodiversity offsets are a commitment to compensate for significant residual adverse impacts on biodiversity identified after appropriate avoidance, minimization and rehabilitation measures have been taken according to the mitigation hierarchy. Offsets cannot provide a justification for proceeding with projects for which the residual impacts on biodiversity are unacceptable.
3. Landscape context: Biodiversity offsets should be designed and implemented in a landscape context to achieve the best measurable conservation outcomes, taking into account available information on the full range of biological, social and cultural values of biodiversity and supporting an ecosystem approach.
4. Stakeholder participation: In areas affected by the project and by the offset, the full and effective participation of stakeholders should be ensured in all phases of decision-making about biodiversity offsets, including their evaluation, selection, design and implementation. Special consideration should be given to the existing, recognized rights of indigenous and local communities.
5. Equity: Biodiversity offsets should be designed and implemented in an equitable manner, which means the sharing of the rights and responsibilities, risks and rewards associated with a project in a fair and balanced way among the stakeholders.
6. Long-term success: The design and implementation of biodiversity offsets should have as their objective sustained outcomes in terms of: a) the viability of key biodiversity components, b) the reliability and accountability of governance and financing, and c) social equity.
7. Transparency: The design and implementation of biodiversity offsets, and communication of their results to the public, should be undertaken in a transparent manner.

Petro-Canada

"No net loss" lake

Petro-Canada's Fort Hills Oil Sands mining operation is expected to mine more than four billion barrels of bitumen over the next three to four decades, with rates of up to 280,000 barrels of synthetic crude oil per day. In order to address the obvious environmental concerns surrounding the project, Petro-Canada is committed to sustaining the environmental integrity of the area, leaving as small an environmental footprint as possible and providing offsets to compensate for permanently impacted areas. An environmental protection plan will ensure this is the case. Petro-Canada will not mine a drop of oil within the fen complex until the mining and protection plan is completed and approved, a fact that will support the company's license to operate in the area and throughout the country.

Petro-Canada is one of Canada's largest oil and gas companies, operating in both the upstream and downstream sectors of the industry.

The Athabasca oil sands deposit is situated within the boreal forest that covers a large swath of northern North America and is one of the world's largest intact ecosystems. The interconnected forest, lakes and wetlands provide habitat for a wide variety of wildlife, including migratory birds, caribou, bears and wolves. The McClelland Lake Wetlands are situated next to Petro-Canada's planned Fort Hills Mine. The Fort Hills Oils Sands mining operation is the largest capital project Petro-Canada has ever undertaken and is one of the largest in Canadian history.

The McClelland Lake Wetlands Complex includes an upper "poor-fen" that feeds into a patterned fen and subsequently drains into McClelland Lake. A patterned fen is an unusual wetland created over thousands of years as peat ridges and pools form a fish-scale pattern on the land's surface.

Petro-Canada's unique challenge at Fort Hills is to mine the oil sand deposits under the upper fen while maintaining the ridges, pools, flora and fauna of the patterned fen. Additionally the operations will draw water from the Athabasca River. Petro-Canada shares the concern that regional aquatic ecosystems may be stressed during periods of low seasonal flows, and the company is working with key stakeholders to develop a Northern water strategy.

As water is vital for any wetland, Petro-Canada has also begun a comprehensive monitoring program, in conjunction with the University of Alberta, to track groundwater flows into the fen. Regulators, First Nations groups, and other stakeholders have joined with Petro-Canada to oversee this research. The Complex will not be impacted by mining for at least 10 years, but Petro-Canada is getting a head start — monitoring animals and plants so that the ecological integrity of this important wetland is better understood and can be preserved.

The Fort Hills Mine will impact fish in Fort Creek, a tributary of the Athabasca River. In response, Petro-Canada will construct a 15-hectare lake to offset or compensate for this. This initiative follows the Department of Fisheries and Oceans Policy for the Management of Fish Habitat that established the goals of "net gain" and "no net loss", as principles promoting the retention of existing productive capacity within fish habitats. The constructed lake will be stocked with a variety of relocated fish including species desirable to First Nations, such as lake whitefish and burbot.

In addition to the construction of the No Net Loss Lake, Petro-Canada has also initiated a project to transplant rare insectivorous pitcher plants to the protected part of the fen.

By combining lessons from past and ongoing research with proven innovative solutions, Petro-Canada is confident in its ability to furnish a post-mining landscape that addresses local stakeholders and the environment.

Business as an essential player in implementing the Convention on Biological Diversity

The ninth meeting of the Conference of the Parties (COP-9) to the Convention on Biological Diversity held in May 2008 in Bonn, Germany turned out to be a critical platform for taking stock in a vibrant and rapidly evolving business and biodiversity landscape. Over 80 business-related events, a dedicated session during the ministerial segment, the number of business representatives at an all-time high, business engagement discussed as part of formal negotiations, were its key highlights.

By Ravi Sharma, Principal Officer, Implementation and Technical Support, CBD Secretariat

A short history of business engagement

While the high visibility of business engagement at COP-9 may have appeared as a novelty, the importance of involving business in the implementation of the Convention is deep rooted. Business is explicitly referred to in the Convention text. Arguably, most if not all articles of the Convention are relevant to business. Many decisions adopted by Parties over the years also refer to business. The programs, tools and guidance developed under the Convention are often directly relevant to business.

The Convention "shifted gears", however, in 2006, with the adoption of the first decision to focus exclusively on business. This decision emerged after a series of meetings in 2005 convened by Brazil and the UK with, among others, the active participation of the Brazilian chapter of WBCSD. By adopting decision VIII/17, Parties clearly and unambiguously stressed that business is critical to the implementation of the Convention.

Most notably, the 2006 decision looks into: engaging business in the drafting and implementation of national biodiversity strategies and actions plans; encouraging greater participation of business at Convention meetings; articulating and communicating the "business case" for biodiversity; and encouraging the dissemination and further development of practical tools to help companies align policies and practices with the objectives of the Convention. There has been much progress in the implementation of that decision (for a detailed overview, see document UNEP/CBD/COP/9/21/ADD1 available at www.cbd.int/doc/meetings/cop/cop-09/official/cop-09-21-add1-en.pdf) and many relevant initiatives – from Parties, business and environmental organizations – were showcased at the COP.

A growing agenda

Over the last two years, there has been a growing and sustained interest in business and biodiversity, including: the establishment of the WBCSD Ecosystems Focus Area, the 2007 (Potsdam) and 2008 (Kobe) G8 ministerial meetings on the environment, the November 2007 high level business and biodiversity conference hosted by Portugal, the establishment of the German Business and Biodiversity Initiative, the launch of an EU Business and Biodiversity Initiative and the French EU Presidency's focus on business at the November 2008 European Platform for Biodiversity Research Strategy meeting.

COP-9 decisions

At COP-9, Parties confirmed this trend by adopting decision IX/26 on promoting business engagement. This decision provides a framework for priority actions, focusing on the continued development and promotion of the business case for biodiversity and the dissemination of best practices. A particular focus of the decision – and a clear area of work for the Convention over the coming years – is on addressing the needs of small and medium sized companies and developing countries.

In addition to the adoption of this specific decision, business engagement can be seen throughout the body of decisions adopted in Bonn. Some of the issues touched upon include payments for ecosystem services, biodiversity offsets, certification schemes, public and private procurement policies, the compilation of good practice and the mobilization of the financial services sector.

At COP-9, particular focus was given to biofuels. While Parties agreed that the sustainable production and use of biofuels could have many positive contributions, its success depends on the methods of production, the feedstocks and the agricultural practices involved. COP-9 called for the development of sound policy frameworks on biofuels under the Convention drawing upon the existing tools that have already been developed.

One of the most important outcomes of COP-9 concerns access and benefit sharing. Parties agreed on a firm process toward the establishment of international rules on access to genetic resources and the equitable sharing of benefits from their use. The COP produced a plan for the negotiations that not only sets out a clear roadmap leading up to 2010, but also provides a shortlist of options as to what elements should be legally binding and which should not.

Towards 2010

Business and biodiversity has gone a long way under the Convention and, over the course of the next biennium, there are opportunities to further strengthen business engagement, in the context of:

- Achieving the 2010 biodiversity target
- Marking the International Year on Biological Diversity (in 2010)
- Ongoing negotiations on an international regime for access and benefit sharing
- The launch of a global study on the Economics of Ecosystems and Biodiversity.

COP-10 will be a particularly critical event in the history of the Convention, an opportunity that cannot be missed by business to illustrate its contribution in advancing the Convention's three objectives.

Parties clearly and unambiguously stressed that **business is critical** to the **implementation** of the Convention.

Over the last two years, there has been a growing and sustained **interest** in **business and biodiversity**

Parties agreed on a firm process toward the establishment of **international rules** on access to genetic resources and the equitable sharing of benefits from their use.

Valuing the priceless

Is it true that the service of pollination, provided mainly by bees for free, is estimated to be at least worth US$ 4 billion a year to the agricultural sector in the US alone? Or that coral reefs provide ecosystem services vital to off-shore fisheries and shoreline protection worth as much as US$ 600,000 per square kilometer? Or that the world's protected areas (accounting for only 12% of total land surface) sustain a rapidly growing eco-tourism sector, support local livelihoods, and overall produce benefits for society in excess of US$ 4,000 billion a year?

The answer is yes, but here is the paradox: 20% of the world's coral reefs and 35% of all mangroves have been destroyed, and two-thirds of all ecosystem services degraded, some perhaps beyond repair. Surely the economic incentives to sustainably manage and invest in conserving ecosystems and the services they provide, like water, food and fiber, should be well recognized. Unfortunately, the answer to this question is no.

One of the main underlying causes fuelling this paradox is the undervaluation of ecosystems and ecosystem services. For many ecosystems and their services, markets simply do not exist and thus lack convenient price tags. As a consequence, their over-use and degradation appear to carry very low to zero costs.

Such a clear flaw in the current accounting system seriously challenges business and its license to operate, as business can only function if ecosystems and the services they provide are healthy and balanced. Businesses not only impact ecosystems and ecosystem services, but also depend on them, and the implications of their degradation and loss are becoming clearer.

Not only does the loss of ecosystem services pose business risks, for example, through higher input costs, new government regulations, reputational damage, changing consumer preferences, and more rigorous lending policies, it also presents new business opportunities, including demand for new products, services and technology, and new revenue streams from managing and selling natural assets.

Recognizing and accounting for the full value of ecosystems, as well as the potential costs associated with the loss of ecosystem services, is required in order to reach the goals of efficient resource allocation and optimal decision-making.

Economic valuation is one approach that lends its support to this challenge by quantifying ecosystem relationships and expressing them in a monetary unit that is directly linked to a company's bottom line. There are many ecosystem valuation toolkits and guidelines, but they have been developed for policy-makers and natural resource planners and managers. Geared towards project implementation by the public sector or as part of development assistance, they have limited applicability to business.

The WBCSD is looking to fill this gap through the development of a corporate guide to ecosystem and ecosystem service valuation with the aim of supporting the business license to operate in a changing ecosystems world.

AkzoNobel

Eco-friendly innovation and business success

AkzoNobel's International Paint business is spreading the word on stricter environmental regulations that lead to the development of new, innovative and eco-friendly products.

Based in Amsterdam, AkzoNobel is the largest global paints and coatings company, making and supplying a wide range of paints, coatings and specialty chemicals. With 60,000 employees in more than 80 countries, the company's pro forma 2007 revenue totaled €14.4 billion.

International Paint is partnering with maritime classification society Lloyd's Register to introduce China's largest shipyards to the Performance Standard for Protective Coatings (PSPC), offering shipyards step-by-step advice on how to go about meeting the requirements of the new standard.

Shipping is one of the more eco-efficient means of transport when compared with air, road and rail. Antifouling coatings make shipping more efficient by preventing organisms such as barnacles and weed from building up on the underwater hull, slowing the ship and decreasing fuel efficiency. It has been estimated that the use of antifouling coatings saves the shipping industry around US$ 30 billion and reduces CO_2 and SO_2 emission levels.

Yet these coatings must be carefully formulated so that they do not degrade the ocean environment.

The partnership's advice to Chinese shipyards has taken the form of a free consultancy. It compares existing processes for coating a ship's water ballast tanks with those that will be required under the PSPC regulations adopted in 2006 by the International Maritime Organization.

The main objective is to help the shipyard understand that the PSPC regulation needs to be taken into consideration not only by the paint department but also by all departments involved in vessel production.

China's shipbuilding industry is growing, and International Paint has ensured that this new method of introducing customers to PSPC is the best way to share important legislative and product information. By bringing solutions and advice to the shipyards directly, International Paint is positively strengthening its presence in emerging markets.

International Paint's initiative is proof that environmental and regulatory concerns can have a positive effect, not only on shipbuilding, but also on building sustainable relationships.

But AkzoNobel's work does not stop there. International Paint has innovated in terms of antifouling technology, bringing to market the very products necessary to meeting the PSPC regulation.

Its Intersleek® 900 product, an environmentally sensitive, fluoropolymer-based, biocide-free antifouling paint that is not harmful to marine life, has demonstrated that innovation can result in a high-value product with environmental benefits in a growing market. Its use is predicted to reduce marine fuel consumption levels and environmental emissions by up to 6%. Expected sales for 2007 were almost 50,000 liters, and the company estimates they will rise 20-fold to one million liters by 2010, showing a textbook case of ecological awareness and profitability working together to create a benchmark product.

Find the full case study at www.wbcsd.org/web/casestudy.htm

Concerns for **ecosystems** match those for **development**

The notion of *sustainable development* unites concerns for ecosystems and concerns for human development.

Poor populations' livelihoods are sustained and protected by a number of "regulating" services.

The single greatest cause of ecosystem degradation is land-use change for agriculture.

The 1987 Brundtland Report defined sustainable development as forms of progress that meet the needs of the present without compromising the ability of future generations to meet their needs.

The needs of future generations may be hard to predict, but it is even harder to imagine them doing without freshwater, a predictable climate, productive topsoil, pollination and genetic resources. And in the middle of this century, it is expected that a global population of some 9 billion will have those needs.

Such ecosystem services are especially important in the developing world, where large majorities depend directly on agriculture and other forms of natural resource-based endeavors such as fishing or forestry. These services become even more important during the present global food crisis.

Ecosystems also provide cultural services, such as recreational activities, and poor populations' livelihoods are sustained and protected by a number of "regulating" services such as shoreline protection and forest cover that reduces runoff and landslides.

It is difficult to quantify the monetary value of these services to developing countries and to the development process, but there are a number of systems that try to do this. Much of the value attributable to these services goes to developing world farmers, fishers and foresters, and poor countries become poorer with the degradation of ecosystem services.

The Millennium Ecosystem Assessment noted that "the human capacity to exploit ecosystem services has played a central role [in human development], and people have been extraordinarily successful in most of the world in using those services to meet a wide range of needs, such as food, clean air and water, shelter and protection from natural hazards, and cultural fulfillment."

The single greatest cause of ecosystem degradation is land-use change for agriculture. Over the period 1950-80, more land was converted to cropland than in the 150 years between 1700 and 1850. Given that agriculture is now expected not only to feed a hungry planet but to help fuel it as well, humanity will have to farm much more carefully in the future.

Yet that farming may become more difficult. A panel of experts at the Goldman Sachs Top Five Risks conference in June 2008 found that the biggest threat to humanity may be a catastrophic water shortage, particularly in the developing world.

"The glaciers of the Himalayas are retreating," warned Nicholas Stern, former World Bank chief economist and one of the panelists. "They are the sponge that holds the water back in the rainy season. We're facing the risk of extreme run-off, with water running straight into the Bay of Bengal and taking a lot of topsoil with it."

He added that a few hundred square miles of the Himalayas are the source of the major rivers of Asia, which supply water to three billion people, almost half the world's population.

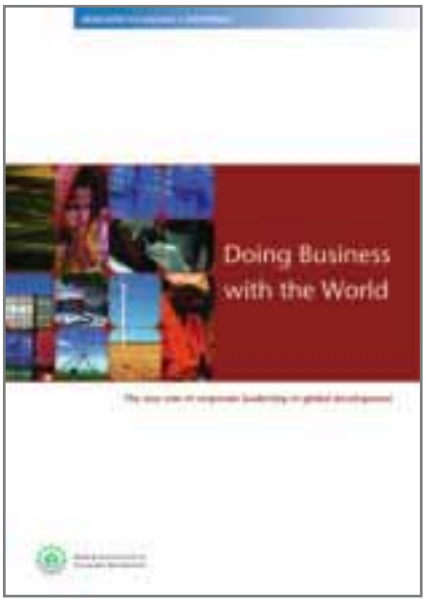
Similar predictions have been made for the glaciers of the Andes, which will provide accelerated run-off as they melt – and then nothing. Many of Africa's nations have been drought-prone since before global climate change became a global issue, and are expected to become more so as climate change dries the interiors of large landmasses.

The toughest challenge is that managing ecosystems requires a very long-term perspective, while development needs can place short-term demands on governments and people. Business, which must take both a short and long-term view to survive, can perhaps help bridge this gap and help governments meet this challenge.

Writing about development and ecosystems, the WBCSD's Development Focus Area noted: "the sustainable use of ecosystems presents many opportunities for them [companies] to develop new technologies and products or increase the efficiency of service use. Business can further contribute by applying only sustainable land use and natural resource utilization practices that avoid, minimize, mitigate or offset impacts on ecosystems."

The report, *Doing Business with the World*, added: "the ecosystem challenge offers opportunities… for putting an economic value on and building businesses around other global commons such as water-quality trading, wetland banking, mitigation credit trading or even threatened species banking."

Yet such new businesses are much easier in the developed world, where systems of law, credit, dispute settlement and property registration are better established than in the developing world.



The biggest threat to humanity may be a catastrophic water shortage, particularly in the developing world.

The realities of ecosystem degradation globally and particularly in the developing world should encourage changes in which "international development assistance" is planned and executed.

But the best course toward sustainable prosperity in the developing world is not aid but eco-sensitive companies creating that prosperity. As British Prime Minister Gordon Brown said in a speech in May 2008: "Not only do you as businesses have the technologies, the skills, the expertise that ... will generate wealth and jobs throughout the developing world. It is also in your best interest as businesses to bring the poorest countries into the global economy and to create a globalization that is inclusive for all."

Nokia

Mobile technology for sustainable behavior

Nokia customers, the one billion people who use Nokia devices every day, want products that promote sustainable development.

Nokia believes that individual acts add up to powerful global forces. This thinking underlies Nokia's attitude to eco-business, and as Nokia's business focus is increasingly being shifted toward software and services, it is seeking different ways in which mobile technology can be used to contribute to sustainable development.

This starts from simple things such as a reminder in all Nokia phones to unplug the charger once the battery is full. If all Nokia phone users did this, the electricity saved would power 100,000 average-size European homes.

Nokia's catalog includes Nokia's own content as well as third-party material and offers information about the product's environmental attributes, including material use, energy consumption and recycling.

It includes environmental tips from "We Are What We Do", a movement inspiring people to use their everyday actions to change the world, as well as content from WWF, such as images and audio and video clips. Nokia recently launched "we:offset", the world's first CO_2 emissions offsetting tool for mobile phones. A partnership with Climate Care means that the carbon offsets will help fund projects around the world that focus on renewable energy and energy efficiency solutions.

MobilEdu, Nokia's environmental service launched in China, integrates device, content and services to provide highly individualized content to improve environmental awareness. Some 300,000 people used the service during its first six months, and there were 1.2 million content downloads by March 2008.

Nokia is supporting IUCN and WWF in a new online community giving young people a better say on the environment. Connect2Earth is accessible from desktop and mobile browsers and is aimed at generating discussion around environmental issues and helping young people share ideas and solutions from their own communities. It is optimized to allow the use of mobile phones to create films, capture photos and submit comments.

Mobile devices can also act as an efficient and environmentally friendly channel for various environmental awareness campaigns. Since November 2007, Nokia has offered nokia.mobi free of charge as a channel for the WWF's "Stop Climate Change" campaign. The pages containing the banner have been viewed over 50 million times so far.

The increasing stress we put on resources and environmental systems cannot go on forever. Mobile technology can play an important role in enabling and advocating sustainable choices. Only together can we all be a part of the solution and make a real difference.

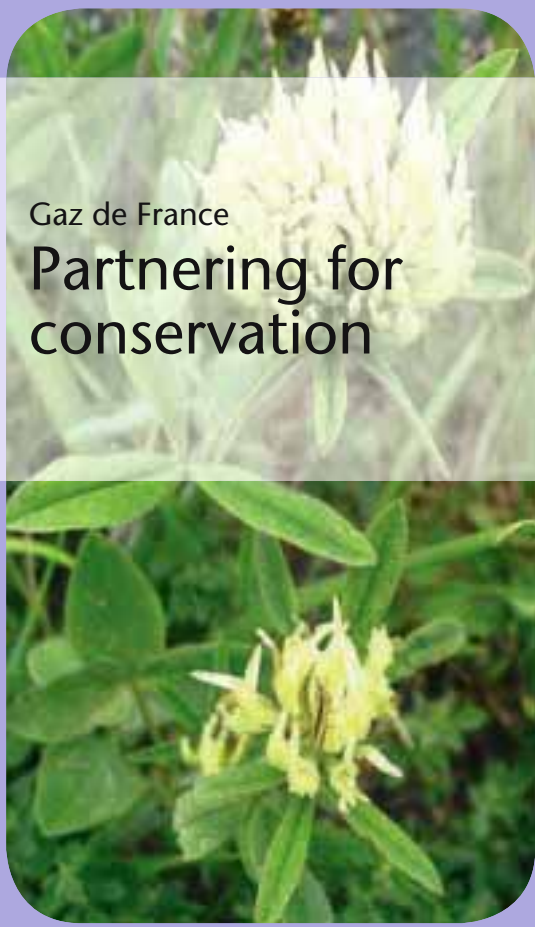
Find the full case study at www.wbcsd.org/web/casestudy.htm

EDP

Electricity and biodiversity can go hand-in-hand

Gaz de France

Partnering for conservation



Operating in biodiversity-sensitive regions in Portugal and Brazil, Energias de Portugal (EDP) has a vested interest in showing that it can help that biodiversity to thrive.

In 2007 EDP established a biodiversity conservation fund of 2.5 million Euros. The fund demonstrates EDP's capacity and willingness to implement its far-reaching biodiversity policy through improving scientific knowledge. Increasing knowledge through biodiversity field studies and working directly with national NGOs will give the company a competitive edge and reinforce its credibility and communications with stakeholders.

EDP's core business is electricity generation and distribution and gas distribution. Operating mainly in Portugal and Spain, EDP also has important activities in Brazil and in the United States. With more than 13,000 employees, the company's 2007 total revenues were approximately 11 billion euros.

EDP used a risk analysis approach to identify biodiversity as an emerging issue for the company and other companies operating in the same sector. The company realized that it needed to increase its internal knowledge of this subject and increase stakeholder involvement. It identified national authorities, NGOs, academia and local communities as the stakeholders in this initiative.

The company recently expanded its renewable generation business to France, Belgium and Poland. With more than 3,700 MW of installed capacity in wind farms, EDP is already the fourth largest player worldwide in this field.

Under the fund, four projects are already running in the field, involving more than 13 different institutions, including NGOs, universities and national authorities, among others. The initiatives include a two-year study on impacts of climate change on national biodiversity, an emergency recovery plan for three cliff bird species, and a study of ways the company can help small streams recover by restocking them with local and endangered fish species.

In a separate initiative, EDP ran a pilot project at its Setúbal thermal plant located in Portugal's Arrábida Natural Park using a cooling water heating system to heat greenhouses constructed on company land.

This not only decreased the effects of warm cooling water on the environment, but it also improved greenhouse plant-growing productivity by 30% and saved six liters of fuel per square meter of greenhouse compared to traditional heating systems.

This effort improved the company's reputation with the community and major stakeholders, especially the Arrábida Natural Park – which benefited as the project is growing plants that are indigenous to the area and needed for reforestation.

Find the full case study at www.wbcsd.org/web/casestudy.htm

Gaz de France's subsidiary GRTgaz is implementing biodiversity corridors above its underground pipes transporting natural gas, helping to connect and maintain biodiversity areas in Ile-de-France.

Thanks to these efforts, GRTgaz, which takes biodiversity into account in all of its operations, is consolidating its knowledge of biodiversity corridor implementation and adding value to the land that is crossed by its pipelines.

With a workforce of more than 53,000 people worldwide, Gaz de France has the longest high-pressure natural gas pipeline network in Europe, one of Europe's most diversified supply portfolios, the second-largest natural gas storage capacity in Europe, and is one of the world's top liquefied natural gas distributors.

Several years ago, the transport subsidiary of Gaz de France, GRTgaz, started carrying out biodiversity impact assessments and avoiding or off-setting its impacts. However, GRTgaz wanted to do more and started looking into activities already in place.

After consultation with different stakeholders, including local communities, GRTgaz began studying biodiversity corridors, which in this case consist of grasslands maintained above underground natural gas pipes that can connect and maintain biodiversity areas in Ile-de-France.

An agreement ensuring that ecological regions were kept continuous was the fruit of a successful partnership between the Val de Seine region, GRTgaz and the National Natural History Museum.

In December 2003 the Gaz de France group, represented by GRTgaz, signed the charter of the Ile-de-France region on biodiversity and signed up to the IUCN's Countdown 2010 Initiative to halt biodiversity loss.

In February 2007, the partnership started work on a three-year project to study and monitor the contribution of these biodiversity corridors. This will involve an inventory of the plant species and habitats to be found above existing pipelines and studies of possible management techniques to enhance the protection of rare or endangered species and habitats.

Some 500 kilometers of pipelines could be included in this project. Financing this undertaking is shared between the various signatories of the agreement, with GRTgaz contributing 50%.

The initial findings of the study carried out in 2006 show that out of 100 species registered in the corridors, five are rare or very rare in Ile-de-France, and two are protected.

GRTgaz hopes to see this partnership and effort carried out throughout France, sharing and consolidating each case's experiences and results.

Find the full case study at www.wbcsd.org/web/casestudy.htm

Markets and ecosystems

All businesses – all economic activities – depend on ecosystem services. Thus it is in the interests of business in general and companies in particular to help maintain and enhance those services.

Not surprisingly, business wants to find market-based ways to do this, given that business understands market mechanisms and knows them to be an extremely powerful lever.

Until recently, environmental NGOs have tended to be suspicious of this approach, partly because they tended to be suspicious of both business and markets, but also for the very good reason that it is often the poorest, most marginalized people who depend most directly on ecosystems, their services and their biodiversity for food, drinking water, clothing and shelter. Such people are rarely well equipped to participate in new markets.

Yet as NGOs have developed a more sophisticated understanding of markets and business, and as companies have become more knowledgeable about ecosystem services and their users, the two have begun to cooperate on solutions. It helps that business is beginning to understand and agree with the environmentalists' argument that conserving ecosystems and sustaining the services they provide is a pre-requisite for prosperity. Now we need to bring governments to this realization.

All businesses – all economic activities – depend on ecosystem services.

One result of the partnership between IUCN and the WBCSD was a publication in 2007 called *Markets for Ecosystem Services – New challenges and opportunities for business and the environment,* with a lead author from each organization. The report is aimed at both companies and conservation communities and is an effort to help them develop a shared vision of market-based approaches to ecosystem conservation.

Market-based instruments can achieve some environmental objectives for less economic cost than conventional approaches.

Market mechanisms can be a powerful complement to existing strategies for conserving ecosystems. Market-based instruments can achieve some environmental objectives for less economic cost than conventional approaches, such as uniform pollution standards or technology mandates.

Market mechanisms can be voluntary or mandatory and come in three basic varieties: direct payments, tradable permits and certification.

Direct payments include buying and selling the delivery of specific ecosystem services or, more commonly, payments for maintaining or adopting land uses that provide such ecosystem services.

Tradable permits create new rights or liabilities for the use of natural resources, and then allow business to buy and sell these rights or liabilities. The growing trade in carbon credits, based on government-allocated emission allowances and/or the purchase of voluntary carbon offsets by both organizations and individuals, is probably the best-known example. The global carbon trade was worth over US$ 30 billion in 2006.

Certification and eco-labeling schemes distinguish products and services by their social and environmental performance, and are increasingly common around the world. They are based on the sometimes overly optimistic view that consumers will prefer to buy or even pay more for certified goods and services.

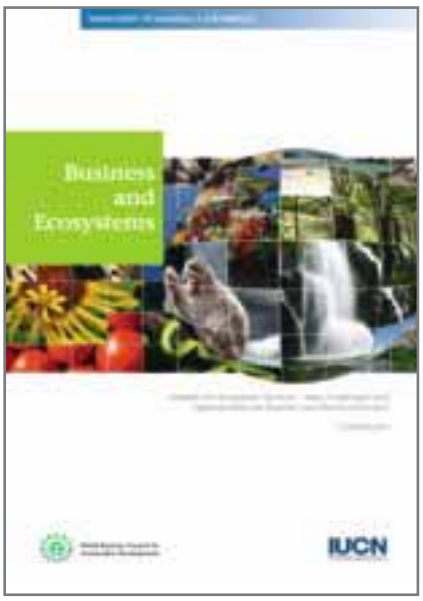
One of the best examples from the WBCSD family is the Marine Stewardship Council (MSC), founded through a partnership between Unilever and the World Wide Fund for Nature. The MSC certifies the sustainability of fisheries, and those certified as sustainable can adorn their products with the MSC label. By the end of July 2008, 102 fisheries worldwide had been certified to the MSC standard and more than 1,600 products carried the MSC label and logo, which retailers report do increase sales.

These mechanisms have their limitations. Weak institutions and poor governance in some areas, often the biodiversity-rich ones, can make it difficult to exploit market mechanisms equitably and sustainably. A lack of experience with market-based approaches to ecosystem management may actually harm ecosystems. And some of the most vital ecosystem services, such as regulating and supporting services, are actually the most difficult to "bring to market."

The list of mechanisms sounds simple, but mandatory market mechanisms will require complex partnerships involving business, governments and NGOs, and usually new legal frameworks to assure that ecosystems services are being bought and sold at full cost, that there is clear ownership of and accountability for the ecosystems services that are to be traded, and that there is competition among buyers and sellers to increase efficiency.

Governments can provide the regulatory frameworks. Civil society can provide the knowledge surrounding ecosystems and their services. Business can offer capital, technology and a growing array of market-based approaches to ecosystem protection. Partnerships for sustainable use will enable all stakeholders to better understand ecosystems and their services, assess their dependence and impacts, reduce their negative impacts and scale-up solutions, and to explore and pursue new business opportunities.

Using market mechanisms offers new business opportunities and the chance to use ecosystems and their services to tap into previously unrealized assets.



Governments can provide the regulatory frameworks.

Civil society can provide the knowledge surrounding ecosystems and their services.

Business can offer capital, technology and a growing array of market-based approaches to ecosystem protection.

DuPont

Saving through biodiversity

Intensive agriculture had turned Spain's 325-hectare Tamón Valley in Asturias into an area with low biological diversity dominated by two huge monocultures: fields and eucalyptus plantations.

In 1990 DuPont started a greenfield project in the Valley so as to both increase local biodiversity and save the company money. Its industrial complex in the area has 1,200 employees and manufactures fibers and crop protection products.

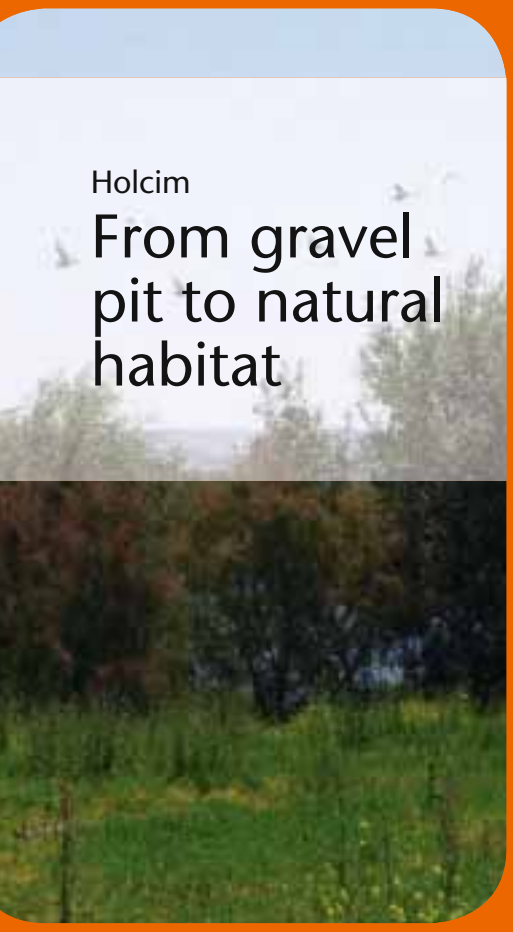
DuPont's greenfield project focused on the conservation of the natural habitat, including local flora and fauna. A greenfield is a piece of undeveloped land, either used for agriculture or just left to nature.

Founded in 1802, DuPont puts science to work by creating sustainable solutions essential for better, safer, healthier lives for people everywhere. Operating in more than 70 countries, DuPont offers a wide range of innovative products and services for markets including agriculture, nutrition, electronics, communications, safety and protection, home and construction, transportation and apparel.

Working in Asturias with community groups and the local university, DuPont launched a long-term program to increase biodiversity, favoring those species most in need of protection. In addition, there were cultural elements worth preserving as tokens of local heritage that the community values.

Four programs were designed to meet those goals. The now complete habitat restoration program consisted of planting over 160,000 trees and shrubs of 52 native varieties, recreating lost habitats including: monospecific woodland, mixed woodland, wetlands, peat bogs, riparian vegetation, etc.

The second program meant evacuating soil to build new or raise hills to minimize both visual and noise impact on the surrounding community. Some planting was done to ensure a more environmentally integrated landscape.



Holcim

From gravel pit to natural habitat

Holcim has developed processes for restoring and reforesting the sites that provide it with the resources it needs for its cement and aggregates business as it extracts those resources.

The production of cement and aggregates depends on long-term access to raw materials acquired through quarrying, while the company's reputation and license to do business depend on restoring those sites to states of equal or greater environmental quality.

Wetlands are especially important ecosystems due to their high biological productivity, yet they are among the most threatened of the world's resources.

Thus Holcim Aggregates, a Holcim (Spain) affiliate, is committed to returning its El Puente gravel pit, near the city of Aranjuez, south of Madrid, to the community in an excellent environmental state. The company has more than 20 sites, quarries and gravel pits working in aggregate manufacturing and distribution for construction throughout Galicia, Madrid, Andalusia, Valencia and Murcia.

Holcim aims to make the industrial use of the gravel pit compatible with the creation of areas suitable for animals such as aquatic birds. This requires sufficient food supplies, shelter and reproduction zones.

Vegetation is conserved to provide food for various bird species. Water levels must be kept about the same, with reasonable seasonal variations, and water quality must be maintained.

Already stabilized gravel pits can be divided into three major areas, depending on the various depths: coast area (closest to the bank, with limited depth), pelagic area (deep water) and benthonic area (bottom dwelling flora and fauna).

Keeping the area natural looking requires the formation of mildly sloped banks, preferably with irregular undulations and depressions; the creation of several water

Third, the company helped to preserve and restore cultural elements. Prior to DuPont's presence in the valley, the local community's main activity was agriculture. The associated local infrastructure, like barns, cottages, etc., had both cultural and emotional value for the community. DuPont decided to preserve and restore those elements to demonstrate its respect for the local heritage.

Fourth, DuPont decided to cut its grasses by introducing grazing livestock (cattle, horses, sheep and donkeys), using breeds indigenous to the area.

DuPont's Asturias greenfield program has increased local biodiversity, saved money, provided a source of community interest and education, been designed and implemented in cooperation with local partners, and provides the basis for research on new techniques and models.

Find the full case study at www.wbcsd.org/web/casestudy.htm

areas of different sizes and depths; replanting vegetation; and constructing islands of different sizes and shapes.

Thanks to the restoration efforts made so far, a total of 19 reproducing species have been detected in the gravel pits. There has been a significant increase both in number of couples and number of nesting species since the consolidation of the reserve, especially among the populations of grebes. Many of the species currently settled in the reserve's gravel pits are of importance at the regional level.

The Jarama River, which flows among the gravel pits, is polluted due to its proximity to urban centers but still maintains suitable conditions for the reproduction of certain aquatic bird species. The calm gravel pits help to attract birds to settle next to the river.

Find the full case study at www.wbcsd.org/web/casestudy.htm

KPMG

Accounting for endangered species

KPMG describes itself as a global network of professional services firms providing audit, tax and advisory services, with over 123,000 professionals working together to deliver value in 145 countries around the world.

So what does KPMG have to do with rare wildlife in Botswana?

In fact, KPMG South Africa worked with the United Nations Development Programme and the government of Botswana to develop an endangered species national policy, implementation strategy and action plan.

Botswana is drawing more and more tourists to see the flora and fauna of what is sometimes described as the last wilderness on earth. The trick is to preserve the rare species amid growing tourism and growing industrialization.

Botswana is home to most of the major African game species and a number of wildlife species that can be found only in that country. And it has managed better than most other African countries to control poaching. It has 164 species of mammals, 157 of reptiles, 80 of fish, 550 of bird and myriad different kinds of insects.

About 17% of the country's total area is designated protected areas, and another 20% are designated wildlife management areas. The largest protected areas include Chobe National Park in the north, the Central Kalahari Game Reserve (the second largest protected area in the world), Moremi Game Reserve in Okavango Delta and the recently launched Kgalagadi Transfrontier Park, which spans the border between Botswana and South Africa.

The government also monitors 42 Controlled Hunting Areas, where hunters may shoot small quantities of game for which authorities issue a limited number of shooting permits each year.

It is a complex picture, which explains the complex partnership on endangered species that did much of its work in 2007, involving extensive stakeholder consultation with zoologists, botanists, conservation experts, government representatives from treasury, tourism and environment, and industry bodies.

Two national consultation conferences were held in which KPMG put forward analyses on the current policy landscape and the potential impacts of an endangered species policy on the wider economy. The company also explained the relevance of protecting threatened species to community-based natural resource management.

The conferences provided stakeholders and the government with the opportunity to comment on the draft policy, implementation strategy and action plan.

"We believe that the key to satisfying everyone's expectations and requirements in such a complicated project is to work with all stakeholders, instill confidence and trust among those stakeholders, and create a roadmap to practical and effective courses of action," said Chi Mun Woo, who directed the work for KPMG.

Find the full case study at www.wbcsd.org/web/casestudy.htm

Greener wood

It is surprising how many forest products a company uses, ranging from paper, for the vast majority of companies, to packaging, wooden pallets and mahogany boardroom tables.

Buying the "right" wood, sustainably produced without ravaging native forests or displacing indigenous peoples' rights, is a good way for a company to decrease its environmental footprint while proactively supporting good forest management. And the need to act is urgent. Each year from 2000-2005, an area of forest about the size of Ireland was converted to other uses, according to UN statistics. Deforestation rates have slowed in North America, Europe and China, but rage on throughout the tropics.

However, procurement managers are getting an awful lot of environmental and social advice these days; must they become experts in sustainable forest management?

The World Resources Institute (WRI) and the WBCSD – a long-term partnership – recently released two guides that balance simplicity with the gamut of facts anyone purchasing wood and paper-based products in bulk needs to know. These guides can save a company both money and embarrassment.

The two – *Sustainable Procurement of Wood and Paper-based Products: an Introduction and Sustainable Procurement of Wood* and *Paper-based Products: Guide and Resource Kit* – come with a free website, www.SustainableForestProds.org. It is the first time that all a procurement manager needs to know about wood has been contained in such a small space.

The publications and website offer an overview of 10 key aspects of sustainable procurement and explain how 23 initiatives backing sustainable procurement relate to these aspects.

A growing demand for wood and paper-based products that are produced legally and sustainably can lead to improved forest management, and such improvements can improve ecosystem services such as clean air and water, wildlife habitat and recreation opportunities.

The environmental benefits match the business payoffs, according to Cassie Phillips, vice president of sustainable forests and products at Weyerhaeuser Company, who added: "finally having a more complete picture of the landscape will make it easier for buyers to design purchasing policies that fight illegal logging, promote sustainable forest management, and protect the environment."

WRI President Jonathan Lash noted: "Corporate managers are taking a close look at what they buy because of consumer preference for sustainable products, competitiveness, production costs and the prestige of having a green brand. We want to help

them make smart choices – both for the bottom line and to benefit the environment, particularly in addressing climate change."

A short article cannot do justice to the 10 things corporate buyers ought to know about buying wood and paper products, but they include knowledge about:

1. Where the materials used to make the product come from
2. The credibility of the information about the products, and whether there is third-party verification
3. The legality of the production of the product
4. The sustainability of the forest management systems, a category that considers economic, social and environmental aspects of management
5. The extent to which production protects special places such as sensitive or endangered ecosystems
6. The inclusion of climate issues in management and production approaches
7. The use of appropriate environmental controls
8. The possibilities of buying products containing recycled fibers
9. The extent to which the product's manufacture harms or wastes other resources
10. The effects on local communities and/or indigenous peoples.

This may seem a daunting list, but most of the data needed to provide the knowledge is readily available. Wood and paper products can be an environmentally and socially sound purchasing option, but products must be selected that have acceptable, even beneficial, impacts. Simple, straightforward information and advice on where to go for the details can make decision-making easier for sustainability and procurement managers, while improving the environment and the company's bottom line.

Concerned consumers, retailers, investors, communities, governments and other groups increasingly want to know that in buying and consuming these products they are making positive social and environmental contributions.

Organizations involved in "sustainable procurement" are looking beyond price, quality, availability and functionality to consider other factors such as the effects the products and/or services have on the environment and social aspects such as labor conditions, indigenous peoples' and workers' rights, etc.

Sustainable procurement can help maintain a company's social license to operate, help reduce reputation risks and, ultimately, help secure sustainable supplies. Sustainable procurement can also be used to align companies with their stakeholders' values and make organizations along the supply chain – from forest owners and producers to retailers – more resilient to changing business conditions.

Sustainable procurement can help maintain a company's **social license to operate**, help reduce reputation risks and, ultimately, help **secure sustainable supplies.**

How do I evaluate my company's ecosystem services-based dependencies and risks?

By Charles Iceland, CFA, Associate, People & Ecosystems Program, World Resources Institute

Understanding how ecosystems, and the services they provide, affect your company can bring tremendous benefits. Not only can risks be reduced, but new revenue opportunities can be uncovered. To help companies answer these questions, the WBCSD teamed-up with the World Resources Institute (WRI) and the Meridian Institute to develop the Corporate Ecosystem Services Review (ESR). Launched this past March, the ESR is a set of guidelines that help companies proactively develop strategies to manage the risks and opportunities arising from ecosystem degradation.

The guidelines provide a structured way of determining what specific ecosystem change affects a particular business unit and what can be done about it. The methodology walks participants through a five-step process.

Steps in a corporate ecosystems services review

The guidelines provide a structured way of determining what specific ecosystem change affects a particular business unit and what can be done about it.

The five steps of an Ecosystem Services Review

The ESR process begins by first selecting a business unit for consideration. This focuses the review on a high-value business line rather than the entire firm or division, which can be too cumbersome. Often firms choose to evaluate their own operations, but the ESR also uncovers risks along the value chain. In step 2, the ESR walks managers through a prioritization exercise to identify those ecosystem services of highest priority. Only these ecosystem services are given attention in subsequent steps. In step three – trends analysis – the present and future status of the ecosystem service is determined (the quality, quantity or timing of ecosystem service delivery) and the direct and indirect drivers of this change are identified. Next, the ESR methodology provides a framework for capturing the risks and opportunities for the company. In the final step, the ESR guides participants through a strategy identification process.

Tips for conducting an ESR

- *Engage a broad group of internal stakeholders* in the ESR, such as line managers, environmental experts, product developers and members of strategy teams, to ensure comprehensive analysis
- *Include external experts* to gain new perspectives, insights and information
- *Coordinate the ESR with existing environmental management systems*, so that data to be collected by other processes is informed by steps 1 and 2 and data originating from parallel studies is used during steps 3 and 4
- *Consider perceived dependencies and impacts* as well as the real ones; these can drive decision-making and stakeholder relations
- *Include the effects of government policies* when analyzing trends in ecosystem services; this could reveal policy development opportunities
- *Use both qualitative and quantitative techniques*, as many decisions can be made without hard data
- *Explore how existing land holdings can be monetized* by selling existing wetlands in local markets, selling nutrient runoff rights in water quality markets, etc.

"The methodology helped us identify and rank emerging problems, and provided us with a framework for turning risks into opportunities," said Peter Gardiner, natural resources manager at Mondi, a leading international paper and packaging manufacturer. Syngenta, the worldwide agribusiness firm, found other values: "The ESR helped us identify new business opportunities for a growing market," notes Madalena Albuquerque, from Syngenta's Business Strategy and Planning department.

Lessons from these and other "road-tests" served to strengthen the methodology and provided general hints for users (see Box).

"We're going to be hearing a lot about the Corporate Ecosystem Services Review," said WBCSD President Björn Stigson. "Leading companies realize that they must be prepared for the business challenges posed by ecosystem decline and there are opportunities to be gained."

The next generation of business leaders does recognize what ecosystems mean to the bottom line. The WBCSD's Future Leaders Team (FLT) – a group of 25 high-potential business leaders from a range of companies – are developing new skills to reduce risks and harness opportunities related to ecosystems. This year, FLT members are applying the ESR within their companies. This exercise is spreading knowledge of ecosystem services throughout companies and helping business units understand their direct relevance to the bottom line. Many of the FLTs are conducting ecosystem service reviews on particular operations, others are conducting "gap analyses" to determine how the ESR – or components of it – could be woven into existing environmental management systems.

Employing the ecosystem service-based thinking that the ESR advances can provide numerous advantages. Most dramatically, it focuses companies on their firm's dependencies on ecosystem services as well as its impacts. Ray Steward, BC Hydro's Chief Safety Health and Environment Officer, notes that "The ESR helped BC Hydro clarify its dependence on several key ecosystem services, an important factor in establishing our long-term goal of no net environmental impact by 2024."

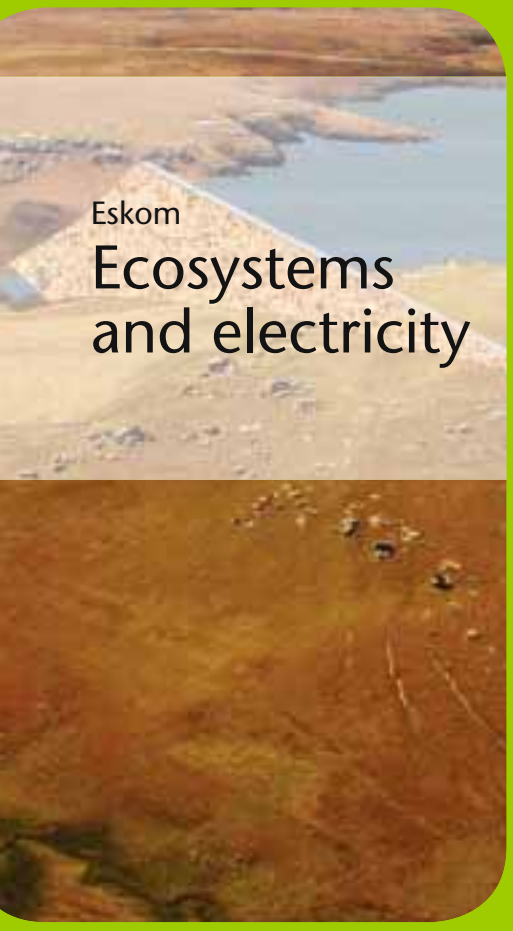
Secondly, the ESR directly links ecosystem service opportunities and risks with corporate strategy. Most existing environmental management systems do not make this link, and valuable information is often not translated into action. The ESR is also efficient in that existing corporate research can be incorporated into

reviews. This lack of duplication not only saves money but speeds the adoption of new strategies.

Finally, ecosystem services-based thinking unites economic and environmental perspectives into a single framework. For example, BC Hydro uses this thinking in their stakeholder relations processes – bringing all parties together to discuss the human benefits they receive from nature. Because all parties could relate to each others' needs, including the simple beauty of natural areas, a compromise solution was reached resulting in a swift permitting process.

As ecosystem markets develop, this value-comparison will become increasingly powerful. It will help, for example, farmers and policy-makers analyze the tradeoffs among different land-use options.

Corporate interest in getting a leg-up over competition in this area is evidenced by the number of downloads of the ESR – more than 4,100 since late March of this year. WBCSD members are also translating the guidelines into several other languages. As these become available, they will be posted on WBCSD's website and distributed among WBCSD members.



Eskom

Ecosystems and electricity

The South African utility Eskom is finding that managing ecosystems is helping it better meet the country's electricity needs.

The company is developing new power stations to meet a 5% annual growth in energy demand. The bulk of energy is produced from coal-fired stations, with a small amount of nuclear and imported hydro, but developing pumped storage schemes provides an opportunity to balance the national grid.

A pumped storage hydroelectric scheme on the Drakensberg Escarpment is close to sensitive wetlands that are the summer habitat of the highly endangered White Winged Fluff Tail, a small bird that migrates to South Africa from Ethiopia for the summer.

Having at first lost the right to build the scheme due to these environmental considerations, Eskom realized that it had to work with the institutions that were critical of project.

The company is offsetting its impacts by soundly managing a conservation area that has led not only to the establishment of a suitable habitat for the 210 bird species on the site, but has also added to water supply security for the project and for the country as a whole. The effort has also won over those institutions that were at first opposed to the company's operations.

Eskom is the main supplier of energy in South Africa. Its core lines of business are infrastructure development, energy business operations, specialized energy services and the pursuit of key opportunities in related or strategic businesses, such as information technology and telecommunications.

In a pumped storage hydroelectric scheme, water is pumped to the top reservoir when there is surplus electricity and released back to the bottom reservoir during periods of high demand, thereby providing affordable electricity immediately.

Michelin

Sustainable rubber development

At the end of 2001, Michelin's rubber tree plantation in the state of Bahia, northeastern Brazil, was producing poorly due to leaf disease. At the same time, the price of natural rubber was falling.

But the plantation is a key employer in a poor region, and the 9,800-hectare property contains 1,500 hectares of rare and endangered Atlantic forest.

Today, the rubber factory, which also processes the rubber of local farmers, produces 10% of total Brazilian output, is ISO 14001 certified and employs some 600 people.

And the demand for natural rubber is rising worldwide. Current rubber demand in Brazil amounts to 290,000 tonnes per year, but only 110,000 tonnes are produced in the country.

So Michelin sought and found creative ways to maintain all the positive aspects of the Bahia operation, but with a radically new management approach.

It divided the original plantation into 12 plantations of 400 hectares each and sold these to Brazilian Michelin managers, enabling them to replant with varieties of rubber tree resistant to the leaf disease and other crops, such as cocoa and banana, between the trees. At the same time, it created the supporting infrastructure, governance and systems required for the rehabilitation of the local community and the management and sale of these farms' cocoa production.

Michelin buys the rubber from the 12 new plantations and also maintains 1,800 hectares of land as well as the basic infrastructure (processing units, roads, logistics, etc.) and the research laboratory trying to defeat the leaf disease.

The company created "ecological corridors" linking the three patches of natural Atlantic forest and it is working with the local government and biodiversity groups to develop and maintain these corridors. The rubber tree plantations that flourish in this area will be exploited for a while, as efforts to replant natural forest in the corridors continue.

Pumped storage schemes need an appropriate dam site close enough to each other with sufficient differences in altitude, suitable geological formations to hold water and construct tunnels, and sufficient water to operate the system.

Although Eskom received government approval to construct the Drakensberg project, this was withdrawn shortly afterwards following objections by a variety of governmental and non-governmental organizations due mainly to the closeness of the wetlands.

Eskom offset the impacts of its project by purchasing land in excess of that required for the development of the power station, and manages this land to the benefit of the White Winged Fluff Tail and other species of birds and mammals and vegetation in the area.

Find the full case study at www.wbcsd.org/web/casestudy.htm

The company has developed family-owned rubber plantations by providing small neighboring farms (1,000 families) with resistant rubber tree varieties. It donated 18 hectares of land for the construction of a new village, mainly for the rubber tappers and their families.

The 12 plantations had a total turnover of US$ 3.1 million in 2006, beating the forecasted US$ 2.5 million, added 150 jobs and increased rubber production 11%. It aims to increase that to US$ 10 million in 2023, with US$ 8 million of that coming from rubber and the rest from cocoa.

Michelin's dedication to sustainable development has helped secure its future rubber requirements, saved jobs and livelihoods and enhanced its reputation with consumers and environmental stakeholders, while protecting and even increasing biodiversity.

Find the full case study at www.wbcsd.org/web/casestudy.htm

Rio Tinto

Minding the Carbon Store

An innovative project developed in 2006 provided Rio Tinto's aluminium business, Rio Tinto Alcan, with the opportunity to explore offsets as part of a broader climate change strategy. The *Minding the Carbon Store* project has saved approximately 12,000 hectares of native vegetation from being cleared and generated around one million tons of fully verified greenhouse gas abatement (carbon credits) through avoided deforestation.

As a company that produces and uses large quantities of energy, Rio Tinto, an international mining group, seeks to combat climate change through a comprehensive program that focuses on three core themes:

1. Reducing emissions from operations;
2. Understanding and developing low-emission product pathways by working with others on supply chain emissions and on breakthrough technologies; and
3. Engaging with governments and stakeholders to advocate sound and efficient domestic and international policies.

As part of its program, Rio Tinto invests in several research and development projects and other initiatives, often working in partnership with other companies and organizations to find technological solutions to climate change.

Minding the Carbon Store was developed as a result of a partnership between Rio Tinto Alcan and The Carbon Pool Pty Ltd – an Australian company established in 2001 to deal in emerging markets for greenhouse gas abatement.

The project aimed to create fully verified greenhouse gas abatements made possible by an impending ban on broad scale land clearing in Queensland, Australia. As a number of landholders held existing land clearing permits, The Carbon Pool Pty Ltd was able to purchase these permits and then register the reduction in clearing as verified abatements under the Australian Government's Greenhouse Friendly™ initiative (www.greenhouse.gov.au). Rio Tinto Alcan then purchased the carbon rights arising from the protection of the vegetation, counting the abatements as offsets in its greenhouse emissions inventories.

The Carbon Pool Pty Ltd will monitor the ongoing management of the vegetation and compliance of participating landowners and their successors, as the vegetation is protected from clearing for 120 years. The project includes a "buffer", whereby 20% of all credits have been set aside to allow for potential losses due to fire, pests or drought, etc.

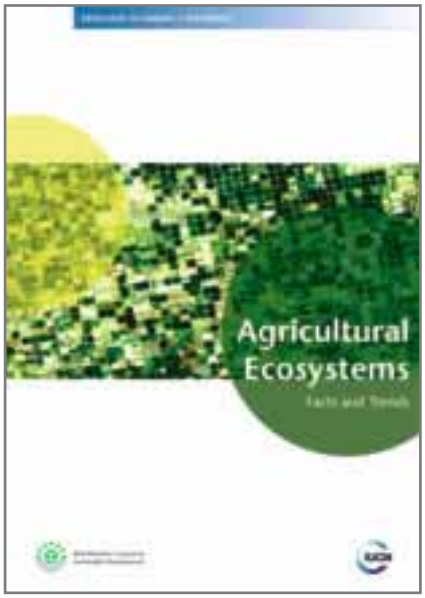
The *Minding the Carbon Store* project has contributed towards building valuable knowledge and capacity around validating biosequestration, or locking up carbon in vegetation, as a demonstrable and practical greenhouse gas emissions offset opportunity.

Food for thought

Lexicon

agriculture /ˌagriˌkʊlcHʊr'/ - the cultivation of land for the advantage of selected species, including agricultural crops, livestock, tree crops and grazing lands

ecosystem /ˌ' ekōˌ sistʊm/ - a dynamic complex of plant, animal and micro-organism communities and the non-living environment interacting as a functional unit



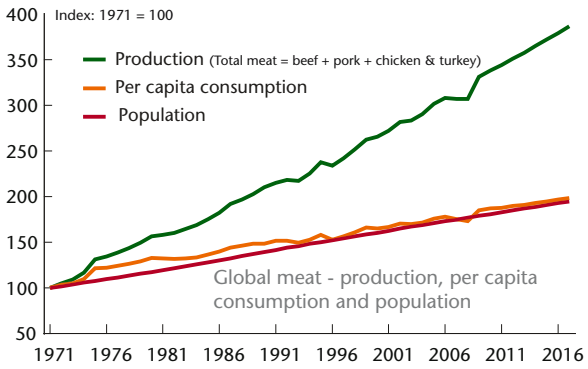
Agricultural ecosystems – Meeting the challenge

How will we produce enough food to feed the planet's projected 9 billion people in 2050? How can shrinking rural populations feed increasing urban ones? What role do consumers play when choosing their diet, especially as increasing wealth is increasing demand for a more diverse diet that includes animal protein such as meat and milk products that require more land to produce? Do consumers need to be encouraged to have a vegetarian diet?

The facts affecting sustainable agricultural ecosystems

Meat consumption in China has more than doubled in the last 20 years and it is projected to double again by 2030.

Producing meat, milk, sugar, oils and vegetables typically requires more water than producing cereals. Food production to satisfy a person's daily dietary needs takes about 3,000 liters of water – a little more than one liter per calorie. Agriculture was responsible for 14% of global greenhouse gas (GHG) emissions in 2000.



Global meat - production, per capita consumption and population

Source: USDA Agricultural Projections to 2017.

How will we produce **enough food** to feed the projected **9 billion people** in 2050?

Agriculture uses 70% of total global "blue water" withdrawals, most of which is for irrigation. Only 17% of all cropland is irrigated, but this land provides 30-40% of the world's food production. Over 60% of the world's irrigated area is in Asia, most of which is devoted to the production of rice.

In the last 40 years, the area of global agricultural land has grown by 10%, but in per capita terms agricultural land area has been in decline. This trend is expected to continue as land is increasingly limited and the population grows.

Food production to satisfy a person's daily dietary needs takes about **3,000 liters of water** – a little more than one liter per calorie.

Each year, 12 million hectares – or enough land to grow 20 million tons of grain – are lost to desertification (extreme land degradation, usually in arid or semi-arid areas). This is about the size of Greece or Nepal that is lost each year, and represents enough grain to feed over 6 million people per year.

What this means for business

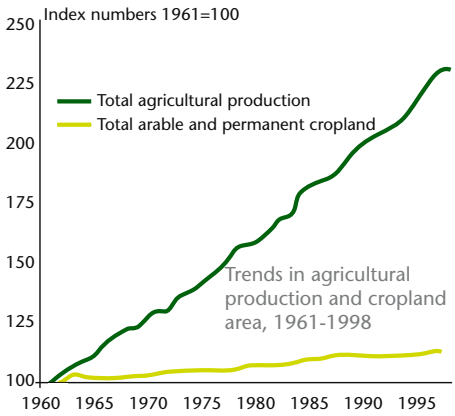
The worldwide increase in food prices is leading to increased media attention on agriculture. Challenges abound for the sector in the face of this scrutiny, including securing enough high-quality agricultural production to meet demand, while conserving biodiversity and managing natural resources, AND improving human

health and well-being, especially for the rural poor in developing countries.

It is critical to work within the whole agricultural value chain to achieve the goal of providing healthy and affordable food for all while protecting the environment. This means that cooperation and coordination between all stakeholders is essential. To help maintain healthy agricultural ecosystems, expertise in natural resource management, project management, agronomy, biology and other areas needs to be shared.

Mainstreaming sustainable agricultural ecosystem practices is an objective that must be shared by industry, the conservation community and consumers. Current tight agricultural markets are a signal for the urgency to act. Formal knowledge, new technologies and practices need to be combined with appropriate local and traditional knowledge to develop long-term, sustainable solutions.

Based on facts and figures from *Agricultural Ecosystems Facts & Trends* (WBCSD 2008).



Trends in agricultural production and cropland area, 1961-1998

Source: FAO 2001.

CEMEX

Ecological restoration

CEMEX has been working on habitat restoration models since 1995 as part of its Santa Maria conservation project in the northern region of Mexico.

The majority of the Mexico-US border region is a semi-arid, fragile ecosystem. For more than 200 years the primary land use along the border has been ranching, and much of the land has suffered from overgrazing, loss of ecosystem biodiversity, soil erosion and desertification.

So far CEMEX's efforts have restored more than 4,000 hectares degraded by overgrazing and poor farming practices. This has brought back biodiversity through natural vegetation, wildlife and water resources. It has also brought economic benefits, allowing landowners to have access to new opportunities to use the land in a sustainable way.

CEMEX is now upgrading and spreading these successful habitat restoration actions to the entire Mexico-USA borderland region. To achieve good results, it is necessary to establish strong alliances between governments, universities, NGOs and companies.

In 2003, CEMEX started to transfer its experience to the Federal Government Environmental Ministry and to NGOs like Pronatura. As a result, these agencies have implemented similar restoration models on several ranches and private lands located in northern Mexico, restoring more than 20,000 hectares.

Founded in Mexico in 1906 as a small, local company, CEMEX has grown into one of the top global providers of building materials, with an annual production capacity of more than 96 million metric tons of cement at 67 wholly-owned and 18 minority interest cement plants. It produces more than 80 million cubic meters of ready-mix concrete annually at some 2,360 facilities and 222 million metric tons of aggregates each year from 564 quarries.

CEMEX is committed to the conservation of ecosystems because the company recognizes their importance as providers of goods and services that it relies on daily. CEMEX also depends on ecosystems to obtain raw materials to produce building materials and is therefore responsible for their stewardship, focusing on the heritage for the next generations.

CEMEX's Santa Maria Ecological Restoration Initiative aims to establish special relationships with key stakeholders, including government, NGOs, educational and research institutions. These relationships allow CEMEX to show its commitment to and respect for ecosystems, ensuring the sustainability of the natural resources needed by the company, ultimately impacting on its image and credibility in terms of environmental activities.

Find the full case study at www.wbcsd.org/web/casestudy.htm

Mondi

Win-win with wetlands

Some 55% of South Africa's wetlands have been lost due to poorly managed agriculture and commercial forestry, mining, urban development, pollution, dam building, erosion and fire. Given that around 6 million South Africans lack piped drinking water, they rely on streams and other natural bodies of water, which wetlands often help to purify and protect.

Mondi is an international paper and packaging group and healthy wetlands are not only critical to its business in South Africa, but also to the water supply of the entire country. Mondi is the principle sponsor of the Mondi Wetlands Programme (MWP). This is a partnership between Mondi and South Africa's two largest NGO conservation organizations (WWF South Africa and the Wildlife and Environment Society of South Africa), together with the Mazda Wildlife Fund. The project aims to bring about social change that encourages wetland users and owners to manage their wetland resources in a more environmentally relevant manner.

A wetland is a family name given to many different types of waterlogged land including springs and seeps, marshes, floodplains, swamp forests, mangrove swamps and estuaries, all connected by rivers and riparian areas.

Besides purifying and storing water, wetlands also control erosion and are vital for biodiversity maintenance, tourism, environmental education, grazing, subsistence agriculture and as a source of food and plant materials for rural communities.

The MWP uses a number of techniques to promote rural wetland conservation among key government agencies and private and communal wetland users including raising awareness, policy work and lobbying, catalyzing partnerships, research-based tools and resources, training and on-the-ground support.

Since its launch in 1991, the MWP has been recognized as the most successful non-governmental wetland conservation program in South Africa, and is considered by its partner organizations to be a pioneering force for wetland conservation outside reserves in South Africa. Over the past 17 years, the MWP has moved wetland conservation from being a side issue to center stage. This has irreversibly changed the way government, communities, and the commercial forestry and sugar industries manage their wetlands.

The MWP played a key role with government in founding and supporting the innovative Working for Wetlands Programme in 2000, which rehabilitates degraded wetlands and facilitates their better management. This government-led and -funded (US$ 10 million a year) initiative rehabilitates 40 wetlands a year, employs 2,000 of the poorest people in the country and provides its workers with life and job skills, increased self esteem, and an opportunity to escape the poverty whirlpool.

The MWP has also lobbied government and made sure that wetlands are an integral part of government policy to manage water resources. It has also focused on the sugar industry and worked with innovative farmers to develop new environmental and social norms for sustainable sugar cane production.

The MWP also developed a wetland policy with Mondi that, among other issues, committed the company to the withdrawal of all commercial plantations from wetland areas and adjacent buffer zones. Using Mondi's example and status in the forest industry, the MWP worked with the forest industry to commit to the withdrawal of commercial trees from riparian areas to protect the wetlands and the associated water resources.

For example, when the South African government's extensive timber plantations were privatized, Mondi bid for plantations on the western shores of Lake St Lucia, the largest natural water body in South Africa.

Given the environmental, economic and social importance of the area, Mondi worked with the authorities to define a new boundary through the wetlands that returned all the key wetland areas to the park. Mondi has retained enough of the commercial areas suitable for high-grade plantations to establish a profitable plantation, and the iSimangaliso Wetland Park gained 9,000 hectares (5,000 hectares from Mondi areas) of high conservation value ecosystems.

The net result is that today both the plantations and the park are thriving enterprises. Animals are free to roam, and the sensitive wetlands areas have returned to functionality and are supplying critical seep water for the Greater St Lucia Lake system.

Find the full case study at www.wbcsd.org/web/casestudy.htm

Syngenta

Helping farmers protect ecosystems

Around the world, Syngenta is helping farmers protect the ecosystems that ultimately make farming possible.

Syngenta is in the crop protection and seeds businesses in over 90 countries. Headquartered in Basel, Switzerland, and employing 21,000 people, the company has operations in Europe, Africa, the Middle East, Latin America, Asia Pacific and North America.

In Canada, Syngenta Crop Protection Canada and Ducks Unlimited Canada are working together on two programs to protect environmentally sensitive land in agricultural areas.

The Small Marsh Restoration Program restores wetlands, and the Saskatchewan Rangeland Stewardship Program educates farmers on sustainable management practices.

Ducks Unlimited Canada (DUC) and Syngenta share a vision of sustainable agriculture where farmers are economically viable and processes such as soil conservation, biodiversity enhancement and the protection of water quality are integral components of farm management.

The marsh program restores small marshes in the fertile zones of the Maritime Provinces (New Brunswick, Nova Scotia and Prince Edward Island) to improve water quality and provide wildlife habitat. A total of 78 projects were completed in 2004 and 2005 resulting in 244 acres of land being restored.

The Saskatchewan Program educates and aids growers in the adoption of sustainable management practices on their farms.

In Brazil, Syngenta began working with farmers in 2004 to improve water management by protecting springs through the restoration of surrounding vegetation. It started when Syngenta signed a partnership agreement with the Coopavel Cooperative in the western region of Parana state and has since expanded to several other regions.

Agua Viva, or "Living Water", was developed to refurbish fountainheads and ensure that families in rural areas receive good quality water in abundance, thereby preserving their customer base and providing the water to grow Syngenta-quality seeds. The project has already restored around 1,480 springs, supplying clean water to families in rural areas and helps guarantee the survival of wild plants and animals.

In Spain, conservation agriculture is providing the solution to soil erosion that threatened the future of one of Europe's most important wildfowl wetlands, Doñana National Park.

More than 3,000 farmers have been involved in a three-year project to tackle soil contamination of the wetlands from olive groves and intensively cultivated farmland. Weed cover is being used to protect soil structure.

The project has transformed traditional agriculture into soil conservation agriculture enabled by Syngenta weed management technology. It improves Syngenta's market position and has displayed Syngenta's commitment to the environment, sustainable agriculture and to its customers.

Located in southern Spain, the 54,000-hectare Doñana National Park contains a huge variety of internationally recognized ecosystems, including wetlands, marshes, dunes and reserves. When the Doñana National Park was extended, this meant that both central and regional authorities would be involved in conservation.

In the vast space of the park, agriculture provides the main source of income and employment in the area. Thus local farmers play an important role in the conservation process.

Due to a mining accident in 1998, some of the park was flooded by the Guadiamar River, an event that released toxic mud and water into salt marshes and elsewhere.

In 2005 the government started an effort to restore the hydrological capacity of salt marsh catchment basins, as well as improving soil quality and structure in order to guarantee crop productivity.

Syngenta's crop protection, marketing and technical teams were fully involved in the project, demonstrating the value of modern weed control technology for soil conservation and proving the company's commitment to environmental protection.

Find full case studies on each project at www.wbcsd.org/web/casestudy.htm

The Ecosystems Revolution:
Looking back from 2050

The WBCSD's Future Leaders Team (FLT) enables future business leaders to become effective ambassadors for sustainable development through experiential learning, knowledge creation and the building of networks and skills. The 2008 FLT is working to understand what ecosystems and ecosystem services mean to business and how these associated risks can be mitigated and opportunities harnessed.

Without research and analysis – and without input from their companies – the FLT imagined a future in which sustainable ecosystems dominate the global landscape.

Back at the turn of the millennium, the earth was being run like a business in liquidation. Although climate change, water scarcity and biodiversity loss were recognized as urgent challenges, ecosystems and ecosystem services were still undervalued and under protected. Since that time, ecosystem considerations and an overall shift in values have significantly advanced. In 2050, every business and nation integrates ecosystem values into their accounts and trading systems.
Putting an economic value on ecosystem services has altered the balance of profitability for many activities. Businesses used to bury waste in landfills, rather than mining them as they do now, and many companies in the growth area of habitat restoration actually developed their skills back when their business was excavating virgin ores.

Today, the urban landscape has also been transformed. While cities like Dubai and Las Vegas have drastically changed their land and resource use, others have been able to achieve sustainable neighborhoods by bringing workplaces, residential buildings and services closer together, and to create closed-loop resource cycles. Most intercity travel is now on rail or rapid transit bus lanes allowing redundant motorways to be transformed into biodiversity corridors.

Many of these changes can be traced back to the Millennium Ecosystem Assessment, published in 2005. The assessment documented the threat to ecosystems, and spelled out the risks to essential ecological services on which human welfare and business depend. The Assessment states that there is an "inescapable link between ecosystem condition and human well-being". Similarly, there is an inescapable link between ecosystem condition and business well-being.

Some companies got this message early. Sustainability leaders developed methodologies to understand the natural systems underpinning their business and integrated ecosystem considerations into their business planning and management. Corporate ecosystem services reviews were a first step in understanding the risks and opportunities; however when these were first launched in 2008, few realized the magnitude of the changes that these kinds of tools would trigger.

By 2010 early industry leaders were ready to commit to the goal of "ecosystem sustainability", although it took another ten years before they were able to convincingly deliver on this objective. By 2035 sustainable ecosystem practices had become an industry standard in many sectors, and were adopted by the Hong Kong, London, New York, Sao Paulo and Tokyo stock exchanges as a condition of listing.

Back at the turn of the Millennium, the earth was being run like a business in liquidation.

Ayako Kohno, Hitachi Chemical; Martin Briere Alcoa; Christina Hillforth, Akzo Nobel; Kathleen Gardiner, Petro-Canada; Srimathi Shivashankar, Infosys

Of course these developments have not been straightforward. There were multiple setbacks over the years that threatened the development of the ecosystem services marketplace. This included a long-running international stalemate over ecological liability associated with historic development. With real-time ecosystem valuation has come concern that investors are gambling with the planet's critical systems and processes, although eco-hedge traders argue that the markets help drive efficiency in the way that these precious resources are used.

And of course there are perennial concerns about whether the values put on ecosystems really reflect fair and equitable usage. Ecosystem sustainability, after all, is not a single, scientifically determined endpoint. Rather, it includes a range of possibilities in which business, governments and individuals must continually negotiate and manage to meet needs, all within the carrying capacity of the environment.

This is only one story about a possible future, but the questions it raises offer a useful starting point for thinking about ecosystem services today. Can you imagine a future in which sustainable ecosystem services are valued and integrated into business? Is ecosystem sustainability a realistic prospect for your business? Have you considered the implications of ecosystem risks and opportunities on your business strategy? What do we have to do to maintain our "business license to operate" in an ecosystem-focused society? Are you taking the lead on addressing ecosystem services? We believe that ecosystem considerations are poised to become the next frontier of business development. Are you ready?

LAFARGE

Onsite wildlife and biodiversity

In its North American activities, LAFARGE conserves wildlife and biodiversity at its various manufacturing sites - unlikely spots for wild animals such as cement plants, aggregate, concrete and asphalt facilities, and gypsum wallboard plants.

Since the 1990s LAFARGE has used a business model established by the Wildlife Habitat Council (WHC) and incorporated the model into its corporate guidance on creating, enhancing and conserving biodiversity/wildlife habitat.

WHC helps landowners, particularly corporations, manage their unused land in an ecologically sensitive manner for the benefit of wildlife. WHC-assisted programs manage wildlife in nearly 1 million hectares in 46 states, Puerto Rico and 16 other countries. The Council has more than 100 corporate members.

Wildlife habitat creation, enhancement and conservation projects on corporate lands vary in nature and scope and are voluntary cooperative efforts between management, employees, community members, local conservation groups and local, state and federal government agencies.

Since 1990 WHC has certified hundreds of Wildlife at Work programs on corporate facilities around the world, providing third-party credibility and an objective evaluation of projects. Certification validates wildlife habitat projects to employees as well as the community at large, transferring sustainability to people's everyday lives.

WHC works with organizations like the US Business Council for Sustainable Development to integrate the concepts of third party evaluation of ecological enhancements into their efforts in restoring brownfields, such as the USBCSD's Green Brownfields Initiative.

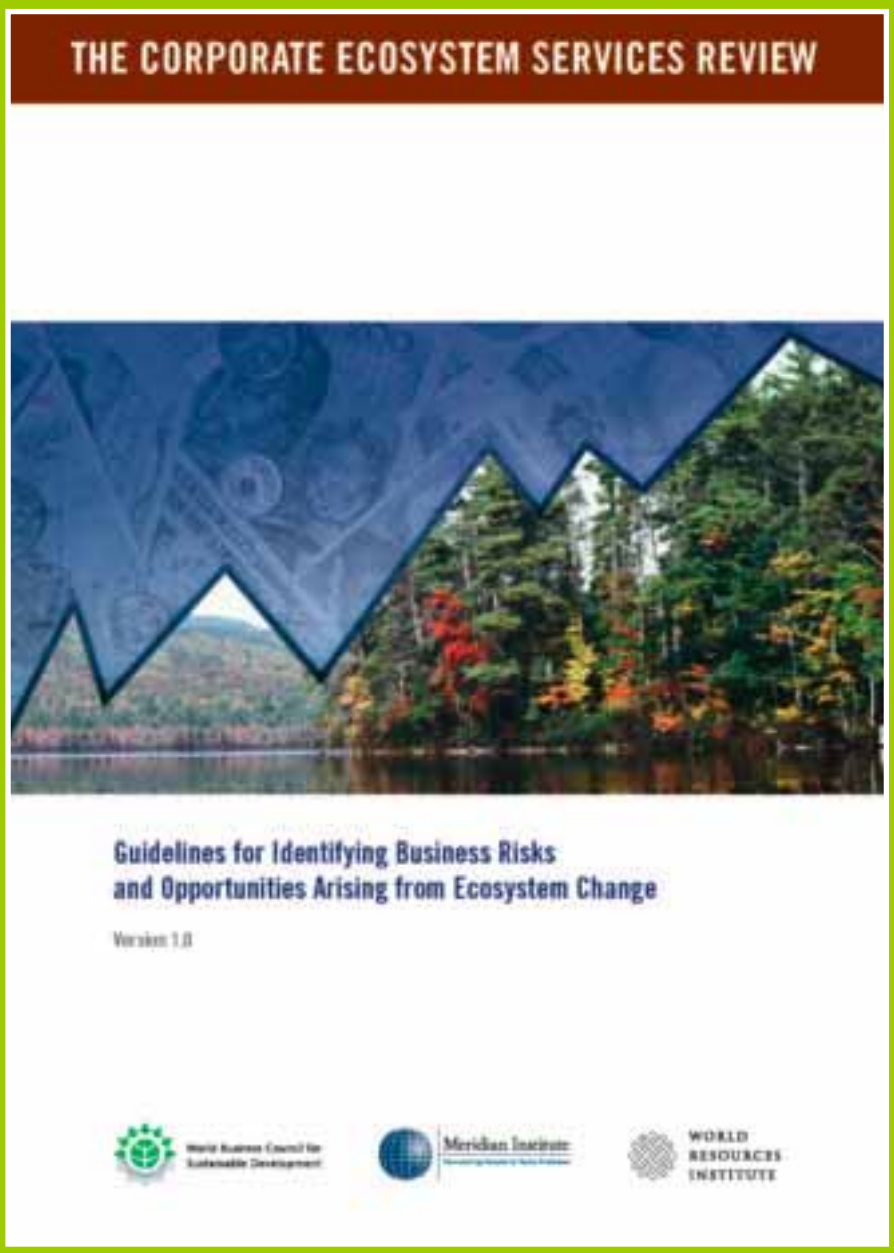
LAFARGE has increased its work with WHC, from its initial site at the Marblehead, Ohio, aggregates quarry to some 84 additional sites in 2008. Thirty-nine of these are certified by WHC as wildlife habitats. The certified sites comprise some 24,000 hectares of its property being managed for wildlife.

Within LAFARGE, conservation of nature and preservation of biodiversity has long been a fundamental/core commitment. This commitment entails, where feasible, the creation of wildlife habitats on its sites for endangered or threatened species, local established species populations and previously displaced species. The work is key to the Group's stakeholder outreach.

LAFARGE has set the following biodiversity targets:

- By 2010, all quarries will have been screened for local biodiversity sensitivity according to criteria validated with WWF International
- By 2012, all quarries within sensitive areas or with biodiversity potential will have developed a biodiversity management plan for the site.

Find the full case study at www.wbcsd.org/web/casestudy.htm. This case study was provided by the USBCSD, a WBCSD Regional Network Partner.



The Corporate Ecosystem Services Review
Guidelines for identifying business risks and opportunities arising from ecosystem change
Version 1.0

A structured methodology that helps managers proactively develop strategies to manage business risks and opportunities arising from their company's dependence and impact on ecosystems.

Download the Guidelines and supporting resources in English, Japanese, Portuguese and Spanish at:

www.wbcsd.org/web/esr.htm

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