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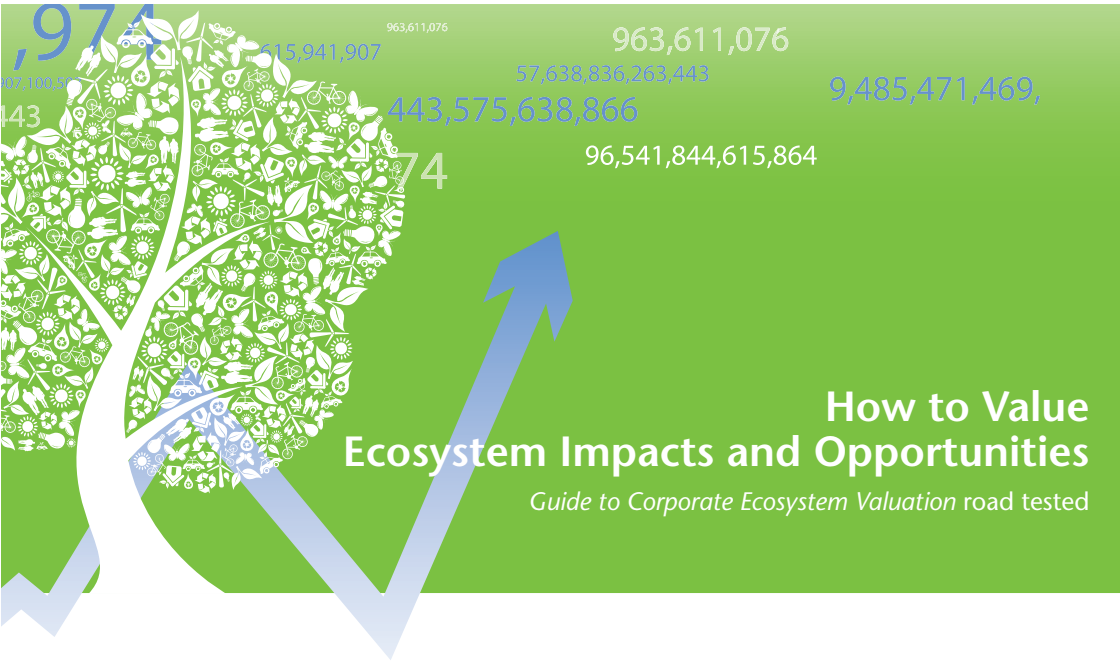

How to Value Ecosystem Impacts and Opportunities

Guide to Corporate Ecosystem Valuation road tested

World Business Council for Sustainable Development

"If you don't have a market price, people might think there is no value either." Mikkel Kallesoe, Program Manager Ecosystems Focus Area of the WBCSD, summarizes a key ecosystem challenge companies around the world face when trying to address issues of biodiversity loss and ecosystem degradation. *The Guide to Corporate Ecosystem Valuation (CEV)* **is the latest instrument the Council has developed to help companies value the risks and opportunities associated with their impacts and dependence on ecosystem services.**

In the past twelve months, fifteen companies have been road testing the new guide. CEV was developed by the WBCSD and its partners to help business build the case for sustainable ecosystem management. The WBCSD has identified 10 reasons why companies should awaken to the opportunities CEV offers. Improved decision-making is one of them, capturing new income streams is another. Although not all of the pilots have been completed, five road testers agreed to lift the veil over their preliminary findings. Most of them belong to the core team that has driven the WBCSD's ecosystem agenda. The pilots apply to water management (GHD), CO_2 reduction (Hitachi Chemical), agriculture (Syngenta), natural habitats (Aggregate Industries / Holcim), and power generation (EDP). The following interviews illustrate how far companies have already come in setting up models that bring ecosystem issues to the heart of their business.

Today, the interrelationship of business and the environment is an established concept among the 200 WBCSD members. Every industry in the world depends on or impacts ecosystems and their services. By not taking appropriate action now, companies may endanger their prosperity in the long run. Scientists, governments and societal groups have been sounding the alarm for decades. However, many reports do not speak the business language. The WBCSD, supported by its members, does.

In 2006, the WBCSD's *Ecosystem challenges and business implications* was the first document to inspire the mindset change now ongoing in corporate boardrooms. Two years later the Council released another tool: *The Corporate Ecosystem Services Review (ESR)*, which is often referred to as an important tool for identifying business risks and opportunities arising from ecosystem change. The *ESR*, translated in six languages, offers a five-step methodology for companies to proactively develop strategies to manage these risks and opportunities. The popular review is used in many corporate training sessions.

CEV goes a step further. By testing the discipline with various members, the WBCSD and its partners are developing a methodology to quantify the business values of ecosystem services. This will allow companies to put a price on natural capital. Ecosystem values can now appear on the balance sheet.

The WBCSD and Environmental Resources Management (ERM) jointly developed the *Guide to Corporate Ecosystem Valuation*, with the support of the International Union for Conservation of Nature (IUCN), the World Resources Institute (WRI) and PricewaterhouseCoopers (PwC).

Road test in Australia highlights improved water management at source

Peter Sutherland, GHD

Over 30% of the professional staff of the global consulting company GHD is involved in water resource management. For this CEV road test, a team of 5 GHD professionals in water management, economics and natural resource management supported project teams at two participating Australian metropolitan water corporations.

Australia has one of the most unreliable rainfalls in the world. Water security is a vital issue in the community, says Peter Sutherland, Business Leader Water Resources at GHD. Having experienced one of the worst droughts on record, all capital cities have faced major water restrictions. Competition for water resources is fierce.

Wastewater reuse, recycling schemes and desalination are all options that make water supplies less dependent on the climate. GHD has assisted many water clients in developing a portfolio approach that integrates ecosystem services in their planning.

Quantifying the value of these services, however, has been less obvious. Road testing CEV offered an excellent opportunity to do so. GHD provided advice to the two major Australian water utilities, SA Water in South Australia and Melbourne Water in Victoria, in working through the road test. The case studies at SA Water have gone through the entire guideline process the WBCSD designed, and at Melbourne Water, a number of case studies are well underway.

GHD professionals in water management, economics and natural resource management supported project teams at two water corporations. “Framing the business scenarios is a critical step, as is determining the valuation techniques to be used. Access to relevant and accurate data is also important.”

At both water utilities, the costs and benefits were assessed of protecting and reinstating ecosystems at the very source of the production chain: the water catchment. The business objective is obvious: the better the quality at the source, the lesser are the costs of subsequent treatment. For example, in one of the case studies, improved management of catchment areas is enhanced by reinstating in-stream wetlands. These help remove micro-organisms as well as suspended sediments and nutrients, that if unmanaged, lead to undesirable algal blooms in downstream reservoir storages.

From a risk management perspective, reduced contamination of water at its source or higher up in the supply chain also

diminishes dependence on the treatment plant as a single 'barrier' for water quality. Unacceptable quality cannot only lead to complaints about odor or taste, but can even present health risks to customers.

Two SA Water case studies that had been investigated before, Cox Creek and Myponga, were put to the CEV test. Where the previous studies had been focused on the reduction of operational costs, this time the scope was broadened to include a wide range of ecosystem services. In addition to the measuring of carbon footprint, aesthetic values and recreational opportunities are now being considered.

Peter Sutherland: "The exact framing of the business scenarios was an important step, as was determining the valuation techniques to be used. Even with a significant amount of data from past investigations that was directly usable, access to relevant and accurate data can be a challenge."

The further testing and release of CEV by a respected organization like the WBCSD will mean an enhanced interest of the business community, including the water sector, in the tool, says Peter Sutherland. GHD sees CEV as an area of increasing importance to its clients.

Anticipating CO_2 emission regulation in Japan

Ayako Kohno, Hitachi Chemical

Hitachi Chemical has been a core member of the WBCSD Ecosystems Focus Area since 2007. The company is currently in the process of extending its WBCSD commitment to the entire Hitachi Group.

As a token of this commitment, the 400,000 Hitachi Group employees are wearing an eco badge. Ayako Kohno, expert at the Corporate Communication Center, who drives the CEV pilot at Hitachi Chemical, explains why: "Since we do not use much material directly extracted from nature, it is even more relevant for us to make the life cycle of our products visible. That is why we were keen on cooperating in the CEV road test."

The company tested CEV by assessing the CO_2 emissions during the production of copper clad laminates, an ingredient used in electronics such as PCs, TVs and digital phones. "Focusing on CO_2 emissions may not necessarily come across as a novel approach to ecosystem valuation, but they do play a role in climate change and thus influence the balance of our ecosystems," says Ms Kohno. Japan, as opposed to the EU, does not yet have a market price for CO_2 emissions. That was another motivation for Hitachi Chemical to participate. Once the regulation is introduced, the company will be prepared.

In the first few months of the pilot, the Hitachi Chemical's team worked hard at articulating the scope of the project.

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Exchanging views with other road testers later in the process made things easier. The WBCSD workshop in March 2010, where all fifteen road testers met in Montreux, Switzerland, was highly useful.

In practice, Hitachi Chemical ran Life Cycle Analysis software on several methods of energy use in the production chain of copper clad laminates. Comparing the impact of electricity, oil, gas or vapor as an energy source and mixtures of these sources made it possible to assess the varying amounts of CO_2 emissions in various scenarios. It turned out that the reuse of vapor, which is generated by the heating or cooling process of copper clad laminates and which was discarded as an additional energy source until now, offered excellent opportunities.

The use of testing has not been obvious companywide, says Ms Kohno: "CEV road testing is a process of learning by doing. Although it is supported at Board level, you have to be prepared to answer critical questions from colleagues. To counter them, I developed a few PowerPoint slides to share the information. Simple and easily accessible information has proven a key factor in getting people involved."

Ms Kohno recognizes the struggle it represents for any company, not just Hitachi Chemical, to connect ecosystem values to the business strategy. However, without releasing exact numbers for the pilot yet, Hitachi Chemical has seen an opportunity to combine cost reductions and ecosystem care. The model tested with copper clad laminates can be applied to other sectors of the company beyond the CEV pilot. "It will however remain quite difficult to compare the outcome of road tests across industries," says the expert at Hitachi Chemical. Further standardization will have to be the next step.

Ecosystem valuation for agriculture focuses on farmers' involvement in habitat restoration

Jennifer Shaw, Syngenta

Approximately 30% of the world food production depends on pollinators to facilitate the reproduction of flowering plants. However, the number of pollination insects has declined dramatically in the past few years. Syngenta, dedicated to bringing plant potential to life, is globally engaged in the improvement of the pollination process through habitat restoration.

Creating new habitats for pollinators has a suite of benefits for ecosystems, such as the improvement of water and air quality, and the reduction of soil erosion. There is even an aesthetic value at stake in terms of providing open spaces and beautiful vistas. Farmers have an importance that reaches far beyond their function as crop growers, says Jennifer Shaw, Syngenta's Head of Sustainability for North America, and it is high time their vital role is recognized. At the growers end, CEV testing is a tool to help farmers appreciate the economic benefits of establishing new pollinator habitats.

Dr Shaw summarizes the approach of the road test at Syngenta: "The role of the growers is crucial, but at the end of the day, farmers should obtain an economic benefit for putting in place more habitats for pollinators. The road test offered an opportunity to focus on that component. Moreover, the practice should be compatible with the daily operations of growers. If it is not, it simply won't happen."

The CEV road test seeks early farmer involvement. "The role of the growers is crucial. At the end of the day, farmers should obtain an economic benefit for putting in place more habitats for pollinators."

Photo courtesy of Michigan State University

The case study explored two scenarios for habitat restoration with blueberry production in Michigan. The first model supposed an enrollment in a CRP (Conservation Reserve Program) or a modification of an existing CRP land project with establishment of a pollinator habitat. This scenario involved a financial incentive through federal programs, a minimum investment of the farmer and a basic enhancement of the farm landscape. Model two required an increasing commitment of the farmer in terms of land management and economic input, followed by substantial cost share incentives from federal agencies.

Blueberry production in Michigan which is 90% dependent on commercial pollinators for yields generates USD 124 million (US Department of Agriculture, National Agricultural Statistics Service, 2008). This means wild bees account for USD 12 million,

based on 2008 Michigan crop value. These numbers clearly emphasize the value of wild bees and by creating new habitats for wild bees, farmers could reap even greater rewards on their lands in the future. They will equally recognize the need for more diversified pollination strategies in cold-damp springs when pollination efficiency may be hampered. The creation of new habitats could thus function as an insurance policy for growers.

Including green payments from the USDA, the road test model also supposes an increase in yield/quality of the land, and a potential willingness of the consumer to pay more for bee-friendly commodities. As a result, the native bee pollination strategy could improve the grower's bottom line.

Testing at the farmer level will provide the insights necessary to understand how to establish the economic model in practice. As the roll-out proceeds, Syngenta will continue to work with USDA and other federal agencies to help fulfill habitat restoration mandates geared toward different geographies, crops and grower needs. Backed by other data as well, the CEV road test provides Syngenta with the conceptual framework to go into the next phase.

Benefits of biodiversity aftercare programs in CEV test exceed costs by far

Delia Shannon, Aggregate Industries

Aggregate Industries, a member of the Holcim Group, supplies a wide range of construction materials including aggregates, asphalt, and concrete products. The company which has had a biodiversity policy in place for more than a decade, has tested the CEV guide with 46 hectares in Yorkshire, England.

Thanks to the Holcim partnership with IUCN, Natalie Olson, an economist at IUCN, collaborated with the company in working on the pilot. The road test quantified in monetary terms the impact quarrying and restoration will have on biodiversity in the region around Ripon City Quarry, North Yorkshire, UK. The test also measured the costs and benefits of the ecosystem services provided to the local communities.

As Delia Shannon, Biodiversity Manager at the company explains, the involvement in ecosystem services among peers is still limited. The CEV road test offered Aggregate Industries the opportunity to take the lead in the sector.

Present data indicates that upon completion of ecosystem restoration after quarrying, the benefits associated with wetlands are greater than the benefits of shifting to agriculture. Aggregate Industries focused on the creation of wetlands in the road test to understand these benefits better. There is also a direct benefit expected in terms of security for the

For Aggregate Industries, Corporate Ecosystem Valuation is not just about finance. “It is a tool to promote biodiversity as a serious item at the boardroom table across our sector and beyond. With CEV, the WBCSD has provided a fantastic, cutting edge tool which will help the reputation of the business community.”

local population. Wetlands have an important function in flood protection. About half of the households of Ripon are affected by flooding every year.

Moreover, creating benefits for external stakeholders opens business opportunities. By submitting a restoration plan with the ecological benefits included, the company can gain credibility. There are considerable reputational benefits if a planning document considers all the requirements of its community.

CEV testing suggests that the benefits of ecologically responsible aftercare exceed the costs by far. Fine-tuning is however possible. Will the construction of a footpath along the wetlands contribute to the value the community already attributes to them? How to assess the costs versus the benefits of a stately home, open for visitors, which borders the restoration area? The road test allowed assessing these factors in far more detail than is usually possible.

The owners of the land will capture the economic value of wetland restoration. For the leaseholders, Aggregate Industries, the costs of attaining habitat of high conservation value are achievable in the scope of enhanced restoration. Both the company and the wider community gain from extraction followed by wetland restoration and lake creation. The contribution to flood control is significant, the reputational benefits are clear. The outcome stresses the importance of dedicating resources to valuing ecosystems and to considering this data early in the company’s decision-making process.

Completion of the pilot must await full permits for the wetlands project. Meanwhile, Aggregate Industries will not fail to impress the British authorities in the field of conservation and hopes to incorporate the results of the road test into the UK Government’s new Natural Environment White Paper. The guidelines will hopefully be tested at other Aggregate Industries sites in the UK, and possibly set a new, economically-viable standard in the business, says Delia. Corporate Ecosystem Valuation is not just about finance, but rather a tool to promote biodiversity as a serious item at the boardroom table across our sector and beyond. With CEV, the WBCSD has provided a fantastic, cutting edge tool to the business community.

Ecosystem valuation for power generation helps reduce risks and increases credibility

Sara Fernandes, EDP

Portugal-headquartered EDP is one of the largest renewable energy operators in the world. EDP's business strategy supports an internal commitment for reducing CO_2 emissions by 70% in the next decade. In doing so, the company's goals contribute significantly to an encompassing plan of the Portuguese government.

Risk reduction around biodiversity issues is becoming a central element in the decision process, says Sara Fernandes, senior corporate staff member for sustainability, explaining EDP's main motivation to engage in the CEV road test. Regulations such as the European Environmental Liability Directive will increasingly affect EDP operations in the future. The monitoring of the surrounding environment of power plants – EDP has 1500 MW under construction – is getting crucial.

The reduction of operational costs equally remains an important driver. Subject of the CEV study was an older hydropower generation system in Serra da Estrela's Natural Park, a region of high ecological value. The choice was based on the impact natural ecosystems, including wildfires, have on the hydropower stations. The data of the CEV test could create opportunities to reduce operational costs for the plant.

It was clear that EDP would need external partners to collect the massive amount of data required for the CEV test. Ms Fernandes:

Liability issues urge companies to reduce their risks and adapt their internal decision process accordingly. The CEV road test offered an excellent opportunity to start doing that. "We are not just valuing a business benefit. Conducting this kind of in-depth research has clear social benefits as well."

"Conducting this kind of in-depth research has clear social benefits as well. Moreover, credibility is an important issue for us. Independent academic research provides that." Two universities did the fieldwork: one research centre of the Porto University, and a research group of the Technical University in Lisbon.

By taking the dismantlement of the old system of hydropower plants as an option, the scientists looked into alternative scenarios for watershed management. Trade-offs between ecosystem services were discussed and accounted for. Constraints and opportunities for the company regarding each watershed management scenario were identified.

Interactions with local stakeholders were improved during the CEV road test, creating

reputational value. EDP is upgrading its environmental management system from the ISO 14001 standard to EMAS (European Eco Management Audit Scheme), requiring the involvement of the local public. EDP organized a workshop with the public on benefits and constraints from a local perspective and explored various scenarios. As a result, the road test helped develop communication tools that EDP can deploy in the rollout of other works.

Reactions of researchers, external stakeholders and involved EDP employees have been positive. The complexity and the amount of data collected have been setbacks, obviously caused by time and money restrictions. And although exact results in terms of costs-benefits cannot be given at this time, the pilot seems balanced, says Fernandes, and can be scaled up to other EDP operations.

The EDP hydropower plants road tested are certified under the strict regulations of the new European Renewable Energy System. It would be interesting to find out, says Sara Fernandes, if consumers will be ready to pay a higher price for biodiversity-friendly energy, just as they do today for green energy. However, for that to happen, CEV will probably have to become standard operating procedure in the industry

About the World Business Council for Sustainable Development (WBCSD)

The WBCSD is a CEO-led, global coalition of some 200 companies advocating for progress on sustainable development. Its mission is to be a catalyst for innovation and sustainable growth in a world where resources are increasingly limited. The Council provides a platform for companies to share experiences and best practices on sustainable development issues and advocate for their implementation, working with governments, non-governmental and intergovernmental organizations. The membership has annual revenues of USD 7 trillion, spans more than 35 countries and represents 20 major industrial sectors. The Council also benefits from a network of 60 national and regional business councils and partner organizations, a majority of which are based in developing countries.

www.wbcsd.org

Conclusion

Road testing the *Guide to Corporate Ecosystem Valuation* is an adventurous journey. Each of the participating companies has taken another route to drawing ecosystem values closer to the core of their business. All of them show entrepreneurship in helping to shape an instrument, which can only take its form by trying it out. The road testers have demonstrated a keen eye for the opportunities offered by ecosystem conservation. Most of them can already put numbers on the impacts of ecosystem services on their business.

At each company, the CEV road test had the full approval of the Board. The sustainability experts have been the drivers, involving the relevant teams for the pilot. In some cases, the visibility of the effort may have been limited and the enthusiasm may not have been companywide. However, the guidance and support of WBCSD staff and the project partners as well as the exchange with peers and the CEV workshops were an enormous help and continue to be so. Some experts made handouts for colleagues summarizing the road test to counter skepticism. This helped. However, the reactions of external partners, organizations and governments have been overwhelmingly positive and kept the road testers going.

Articulating the business case upfront for each individual company was maybe the hardest part. Setting up the parameters and finding the resources may have been easier for companies in agriculture or for consultancies in environmental issues. Testing itself required the collection of an enormous amount of data. Most road testers reported the necessity to collaborate even more with research institutes or government agencies. However, even if a lot of data is needed, the business objective is often simple enough. How big is the profit a farmer can gain from natural pollination? How can the vapor in a production process be recycled? What is the benefit of reinstating ecosystems at the water source, instead of costly treatments later in the process?

CEV is a process of learn-as-you-go. It may not lead to a uniform measurement tool across industries in the near future. However, the *Guide to Corporate Ecosystem Valuation* which the WBCSD aims to publish in early 2011 will provide more answers. The work of the companies participating in the CEV pilot has been invaluable in making progress toward developing a meaningful tool.

More information on the CEV and related WBCSD work on ecosystem management can be found at: www.wbcsd.org/web/ecosystems.htm

More information on Corporate Ecosystem Valuation at:
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