Discussion Paper | Assessing organisational biodiversity performance

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Executive Summary

This paper sets out how an element of organisational biodiversity impact can be assessed and ranked using a tool called the Normative Biodiversity Metric (NBM). The NBM is designed to assess the biodiversity performance of any land-owning entity, based on the pristineness of the organisation's land. It can be applied to any type of organisation, company, region or nation. The assessment generates results which can be used in annual reports, performance assessments marketing strategies/CSR, or as a component of another ecological indicator. The methodology is particularly relevant to raw materials sectors which have a large impact on habitats and biodiversity. The primary advantage of the NBM is that it can be used to compare biodiversity performance at different spatial scales with a standardised methodology, from a garden to a continent: there is no other biodiversity assessment tool which can perform this function. Satellite imagery is used to provide an initial assessment; ecological surveys can also be used where necessary to provide a higher degree of accuracy. The NBM is designed to provide an equivalent to corporate GHG assessment, for biodiversity impact.

Introduction

The pressures on habitats and endangered species around the world from the expansion of economic activity have caused biodiversity to be lost at unprecedented rates in recent years. Meanwhile, the rise of environmentalist support for wilderness conservation and endangered species protection has increased public awareness of the value of biodiversity. Out of this conflict a new paradigm has emerged; one where the conservation of biodiversity is not at odds with the goal of human development, but is congruent with this goal and necessary in achieving it. Despite this, there are few options available for a business to measure or assess its biodiversity performance in a meaningful way. Here, some alternative approaches to biodiversity assessment are briefly considered, before the methodology of the NBM is presented.

The Business and Biodiversity Partnership (BBOP 2008), suggest that businesses develop a *Company Biodiversity Action Plan,* a document in which the biodiversity policy of the company is described and threats and opportunities are documented. However there are few tangible suggestions for how to actually assess biodiversity performance (the BBOP focuses more on the design and

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management of biodiversity offset schemes). There is also much guidance available to business regarding the monetary valuation of ecosystem services as a means of assessing environmental impact (TEEB 2010, for example), but this approach is more applicable for informing policy decisions, and tends to be ill-suited to organisational biodiversity assessment.

The *Biodiversity Benchmark/European Biodiversity Standard* is another alternative for organisations that wish to demonstrate their environmental credentials. To be awarded this eco-label, an organisation is, for a fee, assessed on a set of environmental criteria. These criteria are not made publicly available; therefore the process is not transparent and can offer little confidence to the public or the business community as to what the eco-label actually means, and how it relates to biodiversity.

Rio Tinto is an example of a business which has been able to develop its own bespoke policy and assessment method related to its impact on biodiversity as a consequence of their mining operations (Rio Tinto 2008). Rio Tinto, a multi-national with a global turnover of circa $60 billion, has resources not available to most SME's which allow them to develop policy in-house.

For an organisational biodiversity assessment methodology to be accepted and adopted as a tool by business we hypothesise that it must first meet the following criteria:

- Be globally standardised and comparable across different sectors and scales;

- Be transparent – the assessment methodology must be freely available to businesses and consumers who wish to understand more about the process;

- The methodology must be simple and straightforward; not presented with a false complexity designed to obfuscate;

- Be possible to carry out assessments at very low cost – without the need for expensive external consultants or technical reports;

- Provide an incentive to improve biodiversity performance over time – with a 'score', not another eco-label.

- Be compatible with developments in habitat banking, biodiversity offsetting, REDD+ projects etc.

Given these conditions, the biodiversity assessment methodology cannot be wholly dependent on the use of ecological surveys carried out by experts. The NBM is able to provide an approximate assessment without the need for detailed ecological surveys although such information could be used to improve the accuracy of NBM assessments. A quick and practical assessment methodology is required if biodiversity assessment is to be adopted on a widespread level.

Normative Biodiversity Metric Methodology

The NBM methodology is based primarily on the pristineness of land, a surrogate indicator for biodiversity value. Each piece of land assessed is assigned to a category as in Table 1 based on the pristineness of the patch; pristine natural environments score '5' (the definition of what qualifies as

pristine may be a matter for further debate), down to completely artificial environments scoring '0'; toxic or contaminated environments which have an actively malevolent impact on biodiversity will be given a negative score. The European Land Use and Land Cover Survey [LUCAS](Eurostat 2008) contains an extensive list of land use and land cover definitions which the NBM methodology is loosely based on. 34 categories of land use and 65 categories of land cover were classified in the LUCAS survey, so in the NBM, 2,210 different combinations of land use/cover are assigned to a 'pristineness' meta-class, on a scale from 0 - 5, as shown in Table 1. The score assigned to each distinct patch of land owned by the assessed organisation is then aggregated and averaged to give the NBM score to the organisation as in Table 2. Where patches of land are in transition between different pristineness classes ecological surveys can be used to give a non-integer result.

Degree of 'Pristineness'	Land Meta-class	Land Use	Land Cover
pristine	5	nature reserve/national park	coastal wetlands
minimal Use/Impact	4	hunting/fishing	broadleaved and evergreen woodland
moderate impact	3	forestry	mixed woodland
degraded	2	agriculture/grazing	grassland
monoculture, heavily degraded	1	sports/recreation	grassland
artificial	0	residential	roads

Table 1: Pristineness classes with examples

To more accurately represent the biodiversity significance of an area the NBM pristineness score is adjusted for the presence of endangered mammals in the assessed patch. The IUCN conservation Red List contains an extensive list of globally endangered mammals which are used as a basis for the adjustment. IUCN species distribution maps can be used to establish the presence of species, and where habitat is deemed suitable for the particular species, the NBM score is adjusted. The red list for mammals is the most complete and accurate dataset; the endangered bird list could also be used, however accounting for the distinctions between resident populations, and migratory, occasional and accidental visitors would add a layer of subjectivity to the analysis which is not necessary if mammal lists are used. For each IUCN endangered mammal endemic and present in a patch of habitat, the NBM score is increased by +0.5, up to a maximum increase of +5. This gives businesses an increased incentive to protect the habitat of rare species.

An NBM assessment carried out on a mining company is shown in Table 2. This presents a snapshot of the pristineness of habitat owned by the business; the score attained by the mining company is 0.98, indicating that their land holdings are heavily degraded.

Habitat	Land Meta-class	IUCN Endangered mammals adjustment	Area	Contribution (area x class)	Business NBM Score
Pristine areas of rainforest protected as part of biodiversity offsetting projects.	5	4 endangered species present (+2 to class)	2,000Ha	14,000	
Biodiversity offset areas which are not adequately protected, allowing minimal hunting and deforestation to continue.	4	1 endangered species (+0.5)	3,000Ha	13,500	
Restoration areas which are not yet functioning as a pristine ecosystem.	3	N/A	2,000Ha	6,000	
Areas surrounding mines with high level of disturbance which does not retain many ecosystem functions.	2	N/A	3,000Ha	6,000	
Recently closed mines, vegetation beginning to re-colonise.	1	N/A	6,500Ha	6,500	
Active mining areas, access roads, offices, other artificial areas.	0	N/A	28,500Ha	0	
	Total		45,000Ha	44,000	**0.98** (44,000/45,000)

Table 2: Example of NBM 'static' assessment

The NBM assessment methodology can be used to assess the static position of an organisation at a particular date, as shown in table 2; it can also be used to show the biodiversity performance (NBM change assessment) over a certain period, as shown in table 3. These two results are equivalent to a biodiversity balance sheet (static position) and biodiversity profit and loss account (change assessment), and so can be combined in a financial statement disclosure note – the reporting of NBM assessment results in the director's report of financial statements or in annual reports will be discussed in a forthcoming paper to be published at *ecometrica.co.uk*

The assessment in table 3, for the same organisation in table 2, shows an NBM change score of (0.46), indicating that the organisation has caused net degradation of habitat during the year assessed.

Two detailed examples of NBM change assessments are shown in the appendix to this paper.

	Area	Land Meta-Class Status at 01.01.2010 (or date of purchase)*	Status at Date 31.12.2010 (or date of sale)*	Change in Status	Change by area metric (area x change)	Weighted average change metric
Land patch A – New mine opened	5,000Ha	4.5	0	(4.5)	(22,500)	
Land patch B – biodiversity offsetting project, improvement of habitat	2,000Ha	2	3	1	2,000	
Land with no change	38,000Ha	N/A	N/A	0	0	-
Total land owned/Weighted Average	45,000Ha	-	-	-	(20,500)	(0.46)

***Table 3: Example of NBM 'change' assessment** *****If the date of purchase occurs between the reporting dates, enter the status of the land on the date of purchase; if the date of sale is between the reporting dates, enter the status of the land on the date of sale.

Discussion

The biodiversity impacts of businesses might be divided into three categories: (i) indirect impacts occurring up and down the supply chain; (ii) indirect impacts occurring from the effects of diffuse pollution; and (iii) direct impacts occurring as a result of habitat degradation or land conversion (on the entity's land). Currently, the NBM, although it can be applied to any organisation, is most appropriately applied to sectors where there are high impacts in this third category of direct impacts - mining, agriculture, forestry or oil, for example. However, the NBM will be developed in the future to include the indirect impacts an organisation has on biodiversity through its sourcing of inputs. The land used to supply inputs to an organisation will be assessed, and a more complete picture of biodiversity impact will be given; this will make the NBM relevant to those organisation's which use lots of raw materials in their processes, but do not own the land where the materials originate from; for example supermarkets, bio-energy companies, and various manufacturing sectors.

We must also consider whether the variables selected in the NBM do in fact accurately represent biodiversity value. Pristineness of land is not equivalent to biodiversity: biodiversity is the variability within and between genes, sub-species, species, habitats, ecosystems and biomes. It is a very broad scientific concept, which can be measured in many different ways for different purposes. The assumption underpinning the NBM is that the pristineness of ecosystems is approximately equivalent to biodiversity *value,* the human wellbeing derived from the existence of different habitats, ecosystems, charismatic species, and landscapes.

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The NBM is being incorporated into a new carbon sequestration project standard – the ECO Natural Forest Standard, being developed by ECO Standard and Celestial Green Ventures for REDD+ compliant carbon sequestration schemes in the Amazon rainforest. The NBM will be used to assess the biodiversity value of the forests from which the carbon credits originate.

References

The Economics of Ecosystems and Biodiversity (TEEB) (2010): Mainstreaming the Economics of Nature: TEEB for Business. Available at:
http://www.teebweb.org/Portals/25/Documents/TEEB%20for%20Business/TEEB%20for%20Bus%20Exec%20English.pdf Accessed on 10th October 2011

Business and Biodiversity Offsets Programme (BBOP). 2009. Biodiversity Offset Design Handbook. BBOP, Washington, D.C. Available at: http://bbop.forest-trends.org/guidelines/ Accessed on 10th October 2011

Rio Tinto plc. (2008). "Rio Tinto and Biodiversity: Achieving Results on the Ground". Rio Tinto Publications. Available at: http://www.riotinto.com/documents/ReportsPublications/RTBidoversitystrategyfinal.pdf Accessed on 10th October 2011

Eurostat (2008). "New insight into land cover and land use in Europe." Luxembourg: Publications Office of the European Union. Available at: http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-SF-08-033/EN/KS-SF-08-033-EN.PDF Accessed on 10th October 2011

Biodiversity Benchmark/European Biodiversity Standard website Available at:
http://www.europeanbiodiversitystandard.eu/ Accessed on 10th October 2011

Millennium Ecosystem Assessment (MEA) (2005). Ecosystems and Human Well-being: Biodiversity Synthesis. World Resources Institute, Washington, DC.