

Realising the value of natural capital to UK businesses in the electricity supply sector

October 2015



Introduction

“Natural capital will become as prominent a business concern in the 21st Century as the provision of adequate financial capital was in the 20th Century”ⁱ.

This practice note is aimed at businesses in the electricity supply sector. It sets out the argument for taking account of ‘natural capital’ in business decision making and identifies key tools, expert bodies and initiatives that businesses in the electricity supply sector may find useful.

Why should businesses care about understanding the value of natural capital to their operations?

*Businesses have significant dependencies and impacts on natural capital*ⁱ

Nature can be thought of as a form of capital that businesses draw on. Natural capital can be defined as “our ‘stock’ of waters, land, air, species, minerals and oceans, which underpins all other types of capital – financial, manufactured, human and social - and is the foundation on which our economy, society and prosperity is built.”ⁱⁱ

The generation and distribution of electricity can be roughly broken down into four components: generation, transmission, local area distribution and end supply. The production of power requires natural resources for generation purposes, including biomass generated through forestry and agriculture, fossil fuels (coal, gas, and oil), uranium and plutonium, and water resources supporting the generation of hydropower.ⁱⁱⁱ

In addition to those resources directly enabling the generation of energy, the sector also relies on other ecosystem inputs, such as the provision of water for cooling, the protection of fixed assets from flood risk, and the capacity of ecosystems to absorb pollutants.

Indeed, some large energy companies interviewed as part of a recent research project for the Joint Nature Conservation Committee (JNCC)^{iv} saw some of their natural capital dependencies as “business critical”, particularly where natural features afford protection from floods and storms to their manufactured assets or provide water essential for cooling in power stations.

Key impacts of the electricity sector on the environment include the emissions (e.g. greenhouse gases) and waste (including radioactive waste) generated by the sector’s operations, supply chain impacts (e.g. from extractive industries), water abstraction and discharge, and a range of impacts relating to infrastructure development both on land and in marine environments (e.g. land take, soil and peatland disturbance and visual dis-amenity associated with the introduction of electricity towers or wind turbines into a landscape).

Natural capital and the services it provides are under threat

Natural capital and the ‘services’ it provides are under threat in many areas as a result of overexploitation, increasing demand and climate change.^v Diminishing stocks of natural capital present a significant risk to ‘business continuity’ i.e. ensuring that an organisation’s critical business functions can continue to operate.

Understanding dependencies on natural capital and accounting for these could maintain business-critical natural capital and thereby protect ongoing operations.

Accounting for natural capital may also bring a range of **additional benefits**, including:

- the identification of **new commercial opportunities** (e.g. through carbon or biodiversity offsetting or ‘payments for ecosystem services’^{vi} schemes or potential for generating new revenue streams from ‘stranded assets’ i.e. land that has no book value because it is contaminated and therefore cannot be sold);

- **cost savings** (e.g. through improved water efficiency); and
- **enhanced brand and reputation** (e.g. related to action to enhance the biodiversity value of land holdings^{vii} and reduce water demand).

In contrast, those that fail to consider their dependencies on natural capital may suffer increasing costs and exposure to risks, resulting in loss of market share or decline in profitability.

Additional drivers of action on natural capital highlighted by representatives of businesses in the electricity supply sector interviewed in early 2015 for JNCC^{viii} included:

- values of business leaders/employees (i.e. a desire to minimise negative environmental impacts and maximise positive impacts of business operations based on ethics/values);
- customer expectations – “*It’s very important especially for B2B [business to business] customers to have a company that shares their sustainability goals*”;
- social licence to operate and trust in the way environmental impacts are managed;
- getting infrastructure development done and done cost effectively; and
- regulatory requirements, e.g. for climate change mitigation and adaptation.

Looking to the future, considering natural capital dependencies and impacts may become more important, as resource prices increase and if governments further protect nature through regulations or market-based mechanisms that better reflect the ‘true’ price of goods and services that have, until recently, been largely ‘economically invisible’.^{ix}

Adaptation to our changing climate may also become an increasingly important driver for action by electricity supply businesses. The UK Climate Change Risk Assessment^x identifies considerable risks and uncertainties associated with meeting the climate adaptation needs of the UK, including in terms of infrastructure. For example, while Shell is not an electricity generating company, it has used a natural capital based approach to address flood risk at its Stanlow Oil Refinery. This facility is located

on the flood plain and is at risk from both fluvial and tidal flooding. To address this Shell worked with Cheshire Wildlife Trust to restore the ability of the Gowy Meadows nature reserve to operate as flood storage through a Payment for Ecosystem Services (PES) scheme^{xi}.

Internationally, a PES approach has also been used by the Electric Power Company of Quito, Ecuador to support watershed protection programmes that contribute to continued hydropower generation.^{xii}

Action on natural capital in the electricity supply sector

Recent research conducted for JNCC^{xiii} indicated that some electricity supply businesses are involved in multiple projects to enhance the biodiversity value of the land around their energy assets (e.g. using ecological monitoring and land management plans). Others were working to reduce environmental impacts and dependencies by improving water use, efficiency in energy generation or adopting an Eco-Management and Audit Scheme (EMAS), i.e. focusing on ‘eco-efficiency measures’. However these projects did not involve a systematic approach to valuing natural capital and ecosystem services.

In contrast three of five electricity supply businesses interviewed for the study were trialling approaches for **quantitative valuation of natural capital, albeit at a project or site scale rather than on a corporate/group level**. These examples included:

- use of a natural capital and ecosystem services tool on a project-by-project basis to quantify the value of different options in monetary terms. The respondent felt that putting natural capital into monetary terms is useful for engaging internal stakeholders because “*it translates an idea, which is often intangible... into terminology like stocks, benefits and flows which resonate with different communities within the business.*” It has also helped to demonstrate the wider benefits of sites to other stakeholders and has led to more partnership working such as engagement with Wildlife Trusts to understand their priorities and to help manage natural capital assets for joint benefit. Using the tool enables them to start “*...reflecting the value of the environment in our decision making for site restorations, site change or investment in infrastructure*”.

- doing cost-benefit analysis of projects that encapsulates the wider economic, social and environmental aspects in the process. This is a *“fundamental change to the way we’ve done business... it is an engagement tool; it’s probably not for ultimate decision-making just now because it’s still a little bit of a dark art [i.e. approaches to valuation of social and environmental benefits are still under development] but it’s certainly getting our feet at the table in the discussions now, which previously it didn’t.”*
- driven by stakeholder concerns about natural capital impacts, another business looked at valuing natural capital on land for a transmission line project at a *“very high level”* using values from The Economics of Ecosystems and Biodiversity (TEEB)^{xiv}. However, the land take turned out to be quite small, thus the estimated value of ecosystem services was also relatively low.

- they are also developing an ‘optioneering’ tool for application at the very start of the project identification process *“when you have the ability to assess as many criteria as possible... [and you can] bring in that sort of ecosystem valuation or assessment.”*

While some respondents emphasised the importance of putting monetary values on natural capital, a monetary valuation approach may not always be necessary. For example, one representative of a smaller energy generation business highlighted that their existing qualitative approach to understanding environmental impacts is quite effective in securing funding for natural capital related projects.

The **natural capital accounting hierarchy** shown below may be useful in thinking about the extent to which natural capital thinking has been embedded within your business.

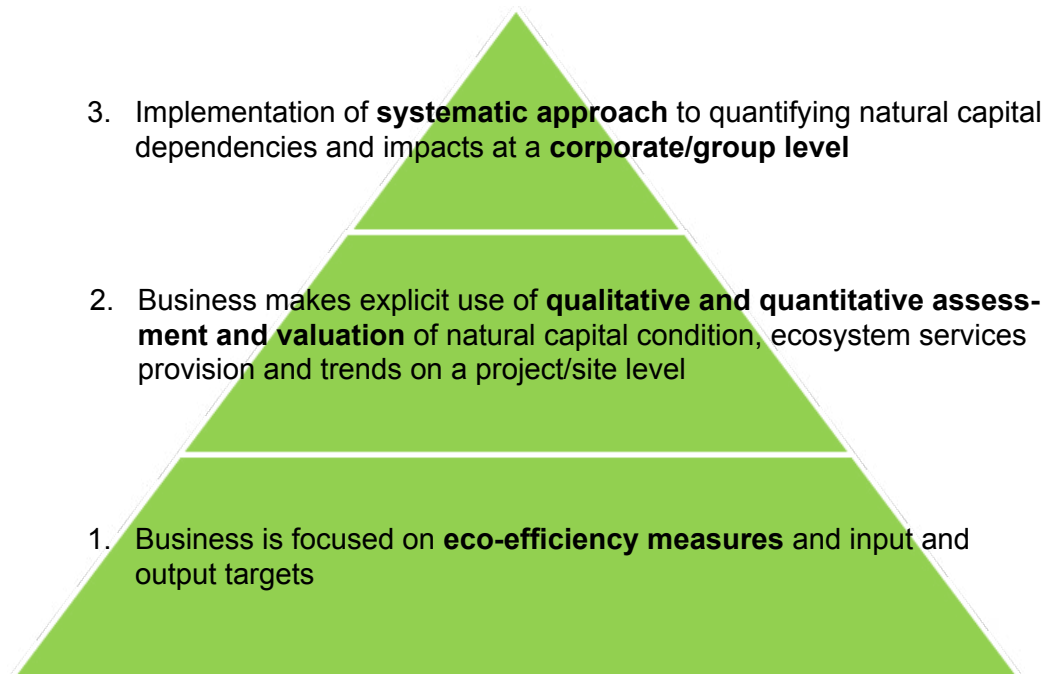


Figure 1: Natural capital accounting hierarchy

Incorporating natural capital in decision making using an accounting tool

National Grid is using a natural capital (NC) valuation tool to support decision making on future estate management and investment strategies, and to identify opportunities for new value creation. The tool translates NC values into monetary terms by estimating the value of twelve benefits provided by NC including flood control, air quality and recreation, using over 50 published valuation techniques and values widely used within the environmental economics community, including those from the UK Natural Ecosystem Assessment (UKNE A), Defra and The Office of National Statistics. It provides a current monetary value for the 'as is' baseline and future values and costs for a range of site management and development scenarios. The tool has been applied on a site-by-site basis to quantify NC stocks, assess the value of the ecosystem services provided and identify related risks and opportunities. The approach has been successfully piloted in investment decision making; two projects comprising over 100 hectares of land surrounding the business' operational assets are now being managed with local partner organisations to deliver a range of services. Use of the tool enables decisions to be made that optimise change in value to National Grid and local stakeholders, reduces costs and builds long term growth in shared NC values that can leverage more than eight times the initial financial investment. Understanding the value of the environment highlights tangible opportunities for creation of value that focuses on local priorities to generate real social, environmental, and economic returns (e.g. by increasing public access to nature).

Source: Accounting for Sustainability (2014) Natural and social capital accounting. <https://www.accountingforsustainability.org/wp-content/uploads/2015/03/A4S-natural-and-social-capital-accounting-Mar15v2.pdf>

What tools, expert bodies and initiatives can support businesses in realising the value of natural capital to their operations?

Some of the most commonly accessed and used tools and information sources that were identified by electricity supply sector businesses earlier this year include:

Tools:

- **Total Impact Measurement and Management (TIMM):** a tool developed by PwC for valuing social, environmental, tax and economic impacts, allowing a business to compare the total impacts of their decisions and manage the trade-offs. www.pwc.com/totalimpact
- **Biodiversity Benchmark:** a Wildlife Trust independent verification/award scheme that requires good ecological management on site and improvement of habitats. www.wildlifetrusts.org/biodiversitybenchmark
- **Data sources:** datasets from the statutory agencies and nature conservation bodies (e.g. Natural England); National Biodiversity Network^{xv} recorder database; MAGIC^{xvi}

Expert bodies:

- **Natural Capital Committee:** established in 2012 to provide expert, independent advice to Government on the state of England's natural capital. The Committee brings together expertise and experience in ecology and environmental science, economics and business. www.naturalcapitalcommittee.org
- **Wildlife Trusts:** the Wildlife Trusts manage around 2,300 nature reserves and run marine conservation projects around the coast. www.wildlifetrusts.org

Natural capital initiatives:

- **Natural Capital Coalition:** a global, multi-stakeholder open source platform for supporting the development of standardised methods for natural and social capital valuation and reporting in business. www.naturalcapitalcoalition.org
- **UN Global Compact:** a strategic policy initiative that assists the private sector in the management of increasingly complex risks and opportunities in the environmental, social and governance realms, seeking to embed markets and societies with universal principles and values for the benefit of all. www.unglobalcompact.org

- **Prince of Wales' Accounting for Sustainability Project (A4S):** works with the accounting and finance community to support a fundamental shift towards resilient business models and a sustainable economy. www.accountingforsustainability.org
- **The Economics of Ecosystems & Biodiversity:** TEEB is a global initiative focused on drawing attention to the economic benefits of biodiversity including the growing cost of biodiversity, loss and ecosystem degradation. TEEB presents an approach that can help decision-makers recognise, demonstrate and capture the values of ecosystem services & biodiversity www.teebweb.org
- **NERC Valuing Natural Capital in Low Carbon Energy Pathways project:** www.nerc.ac.uk/research/funded/programmes/valuingnaturalcapital
- **International Integrated Reporting Council:** the International Integrated Reporting (IR) Framework is a process that results in a periodic integrated report by an organisation about value creation over time. The aims of IR of most relevance here include a focus on communicating and creating enhanced accountability and stewardship of the broad base of capitals, explicitly including natural capital. integratedreporting.org/the-iirc-2
- **ISO14001:** an internationally accepted voluntary standard that sets out how to establish an effective environmental management system. www.bsigroup.co.uk/en-GB/iso-14001-environmental-management

Tools/resources/policy shifts coming soon to be aware of:

Additional tools and initiatives (including emerging tools) that may be of value:

- **Corporate Ecosystems Services Review:** this report from the World Resources Institute provides a highly structured methodology that helps managers proactively develop strategies to manage business risks and opportunities arising from their company's dependence and impact on ecosystems. www.wri.org/publication/corporate-ecosystem-services-review
- **Cambridge Institute for Sustainable Leadership:** CISL is an institution within the University of Cambridge. It seeks to challenge, inform and support leaders from business and policy to deliver change towards sustainability. www.cisl.cam.ac.uk
- **Natural Capital Protocol:** an ambitious project to develop a harmonised framework for understanding and valuing dependencies and impacts on natural capital in business decision-making being led by the Natural Capital Coalition. The Natural Capital Protocol is under development and is due in December 2015. www.naturalcapitalcoalition.org/natural-capital-protocol.html
- **Corporate natural capital accounts:** this report provides a systematic quantitative monetary approach to business-wide natural capital accounting. The process involves documenting natural capital assets (renewable and non-renewable), the costs (liabilities) of maintaining those assets, and changes in asset values and liabilities. www.naturalcapitalcommittee.org/corporate-natural-capital-accounting.html

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Images

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This note should be cited as: AECOM, JNCC.2015 *Realising the value of natural capital to UK businesses in the agriculture, forestry and fisheries sector.* JNCC Practice Note, No. 1, ISSN 2059-9382.

References

- i. Chartered Institute of Management Accountants (2014) Accounting for natural capital: the elephant in the boardroom.
- ii. www.naturalcapitalcommittee.org/natural-capital.html
- iii. Ecosystem Market Task Force (2012) Evidence Review Paper: Business opportunities from the natural environment - a business sector approach [online] available at: <http://webarchive.nationalarchives.gov.uk/20130822084033/http://www.defra.gov.uk/ecosystem-markets/files/Ecosystem-Markets-Task-Force-Evidence-Review1.pdf>
- iv. McNab, D., Davies, J., Eves, C., Rowcroft, P., Dunscombe, R. 2015 Realising nature's value in UK business. JNCC, Peterborough. <http://jncc.defra.gov.uk/page-7008>
- v. Natural Capital Committee (2015) The State of Natural Capital – Protecting and Improving Natural Capital for Prosperity and Wellbeing. Third report to the Economic Affairs Committee [nebula.wsimg.com/272833c20f4e7f67e2799595a7f06088?AccessKeyId=68F83A8E994328D64D3D&disposition=0&alloworigin=1](http://www.naturalcapitalcommittee.org/com/272833c20f4e7f67e2799595a7f06088?AccessKeyId=68F83A8E994328D64D3D&disposition=0&alloworigin=1)
- vi. See Payments for Ecosystem Services Best Practice Guide, www.gov.uk/government/publications/payments-for-ecosystem-services-pes-best-practice-guide
- vii. Electricity supply businesses interviewed in 2015 for JNCC (McNab et al, 2015) talked about the importance of trying to deliver ecological benefits and/or community benefits through site development and management (e.g. by enhancing the biodiversity value of sites around energy assets).
- viii. McNab, D., Davies, J., Eves, C., Rowcroft, P., Dunscombe, R. 2015 Realising nature's value in UK business. JNCC, Peterborough. <http://jncc.defra.gov.uk/page-7008>
- ix. Pavan Sukhdev, special adviser to the United Nations environment programme's green economy initiative, coined the term "the economic invisibility of nature".
- x. Defra (2012) UK Climate Change Risk Assessment: Government Report [online] available at: www.gov.uk/government/uploads/system/uploads/attachment_data/file/69487/pb13698-climate-risk-assessment.pdf
- xi. Smith, S., Rowcroft, P., Everard, M., Couldrick, L., Reed, M., Rogers, H., Quick, T., Eves, C. and White, C. (2013) Payments for Ecosystem Services: A Best Practice Guide. Defra, London. www.gov.uk/government/publications/payments-for-ecosystem-services-pes-best-practice-guide
- xii. Ecosystem Market Task Force (2012) Evidence Review Paper: Business opportunities from the natural environment - a business sector approach [online] available at: webarchive.nationalarchives.gov.uk/20130822084033/http://www.defra.gov.uk/ecosystem-markets/files/Ecosystem-Markets-Task-Force-Evidence-Review1.pdf
- xiii. McNab, D., Davies, J., Eves, C., Rowcroft, P., Dunscombe, R. 2015 Realising nature's value in UK business. JNCC, Peterborough. jncc.defra.gov.uk/page-7008
- xiv. www.teebweb.org
- xv. www.nbn.org.uk
- xvi. Defra's MAGIC website provided authoritative geographic information about the natural environment from across government. www.magic.gov.uk