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## Meeting report

# Capitalizing on nature: how to implement an ecosystem approach

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**The Natural Capital Initiative ([www.naturalcapitalinitiative.org.uk](http://www.naturalcapitalinitiative.org.uk)) held its first conference ‘Valuing our life support systems’ at Savoy Place, London, from 29 April to 1 May 2009. The aim of the conference was to discuss different perspectives on, and solutions to, the conservation and sustainable use of ecosystem services. It particularly focused on the link between the environment and the economy, and how to implement an ecosystem approach to environmental management. This event brought together scientists across the natural and social sciences, alongside representatives from government, non-governmental organizations, business and industry.**

**Keywords:** ecosystem approach; ecosystem services; natural capital; policy; valuation

## 1. INTRODUCTION

We are currently witnessing unprecedented loss and degradation of the natural environment, freshwater, marine and terrestrial, as a consequence of human actions (Millennium Ecosystem Assessment 2005). Climate change and a growing human population are putting increasing pressure on the earth system. In the post Millennium Ecosystem Assessment era, many sectors of society, including scientists, policymakers and industry, are realizing the importance of investing in natural capital: ecosystems and the services they provide to humankind, such as food, water, disease and climate regulation, recreational value and spiritual fulfilment. The Natural Capital Initiative conference (hosted by Rosie Hails, Center of Ecology and Hydrology) highlighted the urgency with which these problems need to be addressed. It illustrated the co-operation necessary between scientists and other sectors of society to achieve this. The conference marked a shift in attitude by many towards recognizing that investment in conserving natural capital is essential for human life and endeavour.

During the first day of the conference, a range of influential individuals from government organizations, departments, NGOs, industry, business and academia discussed the need for, and the challenges to, taking an ecosystem approach. An ecosystem approach is a framework for taking account of whole ecosystems in decisionmaking, and valuing the services they provide.

The following two days were divided between plenary sessions and facilitated workshops, focusing on rural, urban and marine issues. Discussions were devoted to the knowledge and collaborations necessary to implement this approach, and to new, innovative ways of better integrating the principles of sustainability into environmental management.

## 2. IMPLEMENTING AN ECOSYSTEM APPROACH

Ecosystems are being degraded owing to a lack of understanding of the value of the earth's natural capital. Presenting the opening address, Gretchen Daily (Stanford University) outlined the need to bring environmental values into decisionmaking in an attempt to reduce the conflict between conservation goals and human aspirations. She highlighted the necessity to convince society of the value of nature, particularly the ecosystem services on which it depends, in order to facilitate a greater investment in its conservation and sustainable use.

To achieve this, a number of developments need to take place across society and the conference presented examples of how this could be achieved by adopting an ecosystem approach. The recognition that people depend on and cause change to ecosystems is central. Bob Watson (Chief Scientific Advisor to Defra) showed how the UK proposes to build the evidence to operationalize this approach through the National Ecosystem Assessment (NEA) initiative. The NEA, based on the Millennium Ecosystem Assessment, aims to document and value the ecosystem services provided by the marine, freshwater and terrestrial environments of the UK. One of the difficulties facing this initiative is how best to value ecosystem services and whose values to include. There is clearly enthusiasm from politicians and policymakers to place monetary values on ecosystem goods and services, to illustrate their value in comparison to other tradable commodities, and hence create a common language for negotiation. However, in the candid words of Robert May (Climate Change Commission) we need to lose our obsession with free market economics. Nature is valued in a myriad of ways by society and realizing these values, from market to spiritual and future use values, is an important challenge. Bob Watson suggested a good start would be to measure the wealth of the nation not just in economic terms through GDP, but to develop indices that reflect natural and built capital, alongside human well-being. For this approach to succeed, it will be vital to influence the Treasury, representatives from which were notably absent from the conference.

## 3. THE CHALLENGES: DIFFERENT SECTOR PERSPECTIVES

The conference showcased forward thinkers from across NGOs, government organizations and private companies. They described their perspectives on the natural capital challenge. All illustrated that business-as-usual is no longer acceptable and how business can help lead the way without reliance on legislative drivers. Maggie Gill (Chief Scientific Advisor, Rural Affairs and Environment, Scotland) and Barrie Clarke (Water, UK) both stressed the need for a catchment management approach for improving

water quality, meeting Water Framework Directive requirements and for providing sustainable water services to society. Barrie Clarke particularly emphasized the importance of reconnecting the public with water, suggesting that a better understanding of where water comes from and what service is being paid for, may promote its wiser use. Businesses in the travel and transport sector are also investing in more sustainable practices. One example, presented by Richard Brown (CEO, Eurostar), is Eurostar's Tread Lightly initiative that aims to reduce CO<sub>2</sub> emissions per traveller journey and make them all carbon neutral. Gearoid Lane (Centrica) outlined the energy trilemma of achieving energy efficiency while balancing security of supply, cost to the public and ensuring environmental sustainability with a reduction in carbon dioxide emissions. He suggested that the best way forward may be to concentrate on micro-generation; local and regional energy projects that cumulatively can make global-scale differences in terms of mitigating some of the causal factors contributing to climate change. Andrew Clark (Head of Policy Services, National Farmers' Union) showed that the farming industry is aware of the challenges of sustainable food production and is encouraging the use of responsible farming practices. At the end of the food supply chain, Lucy Neville-Rolf (Director of Corporate and Legal Affairs, Tesco) sought to reassure the audience that Tesco now recognizes that a healthy natural environment means a sustainable business. They have a number of schemes to aid their suppliers' move towards sustainable agriculture, and to raise customer awareness of the effects of shopping habits on the environment.

It was clear from these presentations that different sectors of society (both public and private) that deal with rural and urban planning, water pollution, water supply, energy production and food supply are now at least singing from the same sheet. However, the lack of reference to the marine environment during the plenary presentations and the apparent absence of linkages between marine, terrestrial and freshwater ecosystems was disappointing. The challenge of integrating these values and interests is undeniably immense. However, one message was clear, that to move forward, suitable regulation is needed to guide society, and that the scientific evidence on which to base it is vital.

#### 4. SCIENCE AND POLICY NEEDS

Many of the presentations, as well as the workshop discussions, highlighted the need for interdisciplinary research, evidence-based policy and decisionmaking, and for scientists to interact more with policymakers. As outlined by Andrew Watkinson (Director, Living With Environmental Change), research must provide an improved understanding of the role of biodiversity in the provision of ecosystem services. The challenge is to identify what functions and processes give rise to the delivery of services in different ecosystems, and how we might make decisions about the inevitable trade-offs that will arise from managing the environment for multiple uses. This will require much better engagement between the natural and social sciences. The impact that humans, and wider environmental

change, have on these services also needs further exploration. Mark Walport (Director, Wellcome Trust) illustrated this point with a presentation on the human health challenges arising from environmental change. Paul van Gardingen (University of Edinburgh) suggested the need to reassess our understanding of the position of people within ecosystems. He argued that people should not only be considered at the heart of the ecosystem, but that they should be recognized as active participants who capture and derive ecosystem services, rather than as passive recipients. Nick Pidgeon (Cardiff University) warned, however, that the public should not be considered as one homogeneous group. To appreciate how people engage with debates such as climate change, it is important to understand the different publics. The communication of policy and science must be targeted appropriately to ensure engagement. He suggested that current communication strategies are insufficient and that a structural change within both policy and society is necessary, if different publics are to be encouraged to change their behaviour towards the environment.

Scientists also need to build upon interfaces with policymakers. Understanding the needs of policy is crucial to providing the appropriate evidence for decisionmaking. However, a key step to improving the communication between scientists and policymakers is dealing with uncertainty in scientific evidence, an issue that was raised frequently during the conference. A related issue is that of accountability which, in terms of policy, is an assessment of the quality of governance and the application of policy. Applying environmental policy requires a strong science-base, but as Gretchen Daily mentioned, scientists may be reluctant to be held accountable for the information that they provide to policymakers, because of the implications of getting it wrong.

In dealing with policy, we must also include the politicians. Elliot Morley (Chair, Energy and Climate Change Select Committee) recognized the role that natural capital has in the world economic system, and illustrated where win-win situations are to be had through the promotion of renewable energy technology. He assured the audience that Hilary Benn, Secretary of State for the Environment, Food and Rural Affairs, understands very well the need to live within ecological limits. However, John Beddington (HM Government Chief Scientific Advisor) gave some insight into the difficulties of persuading influential politicians of the importance of valuing natural capital in the economic system. The overriding message was that it is essential for academics to work across disciplines, and that cooperation between policymakers, politicians and private business is essential for an ecosystem approach to work. As Graham Wynne (Chief Executive, RSPB) pointed out, working together is not always easy, with the public and private sector often working to different timeframes and objectives. However, Gero Vella (Centrica) demonstrated with a case study of offshore wind generation in The Wash, how scientists, business and public bodies can work together in practice for a common cause. Where the will exists, it appears that natural capital can be incorporated into decisionmaking.

## 5. ALTERNATIVE FUTURES

Having outlined the many challenges, one of the main objectives of the conference was to allow time to consider ways forward. Three workshops discussed balancing options for rural land use, understanding the urban planning system and the sustainable use of the marine environment. Stimulating discussion from a number of speakers ranged from the showcasing of the Marine Bill (John Clorley, Head of Marine Biodiversity, Defra); a presentation of a framework in which science (both natural and social) and stakeholders can interact to support decisionmaking regarding the efficient use of the marine environment (Melanie Austen, Plymouth Marine Laboratory); sociological perspectives on balancing options for rural land use (Philip Lowe, Director, Rural Economy and Land Use); and the importance of developing eco towns to reduce the environmental impact of humans, and to minimize their experience of the consequent implications of environmental change (Pat Willoughby, Director, David Lock Associates).

Some interesting future visions were discussed, including a move towards an eco-economy, treating the economy as part of the environment rather than vice versa (see Brown 2001). However, to achieve this, society will need to change to one that is driven by ethics, where prosperity is about the quality of life, health and well-being, rather than material wealth (Jackson 2009). Such a society would promote living within environmental limits. Having 'sustainable entrepreneurs' in every town to champion development incorporating natural capital would go some way towards this. Tim O'Riordan (Sustainable Development Commission) called for a Social Capital Initiative, making the point that without social capital, natural capital will always be degraded. There is no doubt that radical institutional change would be necessary to achieve the level of integration necessary for the distribution of knowledge and for decisionmaking. The Rev. Nigel Cooper (Anglia Ruskin University) posed that axiology, or the study of value from both ethical and economic viewpoints, could help facilitate this shift. Another workshop participant suggested a National Ecosystem Service body to coordinate the necessary integration across sectors.

## 6. CONCLUSIONS

This conference highlighted some real concerns and challenges. The most pressing is our ability to present ecosystems and the services they provide on an equal

footing with other social and economic concerns; this is likely to require accurate monetary valuation. The apparent increasing emphasis on monetary valuation of these services without due regard to other types of values, for instance alternative measures that move away from GDP and towards well-being, is of concern. However, we are some way from understanding how multiple values can be effectively incorporated into decisionmaking. This is an area that requires much research and it is clear that interdisciplinarity is necessary. It was especially evident that, to be able to make informed decisions and create solutions that enable humans to live within ecological limits, the science community, especially ecologists, are required to understand better the biological processes that are important in the supply of ecosystem services. In addition, they need to deal with the uncertainty in this evidence-base and how it is communicated. Working with economists and other social scientists to provide the expertise on which to base the valuation of ecosystem services is crucial. Integrating across the knowledge we do have requires the development of models or decision tools for dealing with multiple objectives and methods for overcoming conflicts of interest between different groups of society. This is vital if an ecosystem approach is to be implemented.

This conference was inspiring, in the sense of the buy-in from across so many sectors, and gave some hope of a shared vision of a more sustainable environmental management. However, the conference posed many more challenges than solutions, despite some examples of where understanding the value of natural capital has been incorporated into decisionmaking. There is an urgent need to explore how to scale-up such examples of good practice. We hope that in the future the Natural Capital Initiative will provide a forum that facilitates the production of innovative solutions for putting an ecosystem approach into practice.

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