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## **JOINT NATURE CONSERVATION COMMITTEE**

### **JNCC'S ROLE IN ENVIRONMENTAL ECONOMICS**

#### **Paper by Emily McKenzie**

#### **1. Drivers for JNCC's work on environmental economics**

- 1.1 In the UK and globally, the influence of economics in nature conservation is significant and growing. This is due in part to the rise of the sustainable development agenda, which has led to an increased recognition of: a) the interdependence between environmental, social and economic factors; b) the importance of policy coherence across these three sectors; c) the influence that human behaviour and economic incentives have on the state of the natural environment; and d) the importance of the natural environment for human societal well-being.
- 1.2 The growing influence of economics is reflected in many areas of relevance to JNCC, including global environmental initiatives (e.g. the Millennium Ecosystem Assessment), multilateral environmental agreements (the Convention on Biological Diversity, the Ramsar Convention on Wetlands and the Convention on International Trade in Endangered Species have significant environmental economics work programmes) and European directives.
- 1.3 The political profile of environmental economics is increasing, both in the UK and internationally. In the UK, prominent recent initiatives, such as the Stern Review on the Economics of Climate Change, demonstrate that economic approaches, if used intelligently, creatively and appropriately, can be powerful forces for positive change in environmental outcomes. In Europe, the Lisbon Agenda has dominated policy discussions, centered on improving productivity, competitiveness, economic growth and employment. There is increasing recognition that the environment has an important role in meeting these aims. The Convention on Biological Diversity has also made it clear that the international community's attempt to address the problems of global poverty, as articulated in the Millennium Development Goals, will only be met if the value of natural resources is incorporated into measures to solve these issues.
- 1.4 Internally, the JNCC vision and strategy place the organisation's work within the context of sustainable development, making it necessary to build stronger links with social and economic factors. Recent work by JNCC to develop a UK nature conservation framework has raised the relevance of economic tools, particularly environmental valuation, measures of well-being and economic incentives.

- 1.5 The combination of these external and internal drivers makes environmental economics a key area for JNCC. An interdisciplinary approach that includes economics will help JNCC to achieve its vision and strategic objectives.

## **2. Environmental economics – concepts, tools and its role in nature conservation**

- 2.1 Environmental economics is usually defined as the study of how people choose to use and allocate scarce natural and environmental resources to satisfy competing needs and wants. The discipline has a particular way of thinking about natural resource management, which includes core concepts of scarcity<sup>1</sup>, externalities<sup>2</sup> and market failure<sup>3</sup>.
- 2.2 Environmental economics uses a set of tools to support this way of thinking. These tools include: environmental valuation; project and policy evaluation methods, such as cost-benefit analysis, multi-criteria analysis and cost-effectiveness analysis; national income accounting; and economic incentives, such as market-based instruments.
- 2.3 The following areas of environmental economics are most relevant to JNCC's work:
- i. helping to understand the root causes of environmental degradation and underlying human behaviour;
  - ii. analysing market failures and providing a rationale for (government) intervention;
  - iii. developing, refining and applying environmental valuation tools to ensure that the true value of biodiversity and related ecosystem services is reflected in policy and decision-making;
  - iv. developing evidence on the costs, benefits and wider impacts of policy and project proposals that affect the natural environment;
  - v. developing, refining and applying policy and project appraisal methodologies;
  - vi. assisting with the design of economic tools that develop incentives and financing for nature conservation, particularly market-based instruments; and
  - vii. developing, refining and applying macro methods for assessing progress and quality of life that better reflect human dependence on and value for the natural environment (moving beyond GDP).

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<sup>1</sup> Scarcity arises in situations of unlimited wants and limited resources.

<sup>2</sup> Externalities occur when a decision causes costs or benefits to individuals or groups other than the person making the decision.

<sup>3</sup> Market failure occurs when conditions for a well-functioning market fail to hold. This can be due to imperfect competition, public goods, externalities or imperfect information. Market failures are common in the area of environmental resource distribution.

- 2.4 Ecological economics is an emerging field. It has some subtle philosophical and theoretical differences with environmental economics, but continues to have significant areas of overlap. Ecological economics tends to be more interdisciplinary, with ecologists playing a strong role in shaping the field. Thus far, however, the discipline has struggled to develop a cohesive theoretical foundation that rivals environmental economics in providing strong recommendations for policy.
- 2.5 Sources of further information on various aspects of environmental economics are listed in Annex 1.

### **3. JNCC's environmental economics work**

- 3.1 The goal of JNCC's environmental economics work is to strengthen nature conservation through the integration and application of environmental economics, within the context of the ecosystem approach. It forms a core part of the Sustainability Advice programme.
- 3.2 An overview of JNCC's environmental economics work is provided in Annex 2. The key areas of work are:
  - i. contributing to the development of policy positions on priority issues;
  - ii. responding to consultations on economic issues, policies and projects;
  - iii. developing evidence and commissioning research where appropriate and feasible;
  - iv. developing a pilot project to support the use of environmental economics for sustainable ecosystem management in the UK Overseas Territories in the Caribbean;
  - v. contributing to the development of JNCC's strategic work (e.g. the UK nature conservation framework);
  - vi. helping to bring natural environment issues into wider economic debates and vice versa;
  - vii. developing and maintaining professional relationships with economists (and others interested in economics) in partner organisations; and
  - viii. building capacity across JNCC so that non-economists are familiar with basic concepts and able to use economics in their work.
- 3.3 JNCC has already become a significant and recognised player in key areas of environmental economics. However, current work is only a small fraction of what could be covered, as the scope of interest in environmental economics work is vast, but is constrained by current capacity.

#### **4. Potential areas for future work**

- 4.1 JNCC's environmental economics work needs to remain innovative and dynamic so that it can: a) lead the development of new approaches in key areas of policy advice; b) allow JNCC to be proactive in developing its agenda; and c) define an appropriate niche without replicating existing work being undertaken by partner organisations.
- 4.2 At the cutting edge of economics, fundamental questions are being asked about the core assumptions of the discipline relating to human behaviour. Multi-disciplinary research is pushing the boundaries of economics in this area, e.g. behavioural economics (combining psychology and economics) and neuro-economics (combining neuroscience and economics). JNCC needs to understand the policy implications of this research.
- 4.3 In the natural sciences, JNCC needs to support innovative research to increase the scientific understanding necessary to develop good economic models and analysis. In particular, there is a critical need for greater understanding of the links between biological diversity, ecosystem functioning and ecosystem services. Currently, the quality of economic analysis worldwide is limited by our lack of scientific understanding of ecosystem function and services.
- 4.4 Notable practical examples of emerging areas in economics that JNCC could help to develop and apply in our policy advice include:
  - i. developing measures and indicators of sustainability and progress that are more holistic than traditional economic growth statistics;
  - ii. supporting the development of effective markets and payments for ecosystem services;
  - iii. ecological modeling and mapping of ecosystem services using GIS tools; and
  - iv. rethinking the appropriateness of time discount rates<sup>4</sup> for nature conservation policies and projects.

#### **5. Stakeholder engagement**

- 5.1 JNCC's environmental economics work offers an opportunity for the organisation to influence policy areas that are outside the core nature conservation sector, but are nevertheless critical to the achievement of JNCC's strategic objectives. Economic arguments can be particularly powerful for raising the profile of the nature conservation sector, by communicating the importance of the environment in economic and social terms.

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<sup>4</sup> In economics, discounting is the process of finding the current value of an amount of money that will be received at some point in the future. Debates over the appropriateness of discounting over time for the evaluation of environmental policies and projects have recently arisen around the Stern Review on the Economics of Climate Change.

- 5.2 JNCC already collaborates with a wide group of partners in its work on environmental economics. A summary is provided in Annex 3.
- 5.3 JNCC's engagement with UK government departments on economics issues is currently focused on Defra. This is a product of JNCC's institutional history, and is also due to the large and growing demand from Defra for support in this area. However, economics has the potential to be useful for influencing other government departments. For example, debates on green GDP are highly relevant for HM Treasury, while analysis of the links between ecosystem services and poverty alleviation is of critical importance to the Department for International Development. Developing and improving policy appraisal guidance to incorporate the value of biodiversity and related ecosystem services into decision-making is highly relevant to all government departments.
- 5.4 Beyond the UK government, economics provides an opportunity to increase the reach of JNCC's policy audience in Europe, the UK Overseas Territories and globally. In Europe, economics could be used to influence policies beyond DG Environment, such as development, taxation, trade and industry policies. In the UK Overseas Territories, economics can be (and is being) used to engage local communities, and to influence politicians and high-level officials in ministries of finance and planning. Globally, valuing biodiversity and natural resources is seen as an important tool for strengthening commitments made through the Convention on Biological Diversity and World Summit on Sustainable Development.
- 5.5 Economics also provides an avenue for connecting with the private sector. Influencing the business community is essential for achieving UK and global nature conservation targets. Economics has various tools that are of interest to business, including market-based instruments for nature conservation, such as sustainable financing systems, payments for ecosystem services and habitat banking. The Millennium Ecosystem Assessment pointed out that degradation of ecosystem services has major implications for the private sector by increasing the costs of some ecosystem service inputs, changing the framework within which businesses operate, and providing opportunities for new enterprise.
- 5.6 It is essential that JNCC's work on environmental economics engages with the natural science and interdisciplinary research communities to improve the scientific understanding required as a foundation for good economic models. JNCC's economics programme can also be used to encourage others in the nature conservation sector to engage in interdisciplinary research and to collaborate beyond traditional working relationships. There are opportunities for capacity building among ecologists and economists, through formal training and joint interdisciplinary working.

## **Annex 1. Further information on environmental economics**

The following web-links provide access to useful information on various aspects of environmental economics.

- [www.biodiversityeconomics.org](http://www.biodiversityeconomics.org) (a comprehensive source of information on biodiversity economics)
- <http://ecosystemmarketplace.com> (information on market-based instruments for conservation)
- [www.conbio.org/workinggroups/sswg/catalog](http://www.conbio.org/workinggroups/sswg/catalog) (an online catalogue of conservation social science tools, covering a number of disciplines beyond economics)
- [www.biodiversityeconomics.org](http://www.biodiversityeconomics.org) (economic tools)
- [www.tinbergen.nl/discussionpapers/00080.pdf](http://www.tinbergen.nl/discussionpapers/00080.pdf) (a good article outlining the differences between environmental and ecological economics)
- [neweconomics.org/gen/uploads/tfi0ypn1141p45zoi0mrrgf222092005201739.pdf](http://neweconomics.org/gen/uploads/tfi0ypn1141p45zoi0mrrgf222092005201739.pdf) (an introductory briefing on the environmental policy implications of recent ideas in behavioural economics)
- [www.millenniumassessment.org/en/Synthesis.aspx](http://www.millenniumassessment.org/en/Synthesis.aspx) (implications of environmental economics for business)

## **Annex 2. JNCC's current environmental economics work**

**Capacity building.** Over the last two years, there has been capacity building within JNCC, to raise awareness and understanding of environmental economics. A strategic level workshop was held for the Executive Management Board and Programme Leaders, followed by a policy- and project-focused workshop for other interested staff. There is an area on the JNCC intranet providing information on environmental economics, and an internal email group that receives regular updates. Capacity building has also been undertaken for members of staff in Defra, and for MPs through a parliamentary seminar on ecosystem services.

**Overseas Territories issues.** The 'Environmental Economics with the Overseas Territories in the Caribbean' project, funded by the Overseas Territories Environment Programme, is well underway. This project aims to build capacity in UK Overseas Territories in the Caribbean in using economic tools to make policies and decisions more sustainable. A toolkit, *Valuing the Environment in Small Islands*, has been developed and disseminated. It will be used at a regional capacity building workshop to be attended by Overseas Territories partners at the end of the year. JNCC is also supporting three Overseas Territories (Montserrat, the Cayman Islands and Bermuda) to conduct environmental valuation studies to estimate the value of important ecosystem services that are under pressure.

**Global issues.** Globally, the scope for environmental economics work is vast. JNCC supports follow-up work on economic elements of the Millennium Ecosystem Assessment, and contributes to the economics programme of the Convention on Biological Diversity. We advise on a number of Government-led international environmental economics projects, such as research into UK citizens' value for global biological diversity, and research into the relationship between ecosystem services and poverty alleviation.

**European issues.** In Europe, JNCC has been closely involved in the establishment of a European Network of Biodiversity and Economics, through its work with the European Topic Centre on Biological Diversity. JNCC contributed to the Streamlining European Biodiversity Indicators for 2010 project through a scoping paper on the costs of invasive alien species in Europe. Numerous European consultations have arisen relating to environmental economics, such as the European Commission consultation on the role of market-based instruments in environmental policy.

**UK issues.** At the UK level, JNCC has advised on a number of research and policy initiatives, such as a Defra environmental valuation study of the benefits of the UK Biodiversity Action Plan. At the England scale, and in collaboration with Natural England, JNCC supports a Defra research study examining the value of England's terrestrial and aquatic ecosystem services. JNCC is a member of the England Biodiversity Strategy Economics and Funding Group, which co-ordinates research on a variety of areas of biodiversity economics of relevance at the UK scale. Through this group, JNCC is involved in an emerging research project to scope the potential for, and issues around, biodiversity offsets and habitat banking.

**Marine issues.** In the marine environment, JNCC is assisting Defra with research into the impacts of SAC designations, and the costs and benefits of Marine Conservation Zone provisions within the Marine Bill. There is huge potential for environmental economics to contribute to JNCC's marine work, relating to issues such as offshore wind, aggregates extraction and fisheries policy reform.

### **Annex 3. JNCC's main partners for environmental economics work**

**Defra.** There is a large number of economists working within Defra, dispersed across a number of divisions. They develop economic evidence to feed into impact assessments and to shape wider policy development.

- The *Agricultural and Natural Resource Economics* team covers agricultural economics (e.g. applied to CAP reform and agri-environment policy), biodiversity economics, policy appraisal and the environment, marine and fisheries economics, and valuation of ecosystem services. JNCC has very strong links with this team and we are involved with them in a number of collaborative projects.
- The *Central Analytical Directorate* focuses on more strategic and cross-cutting economic issues, such as climate change, trade and the environment, sustainable production and consumption, and links between environmental quality and economic competitiveness. It is also responsible for the Defra interface with HM Treasury around the pre-budget report and for Defra's economic academic panels. JNCC has general links with this team, but has thus far not engaged in close collaborative work with them.
- The *Environmental Policy Economics Directorate* services a wide range of policy areas. JNCC does not currently work closely with this division.
- JNCC is also engaged in economics work with non-economist teams at Defra, although always in collaboration with Defra economists. In particular, JNCC has strong working links with the *Natural Environment Strategy Unit*, which leads on the development of an ecosystems approach for government policy, including development of research and guidance on valuation of ecosystem services. JNCC is closely involved in this project through participation in research and evidence working groups.

**Department for International Development (DFID).** JNCC's links with environmental economists in DFID have mainly developed through the 'Environmental Economics with the Overseas Territories in the Caribbean' (EEWOC) project. JNCC is also involved with the marine element of DFID/NERC research on ecosystem services and poverty alleviation. As the environmental elements of DFID's work grow, there may be further opportunities for collaborative working.

**Foreign & Commonwealth Office (FCO).** JNCC has a strong working relationship with the FCO's Overseas Territories Division, mainly through the EEWOC project.

**Parliamentary Office of Science and Technology (POST).** JNCC has developed good working links with POST, mainly through assisting with the development of an ecosystem services POST-note and a seminar on the economics of ecosystem services for MPs.

**Country nature conservation agencies.** JNCC has close collaborative working relationships with those country agencies that have economist staff. Many of JNCC's interests in economics overlap significantly with the country agencies. We therefore co-ordinate our efforts to divide responsibilities for work areas of mutual interest and avoid unnecessary duplication. Generally, the country agencies take the lead on agricultural policy economics, the economics of local regeneration, and issues with greatest relevance at the country level.

**Environment agencies.** The Environment Agency has a very large economics capacity, focused on non-living natural resource management, such as flood and coastal defence, and the Water Framework Directive. Economists in the Scottish Environment Protection Agency

work on a similar range of issues. JNCC has established some informal relationships with economists in both agencies but these could be strengthened.

**Sustainable Development Commission (SDC).** The SDC has a strong and growing economics capacity. Their economists focus on a broad set of issues, including planning, sustainable production and consumption, energy economics, and quality of life issues. JNCC has good informal links with the SDC, but has not yet engaged in any joint projects.

**Forestry Commission.** The Forestry Commission has an economics programme focused on forestry management, but which has included work on biodiversity valuation in the past. JNCC has links to economists at the Forestry Commission through the Economics and Funding Group of the England Biodiversity Strategy.

**RSPB.** RSPB has a sizeable capacity in economics with a strong shared agenda and expertise in biodiversity economics. JNCC has strong working relationships with RSPB's economists at the UK, European and international scales, and we have undertaken joint work, particularly through the England Biodiversity Strategy Economics and Funding Group.

**European Environment Agency (EEA).** JNCC has an excellent working relationship with the biodiversity economist at the EEA. Joint projects have developed through the European Topic Centre on Biological Diversity and the newly established European Network on Biodiversity and Economics. JNCC has produced a scoping paper for the EEA on the costs of invasive alien species.

**International NGOs.** JNCC has good links with environmental economists at the World Conservation Union (IUCN), through the IUCN Caribbean Initiative and the IUCN-UK Committee. JNCC is a member of the IUCN Economic Valuation Taskforce, which provides support to the EEWOC project. We have also contributed information to the project 'Who Pays for Biodiversity', led by RSPB for the IUCN UK Committee. We have contacts with a range of other NGOs that are working on applications of environmental economics globally, such as The Nature Conservancy, the Business and Biodiversity Offsets Program and WWF.

**UNEP-World Conservation Monitoring Centre (WCMC).** WCMC has an environmental economist, who is mainly involved in follow-up economics work arising from the Millennium Ecosystem Assessment. JNCC has been engaged in joint work relating to ecosystem service valuation.

**Overseas Territories.** Through the EEWOC project, JNCC has developed very strong working relationships with a number of Government and NGO stakeholders in the UK Overseas Territories in the Caribbean with an interest in environmental economics, particularly in Montserrat, Bermuda and the Cayman Islands. There is potential for future partnerships to arise from a regional capacity building workshop in late 2007.

**Academia.** JNCC has good links with environmental and ecological economists at a number of universities and research institutes. These relationships have developed through the UK Biodiversity Research Advisory Group and various societies, including the International Society for Ecological Economics, the UK Network of Environmental Economists, the European Society for Ecological Economics, and the British Ecological Society. JNCC has developed stronger links with some individuals, through joint working on projects involving academics as consultants.