

Ecosystem Valuation and Management

Semester 2, 2012 Thursdays 1400-1800, Crew Annex room 5

Course organiser: Dr Casey Ryan

Room 210 Crew Building casey.ryan@ed.ac.uk 0131 650 7722

Course Secretary: Christine Wilson

Room 211 Crew Building christine.wilson@ed.ac.uk 0131 650 4866

Teaching staff: Dr Ina Porras (IP), Dr Essam Yassin Mohammed (EYM), Prof Paul van Gardingen (PvG), Prof Mat Williams (MaW), Dr Sam Staddon (SS) and Dr Casey Ryan (CR)

Location

1st meeting: 1400 Jan 19th. Room 5 Crew Annex

All sessions will be held in the Crew Building Annexe, Room 5, 14:00-18:00 on Thursdays. In Week 5, instead of the session on Thursday we will spend the day at Glen Tress on **Saturday the 18th Feb. Attendance on this trip is vital for successful completion of the course.**

Course description

This course focuses on the concept of ecosystem services, its history and rise to prominence. We then explore the ways in which ecosystem services can be valued, measured and monetized by society, across the spectrum from intrinsic values (aesthetics, inspiration, cultural) to extractive (e.g. fisheries, forestry, mining). Both theoretical and practical applications of ecosystem valuation are explored through case studies of policies and projects, as well as fieldwork in Edinburgh.

Real-world examples of ecosystem services being valued are presented, including payment for ecosystem services projects, biodiversity offsets, certification schemes and REDD+. Students have the opportunity to explore a case study in depth.

The course concludes with a critique of the idea of valuing ecosystem services, looking at the importance of governance and power structures, the difficulties in valuing complex and unpredictable ecosystems, and the trades-offs between efficiency and equity that often occur.

Learning outcomes

- An appreciation for the role that ecosystem functions and dynamics play in terms of underpinning critical services for human well being
- Examples by case studies of services e.g. food, coastal protection, carbon capture, water supplies, and recreation.
- Capacity to apply non-monetary and monetary economic assessment to various ecosystem services
- An understanding of the challenges to managing ecosystem services, from an ecological, social and economic perspective

Course outline

W1 Jan 19 2012	Ecosystem processes, functioning, services and values To start the course we look at the history of the ecosystem services concept, exploring the origins of the observation that nature supports many aspects of human welfare. Ecosystem Services has risen to prominence in policy making circles in the last decade (e.g. the Millennium Ecosystem Assessment and the UK National Ecosystem Assessment) and we look at the uses and abuses of the concept.	CR
W2 Jan 26 2012	Instruments and policies for incorporating ES into policies, projects and decisions We examine the ways in which ES ideas are currently used to shape policy and behaviour. The focus is on real projects and policies that try to include the value of ecosystem services. Notably this includes Payment for Ecosystem Services project (PES), certification schemes, and current policy approaches to Reducing Emissions from Deforestation and Degradation (REDD). We examine the science underpinning each of these, and the methods used to capture the value of ES.	CR
W3 Feb 2 2012	Practical valuation techniques 1: introduction to concepts We look at and discuss the reasons for economic valuation and the concept of total economic value. When is it useful to estimate economic value and when should this be avoided? Both market and non-market valuation techniques are introduced, and an overview of the methods is presented. <ul style="list-style-type: none"> • Group presentation 	EYM/IP
W4 Feb 9 2012	Practical valuation techniques 2: revealed preferences and cost-based approaches The ideas of market prices, production function approaches and surrogate market approaches to valuation will be presented, along with appropriate techniques to analyse related data. We will break into groups to use these techniques to value changes in for example: forest cover, water flows and hydro electricity production in Costa Rica; the value of wetlands to fisheries in East Africa; and national accounting of forest and other carbon stocks. <ul style="list-style-type: none"> • fieldwork preparation • Group presentation 	IP
W5 Feb 16 2012	Fieldwork. Note that this will take place on <u>Saturday</u> 18 Feb. There will be no session on Thursday the 16 th .	CR&IP
ILW Feb 23 2012	Innovative Learning Week No teaching. Activities will be organised by your degree programme director.	

<p>W6 March 1 2012</p>	<p>Practical valuation 3: Stated preferences and deliberative approaches We will examine non-use and option values as ways to capture the importance of ecosystem services for non-material aspects of human wellbeing. The use of quantitative and qualitative techniques to elicit preferences will be discussed. Drawing on legal approaches and insights from sociology and psychology, this session discusses how to combine qualitative approaches (focus groups, narratives and discourses) with quantitative tools (i.e. choice methods) to value social concepts like fairness and legitimacy. • Group presentation</p>	<p>IP</p>
<p>W7 March 8 2012</p>	<p>ES and poverty Ecosystem services directly support the livelihoods of many poor people in developing countries, by providing energy, food, fibre, medicine and many other services. Although maintaining these ecosystem services is vital to sustain livelihoods, it is less clear whether the effective use of ecosystem services can actually alleviate poverty? This session will explore the links between ecosystem services and poverty, and examine contemporary debates and current research on the topic (http://www.espa.ac.uk/) • Group presentation</p>	<p>PvG</p>
<p>W8 March 15 2012</p>	<p>Governance of ES Ecosystem services are typically difficult to govern. They span spatial domains that do not correspond with social institutions and they often have unclear or contested ownership. The move towards monetary valuation of ecosystem services can have perverse impacts where such valuation conflicts with existing property regimes. It can also reinforce inequalities and provoke conflict.. • Group presentation</p>	<p>SS</p>
<p>W9 March 22 2012</p>	<p>Managing complex systems Ecological systems are often complex and unpredictable. Dramatic changes are often undetectable before they happen, meaning that attempts to manage such systems can lead to perverse results. In this session we will look at how humans try to manage such systems using a model of an ecosystem, which you will have manage to meet certain objectives. The implications of the non-linear and complex behaviour of ecosystems on the valuation of ecosystem services will be discussed. • Group presentation</p>	<p>MaW</p>
<p>W10 March 29 2012</p>	<p>Trade-offs in operationalizing Ecosystem Services We will draw together our knowledge of the different ways of operationalizing ecosystem services., reviewing the different instruments available in terms of their, environmental effectiveness, economic efficiency, and fairness.</p>	<p>IP</p>

W11 April 5 2012	Overview and horizon scanning We will draw together the threads of the course and look at the challenges facing the ecosystem services agenda. Students can reflect on the course and provide feedback.	CR
---	---	----

Teaching staff

Dr Ina Porrás and Dr Essam Yassin Mohammed (International Institute for Environment and Development). Dr Porrás is an economist specialising in understanding markets for ecosystem services and analysis of the legitimacy and fairness of such markets, with expertise in Latin America. Dr Mohammed is an environmental economist at IIED. He specialises in valuation of ecosystem services, with an emphasis on wetlands, freshwater and marine ecosystems in Asia and Africa.

Dr Sam Staddon (University of Edinburgh) is a lecturer in Political Ecology and is an ecologist-turned-social scientist. Her research focuses on the social dimensions of nature conservation, particularly that involving community-based and devolved forms of environmental governance.

Dr Casey Ryan (University of Edinburgh) is a lecturer in Ecosystem Services and Global Change and is an ecologist and biogeochemist by training. His research is focused on land use change (particularly deforestation) in tropical countries.

Prof Paul van Gardingen (University of Edinburgh) holds the UNESCO Chair of International Development and is Director of the Ecosystems Services for Poverty Alleviation Programme (ESPA). His own research interests focus on ensuring that science, technology and innovation contribute to global international development and he has extensive research and fieldwork experience in southeast Asia and Africa.

Prof Mathew Williams (University of Edinburgh) holds a chair in Global Change Ecology. His research interests focus on understanding and predicting ecosystem processes, particularly linking models with data to advance knowledge.

Assessment

Policy brief (5 pages) on controversial issue in ecosystem services (30%). Due W5.

Write-up and analysis of the fieldwork data (30%). Due W8.

Group presentation (40%). Various dates.