

SCHOOL OF GEOGRAPHY AND THE ENVIRONMENT



**MSc ENVIRONMENTAL  
CHANGE AND  
MANAGEMENT**  
COURSE HANDBOOK 2011/12







## WELCOME TO THE SCHOOL OF GEOGRAPHY AND THE ENVIRONMENT



I am extremely pleased to welcome you to the University of Oxford. Oxford is a remarkably diverse and stimulating place, and our postgraduate programmes will be a substantial part of your intellectual and social life over the coming terms. Each and every programme has its essential core features and the chance to reach out and learn about the world in its remarkable diversity. I hope you will take advantage of what we have to offer, and what each College and the wider University has to offer in terms of your broader academic interests.

The School of Geography and the Environment, and its associated research centres in the Oxford University Centre for the Environment, offer a unique blend of teaching and research, providing undergraduates, MSc, MPhil and DPhil students across a range of cognate disciplines the means to engage in the big themes of the 21st century: from climate change to globalization; from the philosophy of nature and society to biodiversity and conservation; and from the frontiers of physical science to the hard realities of public policy and corporate decision-making. Our research expertise and the quality of our research (as recognised in the 2008 national assessment that placed us as the equal top Geography department in the UK), has important implications for our teaching, particularly at postgraduate level. We take pride in the range and scope of our postgraduate programmes, and we are committed to a level of intellectual engagement with the issues that will carry over into your research and subsequent careers. We want to make a difference; we believe that you are an important part of that commitment.

David Thomas  
Professor of Geography  
Head, School of Geography and the Environment

## To the International Graduate School



As Director of the International Graduate School, I am delighted to welcome you to Oxford and to the School. One of the most exciting aspects of being a graduate student is the opportunity to meet and get to know students from a remarkable range of backgrounds and disciplines, in the School, in your College and in Oxford more generally.

The challenges ahead of you are exciting and, for many of you, doubtless a little daunting. You should have confidence in your abilities and the experience that you are bringing to your new course. But you should also be ready to tackle new challenges and new ideas. The School is an intellectually demanding but supportive environment in which to study, combining independent and collaborative styles of working and providing a wealth of opportunities to engage in an energetic research culture through seminars, reading groups, field work and other events. I look forward to meeting you.

Gordon Clark  
Halford Mackinder Professor of Geography  
Director, International Graduate School



## ... and to the Environment Change Institute



As Course Director, I look forward to embarking with you on this intense but remarkable one year journey. One of the exciting things about being at the ECI is the wonderful creative mix of researchers, practitioners, and students who come together around our three critical environmental change and management themes: climate change, energy and lower carbon futures, and ecosystems and conservation. With such a dynamic, multidisciplinary combination of international expertise and experience, new synergies are bound to form. Through the course and the extraordinary array of extracurricular opportunities available, students inevitably help catalyze these synergies, and thus are a critical part of our institution's success. Members of our teaching team consistently remark upon how much they enjoy the mutual learning that goes on through seminars and one-on-one interactions with ECM students. I encourage you to engage with the team and the wealth resources and opportunities available within and beyond the School of Geography and Environment as a means of extending your learning. Get ready for a stimulating and challenging journey filled with new concepts, theories, people, problems, and experiences.

Tom Thornton  
Course Director and Senior Research Fellow



The Environmental Change Institute (ECI) is Oxford University's interdisciplinary institute for research on the complex processes of global environmental change, the exploration of sustainable solutions and the promotion of change for the better through partnership and education. It brings together researchers working on the science of climate change, energy use and ecosystems, and it adds value by working closely with social scientists concerned about policy implementation, cultural and social issues, and governance. The ECI seeks to promote an integrative and interdisciplinary approach to the challenges of environmental management. We work closely with academics right across Oxford University and with partners in academia, government, industry and NGOs worldwide.

As Director of ECI, I would also like to welcome you to ECI, and promise that your time with us will be fully utilised both in your own studies, but also in creating long lasting links with the many and varied researchers in ECI and Oxford University. The Environmental Change and Management course has built up a strong tradition over the past 15 years, and it is at the forefront of many of the key challenges facing the planet in the 21st Century; our aim is to get you to both learn about the issues and to contribute to their resolution. This is a tough assignment.

Jim W Hall  
Director of the Environmental Change Institute



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## INTRODUCTION

This handbook provides an overview of the MSc in Environmental Change and Management. It sets out the aims of the course, the content of the study programme and the various component parts of the course including lectures, electives, Friday workshops, field trips, examinations, and dissertations. The handbook contains important information about submitting coursework, guidelines for dissertations and attending examinations. **You should read through the booklet carefully and ensure that you understand your obligations throughout the course.** We will provide you with more detailed material for particular parts of the course throughout the year.

### The School of Geography and the Environment

The School of Geography and the Environment (SoGE) and its associated research institutes based in the Oxford University Centre for the Environment (OUCE), is an internationally recognised centre of excellence for environmental research and scholarship. The historical origins of SoGE lie in the former School of Geography, the first geography school to be established in Britain over 100 years ago by Halford Mackinder. The School was established through a co-operative effort between the Royal Geographical Society and Oxford University. From these deep roots the School has grown and prospered, with the ethos of the SoGE being to promote research that is bold, innovative and challenging, while remaining committed to the highest standards of scholarship.

Today, the SOGE is a leading institution, developing cutting edge research not only in the UK, but around the world. The SoGE is committed to training a new generation of graduate students in the core research fields of the environmental science and human geography, and in the new and exciting interdisciplinary research frontiers that exist between and across these disciplines.

The SOGE is home to the internationally recognised Environmental Change Institute (ECI) and other vibrant research centres such as the Oxford Centre for Water Research (OCWR), along with cross-departmental research groups, such as the Climate Systems and Policy, African Environments Programme (AEP) and the Global Environmental Change and Food Systems (GECAFS) international project office. Creative combination of theory and practice provides a relevant and fertile training ground for our postgraduates. Our research programmes span the globe, with researchers working in Africa, Asia, the Caribbean, and North America together with a strong record in Europe and the UK.

The SoGE currently offers three thesis-based higher research degrees (DPhil, MPhil and MLitt) and four taught MSc courses:

Environmental Change and Management MSc

Water Science, Policy and Management MSc

Biodiversity, Conservation and Management MSc



Nature, Society and Environmental Policy MSc

For more information on the SoGE see [www.geog.ox.ac.uk](http://www.geog.ox.ac.uk)

## The Environmental Change Institute

The ECI is an interdisciplinary institute that undertakes research on environmental issues, teaches this MSc, and fosters university-wide networks and outreach on the environment. The ECI was founded in 1991, through benefactions, and organised to answer questions about how and why the environment is changing and how we can respond pragmatically through public policy, private enterprise, and social initiatives.

The Institute is currently organised around three major research themes – climate change, energy and lower carbon futures, and ecosystem science and conservation – with close links to the SoGE research clusters in climate systems and policy and biodiversity. Most ECI staff are full time research scientists working on specific externally-funded projects within these research themes, although we also host a number of research fellows working more independently on cross-cutting issues. Many of the research projects have a goal of influencing and informing public policy and decisions about the environment. We encourage you to get acquainted with ECI staff, many of whom teach on the course, and their cutting edge research. For more information on the ECI see [www.eci.ox.ac.uk](http://www.eci.ox.ac.uk).

This interdisciplinary course is led by academics in the SoGE and other departments from economics to zoology, and supported by experienced practitioners, all of whom have considerable national and international expertise.

The core staff teaching on the course can be seen at <http://www.eci.ox.ac.uk/people/>

## Oxford Learning Environment

### Learning Approach

During your time at Oxford you will experience a wide range of different formats and styles of teaching from small group discussions to field visits, and from traditional lectures to public talks by some of the world's leading academics. In keeping with Oxford's tradition of academic freedom, the exact nature of the learning experience within any particular tutorial, seminar or lecture is left to the discretion of the lecturer which, we hope, produces a dramatic variety of learning experiences. The most typical forum for teaching and learning remains the lecture complemented by workshops, class discussions, field work and laboratory work.



In the International Graduate School, we place strong emphasis on peer group and individual learning. Your peer group consists of exceptionally talented scholars from around the world, many of whom have practical experience or extensive knowledge of issues and topics that are covered during the MSc course. We strongly recommend that you form strong academic bonds with your peers and we encourage this with small group projects, reading groups and discussions.

There is an obligation on you as an individual to develop your own spheres of interest within the subject area and to work hard at identifying gaps in your knowledge and training. Oxford's exceptional learning facilities provide unrivalled opportunities for individual and cross-disciplinary learning, not to mention the array of international researchers and scholars who present their work at lectures around the university. We urge you to take full advantage of all of these opportunities if you are to get the most out of your time at Oxford.

Staff members are available to advise students on reading, literature, and topics. An academic supervisor will be assigned to assist students with these matters and your Colleges will provide a personal advisor who can give additional support.

### Library and Learning Facilities

The Oxford University library system is extensive, with dozens of individual facilities around the city. The Radcliffe Science Library will fulfil many of your needs, but over the course, you will also need to seek out books from other locations. A tutorial on using the library facilities will be provided during induction week. More information may be found at <http://www.ox.ac.uk/libraries/>

### WebLearn

WebLearn is Oxford University's virtual learning environment. ECM has its own space where we post general course information along with lecture notes, reading lists and other materials specific to each module, workshop or field trip. There is also a class message board, and Weblearn contains information on all staff and students at Oxford, and their groups, thus allowing you to easily restrict access to certain cohorts. WebLearn can be accessed at <http://weblearn.ox.ac.uk>

### Oxford University Computing Services

Oxford University Computing Services (<http://www.oucs.ox.ac.uk/>) offer a wide range of Information Technology support including excellent training courses and a shop selling leading software at educational discount prices.

### Security and Care of Personal Belongings and Data

People outside the School have access to the building. It is important therefore that you are vigilant of your own and others valuables at all times. This applies particularly to laptops, tablets and phones. In an effort to combat crime the University runs registration schemes for bikes and personal possessions and you are encouraged to use these. Please contact your college for details. You are strongly advised



to back-up your data, lecture notes and drafts of written work at regular intervals. In addition, we request that you are particularly vigilant of 'tail gating' i.e. people coming in through the security barriers behind you and who lack swipe card access to the Department.



## MSc ENVIRONMENTAL CHANGE AND MANAGEMENT

The Master of Science in Environmental Change and Management (MSc ECM) is Oxford's most competitive and popular graduate science course, attracting 300–400 applicants each year. The course is a 1-year MSc by coursework, and consists of full time study with assessment by course assignments, written examinations and a 15,000 word dissertation.

### Course aims and content

The course aims are:

- To produce students who have a broad appreciation of all aspects of the management of people and institutions in relation to environmental change, who are analytical in their approach, and are competent and aware decision-makers.
- To display the nature, causes, extent, temporal characteristics and impacts of major types of environmental change, and to delineate how these changes operate on a global, regional and local scale.
- To provide knowledge of the legal, economic, cultural, and ethical underpinnings of mitigation, adaptation, and other remedial action or management, at different scales and within different organisational contexts.
- To develop a sympathetic understanding of how remedial action impinges on different societies and groups within society, and to understand the effects, equity and limits of such possible action.
- To provide a basic understanding of techniques for monitoring and analysis of environmental change and management.

The importance of interdisciplinary approaches in the solution of environmental problems is a major theme in this course. The course is structured to enable students to develop their own interdisciplinary thinking. We take a problem-based approach to interdisciplinarity through key environmental management issues. At the Masters level, we believe it appropriate that students are given the opportunity to explore diverse literatures, approaches, and issues concerning environmental change and management.

The training aims are:

- To develop and test student understanding of the basic principles involved in the wide range of subject material that can be involved in addressing environmental change.
- To develop specialist knowledge in at least two fields (via the elective programme).
- To develop and test student ability to bring the above two points together in order to develop an understanding of alternative courses of action in the management of environmental problems.



- To develop appreciation of the complex and multi-faceted nature of climate, energy, and ecosystem problems and to realise that solutions are often similarly complex and multi-faceted.
- To develop an ability to work collectively and to convey ideas and recommendations clearly and logically in oral, written, and multimedia formats.

## The Study Programme

### Overview

Seminars, lectures, and workshops form an important compulsory core of the ECM course. These take place in Oxford at local sites, while the field courses offer an opportunity to see aspects of environmental change and management in other settings. Electives allow for smaller group study and in-depth discussion in the typical Oxford "tutorial" atmosphere.

The end of the year examinations are designed to elicit a sense of the student's grasp of the wide range of material covered, and also are an opportunity for the students to display the results of their individual study and interdisciplinary synthesis. The dissertation is a major component of the course, and is an opportunity for individual, original, and specialised in-depth work on some aspect of environmental change and management.

The formal ECM course 'load' is designed to be sufficient to provide basic knowledge over a wide range of topics but not to be so great as to preclude students engaging in individual reading and study in order to broaden their knowledge. There is an obligation on you as an individual to develop your own spheres of interest within the subject area and to work hard at identifying gaps in your knowledge and training. Oxford's exceptional learning facilities provide unrivalled opportunities for individual learning, not to mention the array of international researchers and scholars who present their work at external lectures around the university. We urge you to take full advantage of all of these opportunities to make the most of your time at Oxford.

Staff members are available to advise students on reading, literature, and topics. An Academic Adviser will be allocated to assist students with these matters and your Colleges will provide a personal advisor who can give additional support.

### The MSc course comprises:

- Two terms of core lectures, assessed through written examination;
- Two elective modules, assessed through essays;
- Research skills training;
- Friday workshops, symposia, forums, field trips and supplementary lectures, and
- A research dissertation of 15,000 words.



## Core Lectures

Core lectures take place daily (Monday to Thursday), relate directly to your exams, and consist of the following:

### 1. Issues and Driving Forces

Growth and nature of environmental awareness. Critical issues in current and future environmental change in terrestrial, atmospheric, aquatic and marine systems. The forces driving change including population growth, production, consumption, resource scarcity, climate, and patterns of energy use. Concepts of climate, energy, and ecosystem dynamics, thresholds and sustainability.

### 2. Managing the Environment

The nature of environmental values, perceptions, behaviour and management at various levels, from individuals and households to businesses and communities, special interest groups, national and international actors and institutions.. How the above are mediated by cross-cutting dimensions of a legal, economic, ethical, cultural and ecological nature.

### 3. Methods and Techniques for Environmental Management

Basic computing, and modelling, social and ecological experimental design, data acquisition and handling, risk assessment and research ethics, GIS and remote sensing, surveys and monitoring.

The lectures are interlinked in cross-cutting modules during Michaelmas and Hilary terms.

## Elective Modules

(For full details, please see the Elective Modules Booklet.)

Elective Modules offer a small-group, tutorial-style teaching and discussion environment, based on a suite of contemporary research themes and subfields that reflect specific interests of core faculty and visiting research associates. Each student has the opportunity to identify elective modules of particular interest, though we cannot guarantee everyone's top choices, since spaces in electives are limited to maintain the small group dynamic. The teaching aim is to explore critical issues, concepts, theory, methods and practices in an academic space that encourages critical thinking and vigorous discussion and debate.

Students will be required to read and present work to the group throughout the term. Assessment will be by an essay (of no more than 4,000 words plus a 150-word abstract) on each of two elective modules; essays are due on the first Monday of the term after which the module was taken. Two hard copies of each essay must be submitted to the Clerk of the Schools, Examination Schools, High Street, Oxford OX1 4BG and marked for the attention of the chair of the MSc Examiners (Environmental Change and Management). One electronic PDF copy is also required to be submitted to Ussanee Sparrow, MSc Coordinator by the same deadline.



Outlines of the SoGE's available elective modules for 2011/2012 are listed in the Elective Booklet. Please note that module details may occasionally change on short notice due to changes in staff availability.

## Friday Workshops and Policy Forums

Friday workshops and policy forums provide an opportunity to explore topics in depth not dealt with in other parts of the MSc course. Many of these are of professional or vocational interest.

## Field Courses

Field trips take us to diverse sites to see environmental change and management in action. There are various mandatory field courses, most of which are residential. The exact number of trips and venues will be decided from year to year, and those planned for 2011/2012 are listed separately in this booklet (see end).

## Dissertation

The dissertation forms a significant part of the course in terms of student interest, learning and assessment. The end product is a dissertation of not more than 15,000 words. This is an opportunity for a student to investigate in depth a problem of their choice (after consultation with the Director) within the broad conspectus of environmental change and management.

A supervisor will be appointed to guide the student during this work, the bulk of which will be carried out after the examinations are over in May, and will be completed by the first Friday in September. It is expected that the best of the dissertations will be worthy of publication, and all should show high quality, competent and creative scholarship.

All dissertations will be judged on the degree to which they represent a logical, thorough, and intelligible report on a piece of research, of a standard expected of an Oxford Master's student.



### Course Overview by Term

Course Structure	MT	HT	TT	Summer
Climate Change Module (Wk 1)	✓			
Interdisciplinarity and Causal Explanations (Wk 2)	✓			
Research Design (Mon)	✓			
Development & the Environment (Tues)	✓			
Global Environmental Change and the Biosphere (Wed)	✓			
International Environmental Legal Frameworks (Thurs)	✓			
Energy and Lower Carbon Futures Module (Wk 1-2)		✓		
Environmental Economics (Mon)		✓		
Actors in Environmental Management (Tues)		✓		
Terrestrial and Marine Ecology (Wed)		✓		
Environmental Geography: Issues and Forces (Thurs)		✓		
Elective s	✓	✓		
Field Trips (Courses)	✓	✓	✓	
Research Skills	✓	✓		
Friday Workshops and supplementary lectures	✓	✓	✓	
Dissertation planning		✓	✓	
Dissertation research			✓	✓ Hand-in 7 <sup>th</sup> September 2012

### Oxford Terms

Michaelmas 2011	Sunday, 9 October	Saturday, 3 December
Hilary 2012	Sunday, 15 January	Saturday, 10 March
Trinity 2012	Sunday, 22 April	Saturday, 16 June

### Assessment

Regulations for the Degree of Master of Science (MSc) by coursework are set out in the University of Oxford Examination Regulations, known as the Grey Book. The assessment will consist of:

1. three individual examination components with each written component set in a three-hour paper as described in the schedule (40% of total marks);



2. a dissertation on a subject selected in consultation with the Academic Supervisor and/or Course Director (40% of total marks);
3. two assessed essays based on elective modules (20% of total marks).

The marking range for assessed work is:

- 70% and above (Distinction);
- 50-69% (Pass); and,
- Less than 50% (Fail)

### Criteria for overall classification

Based on a weighted average score, candidates will be classified as follows:

- Distinction: a weighted average score of 70% and above with grades of 50% or more for each examination paper and the dissertation.
- Pass: a weighted average score of between 50% and 69% with grades of 50% or more for each examination paper and the dissertation.
- Partial Pass: a weighted average score of between 50% and 69%, with a mark of less than 50% in (a) one or more examination paper(s) and/or (b) the dissertation.
- Fail: a weighted average score of less than 50%.

*In exceptional circumstances the examiners may decide to award a classification notwithstanding the conventions.*

### Re-assessment

A candidate who has been classified with a Partial Pass or Fail may enter again for each failed component on one, but not more than one, subsequent occasion.

Arrangements for reassessment will be as follows:

- Examination. Candidates may re-sit the failed examination component(s) in the Trinity Term of the following academic year.
- Dissertation. Candidates who fail the dissertation have to resubmit the dissertation by the required date the following academic year.
- Assessed essays. Candidates cannot resubmit a failed essay.

Candidates under re-assessment have neither the right to attend classes nor to expect further dissertation supervision.



### Electives/Assessed Essays

An Assessed Essay is set during the course of the Electives, the topic of which may be given or may arise from discussion. The essay will be 4,000 words plus a 150-word abstract and must be handed in by **12 noon to the Examination Schools. Hand -in dates are:**

- **Elective 1 (MT): Monday 16 January, 2012**
- **Elective 2 (HT): Monday 23<sup>rd</sup> April 2012**

### Examinations

Provisional dates for examinations are **23<sup>rd</sup>, 24<sup>th</sup>, 25<sup>th</sup> May 2012**. These will be confirmed in Hilary Term 2012.

### Dissertations

Criteria for the assessment of dissertations are contained in the **Dissertation Regulations and Guidelines**, which are appended. The dissertation is to be handed in by **noon on Friday, 7<sup>th</sup> September 2012**, at the Examination Schools. See the section on dissertation guidelines for further information.

### Penalties relating to late submissions

Penalties will apply to the grade awarded for any piece of late submitted work (without prior proctorial permission):

- a) Up to 20% deducted from the work submitted between one hour and 7 days late;
- b) Between 21 -30% of the assessed grade for work submitted between 8 and 14 days late; and,
- c) No marks (0%) if the work is submitted more than 14 days late.

### Plagiarism

Oxford University imposes severe sanctions for cases of plagiarism. In the most extreme case, a student will be judged to have failed the course. These regulations are imposed by the University and if a student is suspected of plagiarism the matter is likely to pass to the Proctors who will rule on the matter independently of the School of Geography and the Environment. We expect students enrolled at Oxford to exhibit the highest standards of academic integrity and not knowingly submit any work or intellectual ideas that have been adapted from or copied from a third-party source without appropriate recognition (see below). In addition, we expect all assessed work you submit to represent new and original writing conducted during your relevant terms in Oxford. It is not acceptable to re-package essays presented for degrees elsewhere (i.e. self-plagiarism). Students found suspected of plagiarism will be referred to the Proctors, and if plagiarism is confirmed the student may be failed.

We will discuss these rules and expectations regarding plagiarism. You will be required to sign a 'plagiarism declaration' form which accompanies each piece of submitted assessed work.

<http://www.admin.ox.ac.uk/epsc/plagiarism/index.shtml>



## MICHAELMAS TERM LECTURE PROGRAMME 2011

(N.B. In case of unexpected events, some topics, times, and lecturers may have to change.)

The first two weeks of the term are intensive modules consisting of: 1) the climate change module, known as 'Climate Week,' and 2) an integrative module entitled, 'Interdisciplinarity and Causal Explanations for Societal Collapse and Environmental Change,' which includes discussion of your pre-course reading assignment. Following this, the term consists of lectures, electives, field trips and workshops.

Course Structure	Michaelmas
Climate Change Module (Wk 1)	✓
Interdisciplinarity and Causal Explanations (Wk 2)	✓
Research Design (Mon)	✓
Development & the Environment (Tues)	✓
Global Environmental Change and the Biosphere (Wed)	✓
International Environmental Legal Frameworks (Thurs)	✓
Electives	✓
Field Trips	✓
Research Skills	✓
Friday Workshops and supplementary lectures	✓

Week 1: Climate Week

	9:00-10:00	10:00-11:00	11:00-12:00	12:00-13:00	13:00-14:00	14:00-15:00	15:00-16:00	16:00-17:00	
Monday 10 October <b>9.30 start</b>	<b>Introduction</b> Jim Hall Tom Thornton	<b>"Overview of the greenhouse effect"</b> Richard Washington	<b>"Thinking about doing something about climate".</b> Chris West	<b>Climate change and biodiversity</b> Pam Berry	<b>LUNCH</b>	<b>14.30 – 15.30 "A Low Carbon Future – Challenges for the Energy System"</b> Nick Eyre	<b>Guided Reflection</b> Nick Eyre	<b>Economics of adaptation</b> Sam Fankhauser	
Tuesday 11 October	<b>"Climate modelling and prediction"</b> Myles Allen	<b>"Long-term projections and implications"</b> Myles Allen	<b>"Climate change and adaptation in the Far North"</b> Tom Thornton			<b>Economics of Climate Change "Government failure and market failure: on the inefficiency of environmental and energy policy"</b> Bob Hahn	<b>Guided reflection</b> Tom Thornton	<b>"Ocean Memory and Prediction of Climate"</b> Carl Wunsch	
Wednesday 12 October	<b>"Climate and weather"</b> Myles Allen	<b>"Causal factors in weather events"</b> Myles Allen	<b>"Flood risk management in the Thames Estuary"</b> Jim Hall			<b>"Costing climate adaptation"</b> Paul Watkiss	<b>Guided discussion</b> Staff	<b>"Biodiversity and Climate Change": Panel discussion:</b> Myles Allen Yadvinder Malhi	
Thursday 13 October	<b>"Observed climate change over the past century"</b> Richard Washington	<b>"Attribution of global changes"</b> Richard Washington	<b>11.00 – 11.30 Coffee Break</b>	<b>11.30 – 12.30 "Drought impacts in the Iberian Peninsula"</b> Katie Jenkins		<b>13.45 – 14.45 "Integrated modelling of climate and energy systems"</b> Alexander Lorenz	<b>14.45 to 15.45 "Policies for ambitious CO2 emission targets. The UK in a low carbon world."</b> John Rhys	<b>16.00 – 17.00 Venue: Lindemann Lecture Theatre "Climate Change as a Global Shifting Force".</b> Sir David King	
Friday 14 October 9.30 a.m start	<b>"Great Expectations: Shaping the Post-2012 Climate Governance Architecture"</b> Harro van Asselt	<b>10.30 – 11.00 Coffee Break</b>	<b>"What went wrong with Kyoto"</b> Steve Rayner			<b>"Ethics of climate change" (facilitated discussion)</b> Richard Caplan	<b>"Who should bear the burden of climate change?"</b> Simon Caney	<b>"Designing and delivering climate compatible development"</b> Sam Bickersteth	

Timetable subject to change.

Venue Details:

- 09.00 – 13.00 Lectures will be in the Blue Boar Room at Christ Church
- 14.00 – 16.00 Lectures will be in the Beckit Room at OUCE
- The Public lectures will be held in the OUCE Lecture Theatre except on 13 October when it will be in the Lindemann Lecture Theatre

## Week 2: Interdisciplinarity and Casual Explanations for Societal Collapse and Environmental Change

	9:00-11:00	11:30-12:30	12:30-14:00	14:00-16:00	16:00-
Monday 17 October	<b>Introduction</b> Ariella Helfgott Tom Thornton  <b>Interdisciplinarity in Theory and Practice</b> Ariella Helfgott	<b>"Stopover in Takal"</b> Ariella Helfgott, et al.	<b>LUNCH</b>	<b>Explaining human causes of environmental change</b> A.P. Vayda	David Grey - tbc
Tuesday 18 October	<b>Group work</b>			<b>Causal histories and causal models of environmental hange events</b> A.P. Vayda	
Wednesday 19 October	<b>Collapse Discussion</b> Tom Thornton				<b>People, paper fish and privatization: Human rights, social equity, environmental impacts and other externalities in the Icelandic post-crisis fisheries</b> Niels Einarsson:
Thursday 20 October	<b>Group work</b>			<b>Causal reasoning I- case studies</b> A.P. Vayda	<b>ECI Reception with Students and Staff</b> (17:00)
Friday 21 October	<b>Climate Change Presentations</b>			<b>Causal reasoning II- case studies</b> A.P. Vayda	

Monday 24 Oct (2-4p) Environmental Change Research Design (Vayda 2009: 43-47 [Ch. 1, Concl.], Nyerges, Dialogues reviews): student group presentations around causal research questions.

Readings for seminars on explaining human causes of environmental change based on Andrew P. Vayda's recent works:

1. Monday, 17 Oct (2-4p): Introduction (Causal Explanation for Social Scientists, Preface, Introduction (skim), Ch. 1, 24, 23, + Peat paper)
2. Tuesday 18 Oct (2-4p) Causal Histories and Causal Models of Environmental Change Events (CESS: Ch. 5, 10, 11, 22 --Ch. 12 supplemental)
3. Thurs 20 Oct (2-3p) Causal Reasoning I- Case Studies (CESS Ch. 13, 14, 15, 16)
4. Friday 22 Oct (2-3p) Causal Reasoning II-Case Studies (CESS Ch. 17, 18, 19, 20)
5. Monday 24 Oct (2-4p) Environmental Change Research Design (Vayda 2009: 43-47 [Ch. 1, Concl.], Nyerges, Dialogues reviews): student group presentations around causal research questions.

## WEEKS 3 – 8

### MONDAY – Research Design, Methods, Ethics and Risk

2.00–4.00pm, Beckett Room

**Short Description:** Introduces techniques for interdisciplinary research design and investigation of key environmental change and management problems. –.

**Lecturers:** Tom Thornton, Ariella Helfgott, Rob Hope, Lauren Coad, Robert Dunford, Sarah Darby, Kersty Hobson

#### Lecture Topics:

Week	Lecture Date	Topic	Lecturer
3	24 Oct	Environmental change research design	Tom Thornton, A.P. Vayda
4	31 Oct	Investigate cultural diverse ecological knowledge and conservation and sustainability practices	Tom Thorn8ton
5	6 Nov	Assessing the economics of social choice and payments for ecosystem services	Rob Hope
6	13 Nov	Using GIS and remote sensing in environmental change research	Lauren Coad and Robert Dunford
7	20 Nov	Designing and interpreting quantitative and qualitative research on energy and consumption	Sarah Darby and Kersty Hobson ECI
8	27 Nov	Ethics, risk, and research proposals	Tom Thornton, et al

#### Preparatory reading list

Additional readings may be made available prior to the lectures.

- Bernard, H. Russell. *Handbook of Methods in Cultural Anthropology*. Altimira Press, 2000.
- Crang M and Cook I (2007) *Doing Ethnographies* (London, Sage)
- Hunn, E.S., Johnson, D.R., Russell, P.N. and Thornton, T.F. (2003) Huna Tlingit traditional environmental knowledge, conservation, and the management of a "Wilderness" Park.. *Current Anthropology*, 44 (Supp.): S79–S103.
- King, Gary, Robert O. Keohane, and Sidney Verba. *Designing Social Inquiry: Scientific Inference in Qualitative Research*. Princeton, New Jersey: Princeton University Press, 1994.
- Newing, Helen, Eagle, C. M., Puri, R.K., Watson, C.W. 2010. *Conducting Research in Conservation: Social science Methods and Practice*. Routledge
- Ragin, Charles C. "Introduction." *What Is a Case: Exploring the Foundations of Social Inquiry*. Eds. Charles C. Ragin and Howard S. Becker. New York: Cambridge University Press, 1992. 1–17.
- Vayda, Andrew P. 2009. *Explaining Human Actions and Environmental Changes*. Altimira.
- Vayda, Andrew P. and Walters, B. B. (Eds.). 2011. *Causal Explanation for Social Scientists*. Altimira.
- Yin, Robert K. *Case Study Research*. Applied Social Science Research Methods Series. Ed. Leonard Bickman. Vol. 5. Beverly Hills: Sage Publications, 1984.

## TUESDAY - Development and the Environment

2.00–4.00pm, Becket Room

**Short Description:** This course covers different theoretical and analytical approaches to understanding the relationship between development and the environment, with a view to revealing the practical, real-world stakes attached to pursuing “solutions” that derive from these different perspectives. We provide an introduction to the history of the development/environment nexus of ideas and practices, and an overview theoretical debates and empirical case studies about how economic development has interacted with the environment and to the institutions that administer the human-nature relationship at different scales in the developing world. The relevance of these different theories/methods will be explored in more depth through analyses of particular topics such as agriculture and land-use change, climate change and development, and the relationship between the current financial crisis, development and the environment. The course will also focus on ideas for moving ahead, and for dealing with the myriad of development-environment challenges facing the world. The goal of the class is to help students a) grasp different ways of analysing the root causes of the environment-development challenge, b) develop the capacity to critically evaluate the promises and pitfalls of these different approaches, c) understand the relationship between theory and practice, and d) identify some solutions to the sustainable development problem

**Lecturers:** Kamal Kapadia (KK), ESRC Postdoctoral Research Fellow, ECI [Kamal.kapadia@eci.ox.ac.uk](mailto:Kamal.kapadia@eci.ox.ac.uk) and Diana Liverman (DL), Visiting Professor of Environmental Policy and Development and Senior Research Fellow in ECI ([diana.liverman@eci.ox.ac.uk](mailto:diana.liverman@eci.ox.ac.uk))

### Lecture Topics:

Week	Lecture Date	Topic	Lecturer
3	25 Oct	A brief history of environment and development thought and practice	Kamal Kapadia
4	1 Nov	Trade and markets: Cause or solution to environment and development problems?	Diana Liverman
5	8Nov	Agriculture and land-use change	Kamal Kapadia
6	15 Nov	Climate change and development	Diana Liverman
7	22 Nov	International institutions (UNEP, World Bank, international NGOs) and sustainable development	Diana Liverman
8	29 Nov	Film: TBC	

### Lecture Topics and Readings

The syllabus is divided into required and supplementary readings. Required readings are *\*strictly\** required, and classes will progress on the assumption that students have completed these readings before coming to class. All required material can be found on the course website on Weblearn. A supplementary readings list is included

below; these readings can be obtained online or in Oxford libraries. Supplementary readings are a starting point for digging deeper into a given topic, and could be useful for future study and research.

### **Class 1. A brief history of environment and development thought and practice**

This class will briefly survey the modern global history of environment and development thought and practice, in order to understand the “how did we get here?” question. Through historical analysis, we will explore how “development” has always been a highly contested idea with different theories gaining traction at different times, examine the specific ways in which development and environmental issues have always been linked, and understand how “development” is a process that is fundamentally shaped by relationships between the west and the rest, first and third worlds, rich and poor, powerful and less powerful, etc.

- Elliot, J. 2006. An introduction to sustainable development (3rd ed.) Routledge: London. READ part of Chapter 1: “What is sustainable development?” pp. 15-43.
- Wood, R. 1986. From Marshall Plan to Debt Crisis: foreign aid and development choices in the world economy. Berkeley: University of California Press. READ Introduction to Part One: Alternatives to Aid AND Chapter 1: The Marshall Plan and the origins of the aid regime. Pp. 21-67.
- D. Kapur et al (eds.) 1997. The World Bank: its first half century. Washington: Brookings Institution Press. READ some pages of Chapter 13 by Robert Wade titled “Greening the Bank: the struggle over the environment,” 1979-1995. Pp 611-614 and 729-734.

### **Class 2. Trade and markets: Cause or solution to environment and development problems?**

This class will examine debates about trade and markets as solutions to development problems including those about the ‘neoliberal’ processes of free trade, market environmentalism and ecological modernization. The case study for this lecture will examine the debates about free trade and the environment using the case of the North American free trade agreement and about market environmentalism using examples from Latin America.

- Chomitz, K.M., Brenes, E. & Constantino, L. 1999. Financing environmental services: the Costa Rican experience and its implication. *The Science of the Total Environment* 240:157-169.
- Liverman D.M., and Vilas S. 2006. Neoliberalism and the Environment in Latin America. *Annual Review of Environment and Resources* 31:327-63
- Gallagher, K.P. 2009. Economic globalization and the environment. *Annual Review of Environment and Resources* 34:279-304.
- OECD. 1998. Trade, Investment and Environmental Integrity pp. 64-74 in *Open Markets Matter: The Benefits of Trade and investment Liberalisation*. OECD, Paris.  
[http://www.dfat.gov.au/trade/negotiations/trade\\_liberal.pdf](http://www.dfat.gov.au/trade/negotiations/trade_liberal.pdf)
- Pattanayak, S.K., S. Wunder, and P.J. Ferraro. 2010. Show me the money: do payments supply environmental services in developing countries? *Review of Environmental Economics and Policy* 4 (2):254.
- Rojas Manrique and Bruce Aylward. 2003. What are we learning from experiences with markets for environmental services in Costa Rica? A review and critique of the literature. IIED, Environmental Economics Programme.



WWF. 1999. From Liberalisation to Sustainable Development: A Critique of the OECD paper "Open Markets Matter: the Benefits of Trade and Investment Liberalisation. (response to OECD)  
[http://www.panda.org/downloads/policy/liberal\\_download.doc](http://www.panda.org/downloads/policy/liberal_download.doc)

### **Class 3. Agriculture and land-use change**

This class will focus on the interrelationship between changing agricultural practices, environmental transformations (e.g. deforestation), and socio-economic trends. We will compare mainstream policy analysis (of the World Bank) with more critical perspectives, and briefly survey debates on topics such as the WTO and agriculture, population and land use change, and common property resource management.

World Bank. 2008. World Development Report 2008: agriculture for development. Washington D.C.: The World Bank. READ "Overview." Pp. 1-25 and Chapter 8: "Making agricultural systems more environmentally sustainable."

Patel, R. 2007. Stuffed & starved: markets, power and the hidden battle for the world food system. London: Portobello Books. READ Chapter 7: "Glycine Rex" Pp. 165-214.

Leach, M. And Fairhead, J. 2000. Challenging neo-Malthusian deforestation analyses in West Africa's dynamic forest landscapes. *Population and Development Review* 26(1): 17-43.

### **Class 4. Climate change and development**

In this class we will evaluate different perspectives on the nature of the climate-development challenge, and discuss different proposed solutions (e.g. CDM and REDD, as well as more locally-driven initiatives). We will also discuss the concept of climate justice and compare it with other perspectives on the climate-development problem, and examine the concept and practice of adaptation to climate change.

Agrawal, A., R. Mearns, and A. Norton. 2010. Local institutions and adaptation to climate change. *Social dimensions of climate change: equity and vulnerability in a warming world*:173.

Ayers, J., and D. Dodman. 2010. Climate change adaptation and development: The state of the debate. *Progress in Development Studies* 10 (2):161-168.

Lemos, M.C., E. Boyd, E.L. Tompkins, H. Osbahr, and D. Liverman. 2007. Developing adaptation and adapting development. *Ecology and Society* 12 (2):26.

Gupta, J. 2009. Climate change and development cooperation: trends and questions. *Current Opinion in Environmental Sustainability* 1 (2):207-213.

Liverman, D.M. 2009. Carbon offsets, the CDM, and sustainable development. *Global Sustainability: A Nobel Cause*:129-142.

Liverman, D., and S. Billett. 2010. Copenhagen and the Governance of Adaptation. *Environment: Science and Policy for Sustainable Development* 52 (3):28-36.

World Bank. 2010. Changing the Climate for Development. Overview from World Development Report 2010: Development and Climate Change.



### **Class 5: International institutions (UNEP, World Bank, international NGOs) and sustainable development**

This lecture traces the development of major development institutions and how their environmental policies have changed over time in response to criticism from researchers and social movements. We will look at the Bretton Woods institutions, especially the World Bank, and at the United Nations and at the approaches they have taken to environment and development and the responses from non governmental organizations. We will examine the prospects for the upcoming RIO+20 summit in June 2012.

Conca Ken, "Greening the United Nations : Environmental Organizations and the UN System", Third World Quarterly, 16, 3, 1995

Daly HE. 1994. Fostering environmentally sustainable development: Four parting suggestions for the World Bank. Ecological Economics 10:183-7

Goodland, R. and Daly, H. (1996) Environmental Sustainability: Universal and Non-Negotiable. Ecological Applications, Vol.6, No. 4, pp1002-1017

Stiglitz J.E. 1999. The World Bank at the Millennium. The Economic Journal 109:577-97

New York University. Making Rio 2012 Work: Setting the stage for global economic, social and ecological renewal. [http://www.uncsd2012.org/rio20/content/documents/evans\\_steven\\_rio.pdf](http://www.uncsd2012.org/rio20/content/documents/evans_steven_rio.pdf)

UNCTAD. The Road to RIO+20: For a development led Green Economy. Pp. 1-23 (Sachs, Daly and Kimble) <http://www.uncsd2012.org/rio20/content/documents/1150172%20Low%20RES.pdf>

### **Supplement Readings**

#### **Class 1. A brief history of environment and development thought and practice**

Elliot, J. 2006. An introduction to sustainable development (3rd ed.) Routledge: London. READ part of Chapter 1: "What is sustainable development?" pp. 15-43.

Wood, R. 1986. From Marshall Plan to Debt Crisis: foreign aid and development choices in the world economy. Berkeley: University of California Press. READ Introduction to Part One: Alternatives to Aid AND Chapter 1: The Marshall Plan and the origins of the aid regime. Pp. 21-67.

D. Kapur et al (eds.) 1997. The World Bank: its first half century. Washington: Brookings Institution Press. READ some pages of Chapter 13 by Robert Wade titled "Greening the Bank: the struggle over the environment," 1979-1995. Pp 611-614 and 729-734.

Cooper, F., Packard, R. (eds.) 1998. International development and the social sciences: essays on the history and politics of knowledge. Berkeley: Univ. of California

Diamond, J. 1999. Guns, germs and steel: the fates of human societies. London: W. W. Norton & Co

Elliott, L. 2004. The global politics of the environment (second edition). Basingstoke: Palgrave Macmillan. Read: Chapter 1: From Stockholm to Rio to Johannesburg, pp. 7-28.

Hart, G. 2010. D/developments after the Meltdown. Antipode 41(s1): 117-141.

Rist, G. 2002. The history of development: from Western origins to global faith. London: Zed Books.

Grove R., Damodaran V., Sangwan S. 1998. Nature and the Orient: essays on the environmental history of South and Southeast Asia. New Delhi: Oxford University Press.

Goldman, M. 2005. Imperial nature: the World Bank and struggles for social justice in the age of globalization. New Haven: Yale Press. Read Chapters 1-4.



- Gowan, P. 1999. *The global gamble*. London: Verso
- Harvey, D. 2005. *A brief history of neoliberalism*. Oxford: Oxford University Press
- Klein, N. 2007. *The shock doctrine: the rise of disaster capitalism*. New York, Metropolitan Books.
- McNeill J. 2001. *Something new under the sun: an environmental history of the twentieth-century world*. London: W. W. Norton & Company
- Worster D. 1988. *The ends of the earth: perspectives on modern environmental history* Cambridge University Press
- Blaikie P. 2000. Development, post-, anti-, and populist: a critical review. *Environment and Planning A* 32: 1033–50
- Blaikie, P. and H. Brookfield. 1987. *Land degradation and society*. London: Routledge. Read chapters 1 and 2.
- Castree, N. And Braun, B. 2001. *Social Nature: theory, practice and politics*. Oxford: Wiley-Blackwell
- Escobar, A. 1995. *Encountering development: the making and unmaking of the Third World*. Princeton: Princeton University Press.
- Harvey, D. 1996. *Justice, nature and the geography of difference*. Oxford: Wiley-Blackwell.
- Hecht, S. 1985. Environment, development and politics: capital accumulation and the livestock sector in Eastern Amazonia. *World Development* 13(6): 663–684
- Jacquette, J. and Summerfield, G. (eds). 2006. *Women and Gender Equity in Development Theory and Practice*. Durham, NC: Duke University Press.
- Jones S. and Carswell G. (eds.) 2004. *Earthscan reader in environment, development and rural livelihoods*. London: Earthscan.
- Liverman D., Vilas S. 2006. Neoliberalism and the environment in Latin America. *Annual Review of Environment and Resources* 31:327–63
- Mitchell, T. 2002. *Rule of experts: Egypt, techno-politics, modernity*. Berkeley: University of California Press. See chapters: “Can the mosquito speak?” and “The Object of Development”
- Moore, D. Kosek, J. and Pandian, A. 2003. *Race, nature, and the politics of difference*. Durham: Duke University Press.
- Peet R. and Watts M. 1993. Development theory and environment in an age of market triumphalism. *Economic Geography* 69
- Robbins, P. 2004. *Political ecology: a critical introduction*. Blackwell: Oxford.
- Stiglitz J. 2002. *Globalization and Its discontents*. London: W. W. Norton & Company
- Watts, M. and Peet, R. 2004. *Liberation ecologies: environment, development, social movements*. London: Routledge
- UNDP. 2008. *Human Development Report 2007/2008: Fighting climate change –human solidarity in a divided world*. New York: United Nations Development Programme
- UNDP, UNEP, The World Bank, and World Resources Institute, 2005. *World Resources 2005: the wealth of the poor: managing ecosystems to fight poverty*.

## **Class 2. Trade and markets: Cause or solution to environment and development**

- Antweiler & Brian R. Copeland & M. Scott Taylor, 2001. Is Free Trade Good for the Environment?, *American Economic Review*, American Economic Association, vol. 91(4), pages 877–908, September.
- Bakker, K. 2010. The limits of ‘neoliberal natures’: Debating green neoliberalism. *Progress in Human Geography*



34 (6):715.

- Bebbington, A. 2010. Contesting Environmental Transformation: Political Ecologies and Environmentalisms in Latin America and the Caribbean. *Latin American Research Review* 44 (3):177–186.
- Bernstein, Steven 2002. Liberal Environmentalism and Global Environmental Governance *Global Environmental Politics* 2:3, 1–16 August 2002
- Daniels, A.E., K. Bagstad, V. Esposito, A. Moulaert, and C.M. Rodriguez. 2010. Understanding the impacts of Costa Rica's PES: Are we asking the right questions? *Ecological Economics*.
- Dean JM. 1992. Trade and the Environment: A Survey of the Literature: Office of the vice president, Development Economics, World Bank [http://www-wds.worldbank.org/servlet/WDSContentServer/WDSP/IB/1992/08/01/000009265\\_3961003065706/Rendered/PDF/multi\\_page.pdf](http://www-wds.worldbank.org/servlet/WDSContentServer/WDSP/IB/1992/08/01/000009265_3961003065706/Rendered/PDF/multi_page.pdf)
- Fisher DR, Freudenburg WR. 2001. Ecological Modernization and Its Critics: Assessing the Past and Looking Toward the Future. *Society and Natural Resources* 14:701–9
- Gómez-Baggethun, E., R. De Groot, P.L. Lomas, and C. Montes. 2010. The history of ecosystem services in economic theory and practice: from early notions to markets and payment schemes. *Ecological Economics* 69 (6):1209–1218.
- Gore, Charles 2000 The Rise and Fall of the Washington Consensus as a Paradigm for Developing Countries”, *World Development*, 28, 5, 2000
- Kosoy, N., and E. Corbera. 2010. Payments for ecosystem services as commodity fetishism. *Ecological Economics* 69 (6):1228–1236.
- Liverman DM, Varady RG, Chávez O, R S. 1999. Environmental issues along the United States–Mexico border: Drivers of change and responses of citizens and institutions. *Annual Review of Energy and the Environment* 24:607
- Liverman, D. 2004. Who governs, at what scale and at what price? *Geography, environmental governance, and the commodification of nature. Annals of the Association of American Geographers* 94 (4):734–738.
- McAfee, K., and E.N. Shapiro. 2010. Payments for ecosystem services in Mexico: Nature, neoliberalism, social movements, and the state. *Annals of the Association of American Geographers* 100 (3):579–599.
- Mol APJ. 2002. Ecological Modernization and the global economy. *Global environmental Politics* 2:92–115
- Nordstrom Hakan and Vaughn, Scott. 1999. Trade and Environment. *WTO Special Studies* No 4.
- Norgaard, R.B. 2010. Ecosystem services: From eye-opening metaphor to complexity blinder. *Ecological Economics* 69 (6):1219–1227.
- Norgaard, R.B., and L. Jin. 2008. Trade and the governance of ecosystem services. *Ecological Economics* 66 (4):638–652.
- Perreault T, Martin P. 2005. Geographies of neoliberalism in Latin America. *Environment and Planning A* 37:191–201
- Sánchez RA. 2002. Governance, trade, and the environment in the context of NAFTA. *American Behavioral Scientist* 45:1369–93
- Sommerville, M.M., J.P.G. Jones, and EJ Milner–Gulland. 2009. A revised conceptual framework for payments for environmental services. *Ecology and Society* 14 (2):34.
- Tallis, H., R. Goldman, M. Uhl, and B. Brosi. 2009. Integrating conservation and development in the field: implementing ecosystem service projects. *Frontiers in Ecology and the Environment* 7 (1):12–20.

- Van Hecken, G., and J. Bastiaensen. 2010. Payments for Ecosystem Services in Nicaragua: Do Market based Approaches Work? *Development and Change* 41 (3):421–444.
- Van Hecken, G., and J. Bastiaensen. 2010. Payments for ecosystem services: justified or not? A political view. *Environmental Science & Policy*.

### Books

- Copeland, B.R., and M.S. Taylor. 2005. *Trade and the environment: Theory and evidence*: Princeton Univ Pr.
- Daily GC, Ellison K. 2002. *The New Economy of Nature: The Quest to Make Conservation Profitable*: Island Press
- Fine B, Lapavitsas C, Pincus J. 2001. *Development Policy in the Twenty-First Century: Beyond the Post-Washington Consensus*: Routledge
- Gallagher, K. 2008. *Handbook on trade and the environment*: Edward Elgar Publishing.
- Gallagher KP. 2004. *Free Trade and the Environment: Mexico, NAFTA, and Beyond*. Palo Alto: Stanford University Press
- Hajer MA. 1997. *The Politics of Environmental Discourse: Ecological Modernization and the Policy Process*: Oxford University Press, USA  
<http://www.oxfordscholarship.com/oso/private/content/politicalscience/019829333X/p007.html>
- Harvey D. 2005. *A Brief History of Neoliberalism*: Oxford University Press
- Hogenboom B. 1998. *Mexico and the NAFTA environment debate : the transnational politics of economic integration*. Utrecht: International Books
- Polanyi K, 2001. *The Great Transformation: The Political and Economic Origins of Our Time*: Beacon Press
- Stiglitz JE. 2003. *Globalization and Its Discontents*: WW Norton & Company

### Class 3. Agriculture and land-use change

- Berry, S. 1993. *No condition is permanent: the social dynamics of agrarian change in sub-Saharan Africa*. Madison: University of Wisconsin Press.
- Davis, Mike 2001. *Late Victorian Holocausts: El Nino famines and the making of the third world*. London and New York: Verso.
- Ericksen, P.J., J.S.I.Ingram, D. Liverman (eds) 2009. Special issue of *Environmental Science and Policy* on "Food Security and Environmental Change" 12(4)
- FAO, State of Food and Agriculture, see recent reports.
- Fairhead J. and M. Leach. 1996. *Misreading the African Landscape: society and ecology in a forest-savanna mosaic*. Cambridge: Cambridge University Press.
- Friedmann, Harriet. 1982. "The political economy of food: the rise and fall of the postwar International Food Order." *American Journal of Sociology* 88:248–286.
- Fulton, R. and Buterbaugh, K. 2007. *The WTO primer: tracing trade's visible hand through case studies*. New York: Palgrave Macmillan
- Hardin G., Baden J. 1977. *Managing the commons*. San Francisco: WH Freeman
- Hough, P. 1998. *The global politics of pesticides: forging consensus from conflicting interests*. London: Earthscan
- Ingram, J., Ericksen, P. and Liverman, D. (2010) *Food Security and Global Environmental Change*. Earthscan. 352 pp. ISBN 9781849711289.
- Kloppenborg Jr., J. 1988. *First the seed: the political economy of plant biotechnology, 1492–2000*. New York:



Cambridge University Press

- Lang, T. 2003. Food industrialisation and food power: implications for food governance. *Development Policy Review*, 21 (5-6): 555-568
- McCullough, E. Pingali, P. and Stamoulis, K. (eds.) 2008. *The transformation of agri-food systems: globalization, supply chains and smallholder farmers*. London: Earthscan
- Meadows, D.H. et al (1992) *Beyond the limits: global collapse or a sustainable future*. London: Earthscan Publications.
- Millennium Ecosystem Assessment, 2005. *Current State & Trends Assessment*. Washington D.C.: World Resources Institute. Read chapters 3 (drivers of change), 8 (food ecosystem services) and 26 (cultivated systems)
- Newell, P. 2003. Globalization and the governance of biotechnology. *Global Environmental Politics* 3:2
- Ostrom E. 1990. *Governing the commons*. Cambridge University Press New York
- Pollan, M. 2007. *The omnivore's dilemma: a natural history of four meals*. New York: Penguin
- Shiva, V. (ed.), Petrini, C., Lionette, J. 2007. *Manifestos on the future of food and seed*. Cambridge: South End Press, 2007.
- Taylor P. 2005. In the market but not of it: Fair Trade coffee and Forest Stewardship Council certification as market-based social change. *World Development* 33:129-47
- WFP, 2009. *Hunger and markets: World Hunger Series*. United Nations World Food Programme 2009
- Zimmerer, K. 2007. Agriculture, livelihoods, and globalization: the analysis of new trajectories (and avoidance of just-so stories) of human-environment change and conservation. *Agriculture and Human Values* 24:9-16

#### **Class 4. Climate change and development**

- Agarwal, A. 2008. *The role of local institutions in adaptation to climate change* (Paper prepared for Social Development Department, World Bank). Washington DC: World Bank.
- Ayers, JM, and S Huq. 2009. The Value of Linking Mitigation and Adaptation: A Case Study of Bangladesh. *Environmental Management* 43 (5):753-764.
- Boyd, E., H. Osbahr, P.J. Ericksen, E.L. Tompkins, M.C. Lemos, and F. Miller. 2008. Resilience and 'Climatizing' Development: Examples and policy implications. *Development* 51 (3):390-396.
- Boyd, E., Hultman, N., Timmons R., Corbera, E., Cole, J., Bozmoski, A., Ebeling, J., Tippman, R., Mann, P., Brown, K., Liverman, D. 2009. Reforming the CDM for sustainable development: lessons learned and policy futures. *Environmental Science & Policy*, 12(7): 820-831.
- Boykoff, M. (ed.) 2009. *The Politics of Climate Change: a Survey*. Routledge: London
- Brown, K. and Corbera, E. 2003: Exploring equity and sustainable development in the new carbon economy. *Climate Policy* 3(1): 41-56.
- Bumpus, A. and Liverman D. 2008: Accumulation by decarbonization and the governance of carbon offsets. *Economic Geography* 84(2):127-155.
- Bumpus, AG, and DM Liverman. 2011. Chapter 10 Carbon colonialism? Offsets, greenhouse gas reductions, and sustainable development. In Peet R et al *Global Political Ecology*. Routledge.
- Casillas, C.E., and D.M. Kammen. 2010. The energy-poverty-climate nexus. *Science* 330 (6008):1181.
- Eakin H. 2005. Institutional change, climate risk, and rural vulnerability: Cases from Central Mexico. *World*



- Development 33(11): 1923–1938 <http://ideas.repec.org/a/eee/wdevel/v33y2005i11p1923-1938.html>
- Eakin, H. and Luers, A. 2006. Assessing the vulnerability of social–environmental systems. *Annual Review of Environmental and Resources*, 31: 365–94.
- Eakin, H. et al. 2009. Nested vulnerability: exploring cross-scale linkages and vulnerability teleconnections in Mexican and Vietnamese coffee systems. *Environmental Science and Policy*, 12, 398 – 412.
- Eriksen, S. and Lind, J. 2009. Adaptation as a Political Process: Adjusting to Drought and Conflict in Kenya’s Drylands. *Environmental Management* 43: 817–835.
- Eriksen, S. et al. 2007. Climate Change Adaptation and Poverty Reduction: Key interactions and critical measures. Report prepared for the Norwegian Agency for Development Cooperation (Norad). University of Oslo.
- Gilbertson, T. and Reyes, O. 2009. Carbon Trading: How it works and why it fails. Occasional Paper Series. Uppsala: Dag Hammarskjöld Foundation. Chapters 1, 4 and 5.
- Huq S., Reid H., Murray L. and Programme C. 2006. Climate Change and Development Links. IIED, Sustainable Agriculture and Rural Livelihoods Programme <http://www.iied.org/pubs/pdf/full/14516IIED.pdf>
- Huq, S, F Yamin, A Rahman, A Chatterjee, X Yang, S Wade, V Orindi, and J Chigwada. 2005. Linking Climate Adaptation and Development: A Synthesis of Six Case Studies from Asia and Africa. *IDS Bulletin* 36 (4):117–122.
- Ireland, P. 2010. Climate change adaptation and disaster risk reduction: Contested spaces and emerging opportunities in development theory and practice. *Climate and Development* 2 (4):332–345.
- Klein, R. J. L. F. Schipper, and S. Dessai. 2005. Integrating mitigation and adaptation into climate and development policy: three research questions. *Environmental Science & Policy* 8 (6):579–588.
- Leary, N., J. Adejuwon, V. Barros, I. Burton, J. Kulkarni, and R. Lasco, eds. 2007. *Climate Change and Adaptation: Earthscan*.
- Liverman, D. and Boyd, E. 2008: The CDM, ethics and development. In Olsen, K. and Fenhann, J. (eds.), *A Reformed CDM: including new mechanisms for sustainable development*. Roskilde: UNEP Risoe Centre, 49–58.
- Lobell, DB, MB Burke, C Tebaldi, MD Mastrandrea, WP Falcon, and RL Naylor. 2008. Prioritizing climate change adaptation needs for food security in 2030. *Science* 319 (5863):607.
- Lohmann L. 2005. Marketing and Making Carbon Dumps: Commodification, Calculation and Counterfactuals in Climate Change Mitigation. *Science as Culture* 14(3): 203–235
- Lohmann, L. 2008. Carbon Trading, Climate Justice and the Production of Ignorance: Ten examples. *Development* 51 (3):359–365.
- Lohmann, L. 2008. *Carbon Trading: Solution or Obstacle?* Dorset: The Corner House.
- Najam A., Huq S. and Sokona Y. 2003. Climate negotiations beyond Kyoto: developing countries concerns and interests. *Climate Policy* 3(3): 221–231
- O’Brien, K. et al. 2004. Mapping vulnerability to multiple stressors: climate change and globalization in India. *Global Environmental Change*, 14: 303–313.
- O’Brien, K. et al. 2007. Why different interpretations of vulnerability matter in climate change discourses. *Climate Policy*, 7, 73–38.
- O’Brien K. and Leichenko R. 2000. Double exposure: Assessing the impacts of climate change within the context



of economic globalization. *Global Environmental Change, Part A: Human and Policy Dimensions* 10(3): 221-232

- Parry M., Arnell N., McMichael T., Nicholls R., Martens P., Kovats S., Livermore M., Rosenzweig C., Iglesias A. and Fischer G. 2001. Millions at risk: defining critical climate change threats and targets. *Global Environmental Change* 11(3): 181-183
- Paterson M. 2004. Climate change and sustainable development: Prospects for developing countries. *Environmental Politics* 13(2): 482-488.
- Patt, A. et al (eds.), 2009. *Assessing vulnerability to global environmental change: making research useful for adaptation decision-making and policy*. Earthscan: London.
- Pearson B. 2004. Market failure: Why the Clean Development Mechanism won't promote clean development. CDM Watch. <http://cdmwatch.org/files/market-failure-2004.pdf>
- Ribot, Jesse C. [Forthcoming]. Vulnerability does not just fall from the sky: toward multi-scale pro-poor climate policy. In Mearns, R. and Norton, A. (eds.), *Social dimensions of climate change: equity and vulnerability in a warming world*. Washington, DC: The World Bank.
- The World Bank 2009: *State and trends of the carbon market 2009*. Washington, D.C.: The World Bank.
- Thomas D.S.G. and Twyman C. 2005. Equity and justice in climate change adaptation amongst natural-resource-dependent societies. *Global Environmental Change-Human and Policy Dimensions* 15(2): 115-124.

### Books

- Adger W., Huq S., Mace M. and Paavola J. 2005. *Equity and Justice in Adaptation to Climate Change*. MIT Press, Cambridge
- Agarwal A., Narain, S. 1991. *Global Warming in an Unequal World: A Case of Environmental Colonialism*. Centre for Science and Environment.:New Delhi
- Bond P. and Dada R., Eds. 2004. *Trouble in the Air: Global Warming and the privatised atmosphere*. Civil Society Energy Reader. Center for Civil Society Durban SA. [http://www.carbontradewatch.org/pubs/CCS\\_ENERGYSERIES\\_1005\\_COMPLETE.pdf](http://www.carbontradewatch.org/pubs/CCS_ENERGYSERIES_1005_COMPLETE.pdf)
- Munasinghe M. and Swart R. 2005. *Primer on climate change and sustainable development*. Cambridge University Press New York
- Smith, K. 2007. *The Carbon Neutral Myth-Offset Indulgences for your Climate Sins*: [http://www.carbontradewatch.org/pubs/carbon\\_neutral\\_myth.pdf](http://www.carbontradewatch.org/pubs/carbon_neutral_myth.pdf).

### Web sites

- CDM Watch <http://www.cdmwatch.org/>
- Centre for Science and Environment, India <http://www.cseindia.org/programme/geg/geg-index.htm>
- Global Environmental Change and Food Systems <http://www.gecafs.org/>
- International Institute for Environment and Development, Climate Change Programme <http://www.iied.org/CC/>
- Tiempo: Newsletter of climate change and developing world <http://www.cru.uea.ac.uk/tiempo/>
- Tyndall Centre <http://www.tyndall.ac.uk/index.shtml>
- Watkins, K. 2007. *Human Development Report 2007/2008. Fighting climate change: Human solidarity in a divided world*. Human Development.
- World Resources Institute. <http://www.wri.org/project/vulnerability-and-adaptation>

World Bank. 2010. World Development Report 2010: Development and Climate Change.

<http://www.worldbank.org/wdr2010>

**Class 5: International institutions (UNEP, World Bank, international NGOs) and sustainable development**

Doyle, Timothy. 1998 Sustainable development and Agenda 21: the secular bible of global free markets and pluralist democracy. *Third World Quarterly* 19:4 771-786

Goodland, R. and Daly, H. (1996) Environmental Sustainability: Universal and Non-Negotiable. *Ecological Applications*, Vol.6, No. 4, pp1002-1017

Lawrence. Shannon 2005. Retreat from the Safeguard policies: Recent Trends Undermining Social and Environmental Accountability at the World Bank January 2005, Environmental Defense [http://www.environmentaldefense.org/documents/4279\\_RetreatSafeguardPolicies\\_0105.pdf](http://www.environmentaldefense.org/documents/4279_RetreatSafeguardPolicies_0105.pdf)

Masika R, Joekees SP, Unit GE. 1997. Environmentally Sustainable Development and Poverty: A Gender Analysis: Institute of Development Studies at the University of Sussex

**Books**

Adams WM. 2001. *Green Development: environment and sustainability in the Third World*: Routledge

Brundtland G. 1987. *Our Common Future: The World Commission on Environment and Development*. Oxford: Oxford University Press

Conca K. 1995. *Green planet blues*: Westview Press

Daly, Herman E. *Beyond growth: The economics of sustainable development*. Boston: Beacon Press, 1996.

Fox JA, Brown LD, Brown LD. 1998. *The Struggle for Accountability: The World Bank, NGOs, and Grassroots Movements*. MIT Press.

Jones S and Carswell G eds. 2004. *Earthscan Reader in Environment, Development and Rural Livelihoods*. Earthscan: London.

Goldman M. 2005. *Imperial Nature: The World Bank and Struggles for Social Justice in the Age of Globalization*: Yale University Press

Kapur D, Lewis JP, Webb RC. 1997. *The World Bank: Its first half century*: Brookings Institution

Keck, Margaret E. and Kathryn Sikkink. *Activists Beyond Borders*. Ithaca, NY: Cornell University Press, 1998

Rich Bruce 1994. *Mortgaging the Earth: The World Bank, Environmental Impoverishment and the Crisis of Development*, Beacon Press

Stoddard, H. ed. *A Pocket Guide to Sustainable Development Governance*.

<http://www.uncsd2012.org/rio20/content/documents/A%20Pocket%20Guide%20to%20Sustainable%20Development%20Governance.pdf>

**Web sites:**

International Institute for Sustainable Development <http://www.iisd.org/>

Rio + 20 United Nations Conference on Sustainable Development <http://www.uncsd2012.org/rio20/>

UN Millennium Development Goals <http://www.un.org/millenniumgoals/>

World Bank. Environment Programme.

<http://lnweb18.worldbank.org/ESSD/envext.nsf/41ByDocName/Environment>

## WEDNESDAY – Global Change and the Terrestrial Biosphere

2.00–4.00pm, Beckett Room

**Short Description:** This module will outline and explore the functioning of the terrestrial biosphere, from global to local scales, and explore how contemporary global change is affecting the biosphere. The approach will introduce key overarching questions and concepts, and then closely examine how research scientists address these questions through a variety of tools and approaches.

**Lecturers:** Professor Yadvinder Malhi, Dr Nathalie Butt, Mike Morecroft, Dr David Galbraith, Chris Doughty, Imma Oliveras, Kate Parr.

### Lecture Topics :

Week	Lecture Date	Topic	Lecturer
2	19 Oct	The functioning of the biosphere in the Earth system	Prof Yadvinder Malhi
3	26 Oct	Modelling the biosphere-atmosphere system	Dr David Galbraith
3	28 Oct	Wytham Woods lecture and fieldtrip	Dr Nathalie Butt, Dr Mike Morecroft, Prof Yadvinder Malhi
4	2 Nov	The deep history and 21st Century prospects of the terrestrial biosphere	Prof Yadvinder Malhi
5	9 Nov	Tropical forests and global change	Prof Yadvinder Malhi
6	16 Nov	Using tropical elevation gradients to understand global change	Prof Yadvinder Malhi and Dr Kate Parr
7	23 Nov	Case studies of global change research	Dr Chris Doughty and Dr Imma Oliveras
8	30 Nov	Synthesis: managing the terrestrial biosphere in the Anthropocene	Prof Yadvinder Malhi

### Lecture Topics and Readings

#### Week 2 – The functioning of the biosphere in the Earth system (Prof Yadvinder Malhi)

History of key concepts in biosphere science. The main regions of the biosphere and their key properties and differences. The cycles of energy, water, carbon, nitrogen and phosphorus in the terrestrial biosphere. The ecology of ecosystems. Ecosystem services at global, regional and local scales.

#### Readings

Cockell C., An Introduction to the Earth-Life System, Cambridge University Press, pp 319

Falkowski P. et al. (2000) The global carbon cycle: a test of our knowledge of the earth as a system

### **Week 3 -Modelling the biosphere-atmosphere system (Dr David Galbraith)**

Why do we need models? Brief history of climate and biosphere modelling. Overview of key concepts in biosphere-atmosphere modelling. Modelling ecosystem processes. Modelling species distributions and extinction risk. Key questions and uncertainties. Case study: trying to understand the risk of Amazon forest dieback under climate change.

#### Readings

Prentice IC, et al 2007 Dynamic global vegetation modelling: quantifying terrestrial ecosystem responses to large-scale environmental change.

In: Canadell JP, Pataki D & Pitelka LF (eds.) Terrestrial Ecosystems in a Changing World. Springer, Berlin, Heidelberg, New York, Pp. 175-192

Galbraith, D., Levy, P., Sitch, S., Huntingford, C., Cox, P., Williams, M. and Meir P. (2010) Multiple mechanisms of Amazonian forest biomass losses in three dynamic global vegetation models under climate change. *New Phytologist*, 187: 647-665.

Malhi, Y. et al. (2009) Exploring the likelihood and mechanism of a climate-induced dieback of the Amazon rainforest. *Proceedings of the National Academy of Sciences of the United States of America*, 106: 20610-20615.

### **Week 3 - Wytham woods lecture and field trip (Dr Nathalie Butt, Dr Mike Morecroft, Prof Yadvinder Malhi)**

Key questions in forest ecology in the context of global change. Methods to assess plant species composition, diversity and carbon stocks. The history and ecology Wytham Woods. Ecosystems research at Wytham Woods.

#### Readings

Thomas, M.V., et al. (2011) Carbon dioxide fluxes over an ancient broadleaved deciduous woodland in southern England, *Biogeosciences*

Butt, N, et al. (2009) Initial Results from Establishment of a Long-term Broadleaf Monitoring Plot at Wytham Woods, Oxford, UK. University of Oxford Report.  
<http://www.eci.ox.ac.uk/publications/downloads/butt09-wythamwoods.pdf>

Savill P et al. (2010) *Wytham Woods: Oxford's Ecological Laboratory*, Oxford University Press, pp. 288.

### **Week 4 - The deep history and 21st Century prospects of the terrestrial biosphere (Prof Yadvinder Malhi)**

Introduction to timescales. Development of key components of the biosphere over Earth history, from evolution of photosynthesis to present. Snowball Earth and Hothouse Earth. Mass extinctions. Period of rapid climate change - the Paleocene-Eocene thermal maximum and glaciations. Contemporary global change in the context of Earth history. The concept of the Anthropocene.

#### Readings

Zachos et al. (2001) Trends, rhythms, and aberrations in global climate 65 Ma to present, *Science*, 292, 686-693

Steffen, W., et al. (2011) The Anthropocene: conceptual and historical perspectives. *Philosophical Transactions of the Royal Society a-Mathematical Physical and Engineering Sciences*, 369, 842-867.



### **Week 5 – Tropical forests and global change (Prof Yadvinder Malhi)**

The history, evolution and ecology of tropical forests. The biogeography and biodiversity of tropical forests. Attributes of tropical forests in Earth system functioning. Patterns of deforestation and climate consequences of deforestation. Understanding and monitoring intact forests. The impacts of climate change on tropical forests. Feedbacks between tropical forests and the atmosphere. Managing tropical forest regions in the context of global change.

#### Reading

Malhi et al (2009) Climate change, deforestation and the fate of the Amazon, *Science*

Bonan GB (2008) Forests and climate change: forcings, feedbacks, and the climate benefits of forests, *Science*, 320, 1444-1449

Malhi et al (2002) Forests, carbon and global climate *Phil Trans Royal Soc*, xxxx

### **Week 6 – Using tropical elevation gradients to understand global change (Prof Yadvinder Malhi and Dr Kate Parr)**

Why tropical elevation gradients are powerful tools. Introduction to the Andean transect study. Description of methods in tree, bird and insect diversity. Methods in plant and soil sciences. Insights in ecosystem science and response of carbon cycle to global change. Insights into response of species to global change.

#### Readings

Malhi et al. 2010 Introduction: Elevation gradients in the tropics: laboratories for ecosystem ecology and global change research, *Global Change Biology*, 16, 12, 3171–3175

Girardin, C.A.J. et al 2010 Net primary productivity allocation and cycling of carbon along a tropical forest elevational transect in the Peruvian Andes, *Global Change Biology*, 16, 12, 3176–3192

Chen et al. 2009. Elevation increases in moth assemblages over 42 years on a tropical mountain. *PNAS* 106: 1479–1483.

Colwell et al. 2008, Global warming, elevational range shifts and lowland biotic attrition in the wet tropics. *Science* 322: 258–261.

### **Week 7 Case studies of global change research (Dr Chris Doughty and Dr Imma Oliveras)**

7a. Pleistocene megafaunal extinctions and their impact on the biosphere

Global ecology in the early Pleistocene- what has been lost? The Pleistocene megafaunal extinctions. Causes of the extinctions: humans or climate? Impacts of the extinctions on high latitude ecology. Impacts on low-latitude ecology. Possible implications of contemporary megafaunal decline.

7b Fire in the earth system (Dr Imma Oliveras). Global patterns of fire. A history of fire in the earth system. Fire as a natural and anthropogenic component of the earth system. The ecology and impacts of fire in tropical savannas and high elevation grasslands. Interactions between drought and fire.

#### Readings

Barnosky AD et al (2004) *Science*, 306, 70–75 Assessing the causes of the late Pleistocene Extinctions on the Continents

Doughty CE and Field CB *Environmental Research Letters*, 5, (2010)

Agricultural net primary production in relation to that liberated by the extinction of Pleistocene mega-herbivores: an estimate of agricultural carrying capacity?

Bowman et al (2009) Fire in the earth system *Science*, 324, 581–884



Cochrane MA (2009) Tropical fire ecology. Springer-Verlag, 682 pp

**Week 8 - Synthesis: managing the terrestrial biosphere in the Anthropocene (Prof Yadvinder Malhi)**

Presentations of posters on key questions for the terrestrial biosphere under contemporary environmental change. How do we expect the biosphere to change in the 21st century? How do we manage such change? What role does conservation and preservation have in a rapidly changing biosphere? How vulnerable or resilient is the biosphere?

## THURSDAY – International Environmental Frameworks and Policy

2.00–4.00pm, Beckett Room (open to ECM, BCM, NSEP and Water MScs)

### Short description

The IEF module aims to:

- (1) introduce structures, processes, mechanisms and actors in international environmental frameworks;
- (2) canvas key international environmental law frameworks, how obligations are differentiated, and mechanisms to support compliance;
- (3) focus on important obligations in four issue areas: terrestrial species conservation, ocean depletion, pollutants, and global warming;
- (4) encourage critical thinking about underpinning concepts and principles;
- (5) use case studies to bring issues alive;
- (6) elicit perspectives on the value and limits of using international agreements as a tool to move environmental agendas forward.

**Lecturer:** Marta Lang

### Lecture Topics:

Week	Lecture Date	Topic	Lecturer
3	27 Oct	Treaty Making	Marta Lang
4	3 Nov	Terrestrial Species Loss	Marta Lang
5	10 Nov	Marine Depletion	Marta Lang
6	17 Nov	Pollution	Marta Lang
7	24 Nov	Global Warming	Marta Lang
8	1 Dec	Compliance, Concepts, and Challenges	Marta Lang

### Teaching approach

Students will be asked to complete 2–3 hours of readings prior to each lecture. A reading list and chapter extracts for the first three lectures will be on Weblearn at the end of week 2. Chapter extracts for the final three lectures will go up in week 5. Extracts will stay up on Weblearn for one week after they are discussed in class.

Questions from the module will appear in compulsory examinations.

### Module outline

**Week 3: Treaty making:** the state, the commons and international multilateral treaty frameworks. How international law is made: national positioning, actors, state consent, and the function of the conference of the parties (COP). Case study on the Convention on Biological Diversity Nagoya COP outcomes.

**Week 4: Terrestrial species loss:** approaches applied to stem species loss, and regulate the appropriation of biodiversity. The biodiversity, migratory species and trade in endangered species conventions. Case studies on access and benefit sharing in Mexico and South Asia.

**Week 5: Marine depletion:** treaties governing fisheries management and marine conservation, with a focus on exclusive economic zones and the high seas. The implementing agreement for straddling and highly migratory fish stocks. Case studies on Australian fisheries legislation, bottom trawling, and bluefin tuna.

**Week 6: Pollution:** the toxic waste, persistent organic pollutants, marine dumping and ship pollution conventions. How international obligations can be brought to bear in domestic court cases. Case study on toxic waste dumping in Africa.

**Week 7: Global warming:** how the climate change regime has evolved. Common but differentiated responsibility. The Kyoto Protocol, Clean Development Mechanism and recent developments. The place of science, experts and ad hoc working groups.

**Week 8: Compliance, concepts and challenges:** mechanisms that encourage national implementation and a case study on the Kyoto Protocol compliance regime. Drawing together overarching concepts across issue areas. Key challenges in the use of international agreements as a tool to move environmental agendas forward.

## Course readings

Brand, U. and Gorg, C. (2003) The state and the regulation of biodiversity: International biopolitics and the case of Mexico. *Geoforum* 34: 221–233.

Brunee, J. (2002) COPing with Consent: Law making under multilateral environmental agreements. *Leiden J. Intl'l L.* 15: 1.

Brunee, J. (2003) The Kyoto Protocol: Testing Ground for Compliance Theories? *Zeitschrift für ausländisches öffentliches Recht und Völkerrecht / Heidelberg Journal of International Law* 63: 255–280.

Chukwuka, E. (2007) The Bamako Convention on the Ban on the Import into Africa and the Control of the Transboundary Movement and Management of Hazardous Wastes Within Africa: a milestone in environmental protection? *African Journal of International and Comparative Law* 15(2): 208–229.

Cullet, P. (2003) *Differential Treatment in International Environmental Law*. London: Ashgate. Chapter 1: International Environmental Law, Sustainable Development and Differential Treatment: An Introduction, pp1–20. RSL, L2: K 3585 CUL or law library: Internat 610 C967a.

Harrop, S.R. (2011) “Living in harmony with nature?” Outcomes of the 2010 Nagoya conference of the Convention on Biological Diversity. *Journal of Environmental Law* 23(1): 117–128.

Kurlansky, M. (1997) *Cod*. London: Jonathan Cape. Chapter 10: Three Wars to Close the Open Sea, pp158–173. RSL offsite: 18956 d. 284.

Mohd Taib, F. (1997) *Malaysia and UNCED An Analysis of a Diplomatic Process: 1989–1992*. London: Kluwer Law International. Chapter 2: Preparation at the National Level, pp29–61. Law library: Internat 610 T129a.

Nijar, G. (2010) Incorporating traditional knowledge in an international regime on access to genetic resources and benefit sharing: problems and prospects. *European Journal of International Law*. 21(2): 457–475.



Oberthür, S and Lefeber, R. (2010) Holding countries to account: The Kyoto Protocol's compliance system revisited after four years of experience. *Climate Law*. 1(1): 133–158.

Safina, C. (1997) *Song for the Blue Ocean*. New York: John Macrae. Chapter: Shores of Three Continents, pp78–108.

Scovazzi, T. (2004) Marine Protected Areas on the High Seas: Some Legal and Policy Considerations. *International Journal of Marine and Coastal Law* 19: 1–17.

Siebenhuner, B (2003) The changing role of nation states in international environmental assessment – the case of the IPCC. *Global Environmental Change* 13: 113–123.

Skaereth, J. (2003) Managing North Sea Pollution Effectively: Linking International and Domestic Institutions. *International Environmental Agreements: Politics, Law and Economics* 3: 167–190.

Trouwborst, A. (2009) International nature conservation law and the adaptation of biodiversity to climate change: a mismatch? *Journal of Environmental Law*. 21(3): 419–442.



## HILARY TERM LECTURE PROGRAMME 2012

(N.B. In case of unexpected events, some topics, times, and lecturers may have to change.)

The first two weeks of term will consist of the Energy module and a field course to the Centre for Alternative Technology in Wales. Following this, term will consist of lectures, electives, field trips and workshops. Elective times will be discussed with individual tutors.

Course Structure	Hilary
Energy and Lower Carbon Futures Module (Wk 1-2)	✓
Environmental Economics (Mon)	✓
Actors in Environmental Management (Tues)	✓
Terrestrial & Marine Ecology (Wed)	✓
Environmental Geography & Driving Forces (Thurs)	✓
Electives	✓
Field Trips (Courses)	✓
Research Skills	✓
Friday Workshops and supplementary lectures	✓
Dissertation planning	✓

## Energy Module

Week 1 of a 2 week interdisciplinary module, led by Dr Christian Jardine (to be updated)

	09:00-10:30	11:00-12:30	14:00-15:30
Monday 16 Jan	Principles of Energy, resources and geopolitics, (Dr Chris Jardine, ECI)	Renewables = natural resources, types of electricity generation, heat provision (Prof. John Twidell)	Nuclear overview = costs, benefits, waste, public opinion (Prof. Gordon MacKerron, Univ of Sussex)
	<b><i>Energy and Buildings</i></b>		
Tuesday 17 Jan	Energy Efficiency and Market Transformation (Dr Nick Eyre, ECI)	Buildings and Heating (Gavin Killip, ECI)	Solar Photovoltaics and microgeneration (Dr Chris Jardine, ECI)
	<b><i>The Big Issues</i></b>		<b><i>Energy Policy</i></b>
Wednesday 18 Jan	Transport (Prof. David Banister, TSU)	The oil and gas industry (Prof Jonathon Stern, Oxford Institute of Energy Studies)	Energy policy and promoting renewables (Prof. Catherine Mitchell, Univ of Exeter)
	<b><i>Behaviour</i></b>	<b><i>Energy and Development</i></b>	
Thursday 19 Jan	Understanding Energy: How users learn and how behaviour changes (Dr. Sarah Darby, ECI) Social Dimensions of Energy Use (Dr. Katy Janda, ECI)	Energy and Developing countries (Phil Mann, ECI)	Energy in China (Jimin Zhao, ECI)
	<b><i>A look to the future</i></b>		<b><i>PolicyEnergy</i></b>
Friday 20 Jan	The Hydrogen Economy (Prof. Peter Edwards, Chemistry, University of Oxford)	Carbon Capture and Storage (John Kessels, International Energy Agency Clean Coal Centre)	Historical Trends and general overview (Prof John Chesshire, Univ of Sussex)

## Energy Module: Week 2

At the end of Week 1 student working groups will be decided, each given a topic to research. The topics will be related to the Week 1 lectures and will be interdisciplinary. Each group will prepare a 20 minute presentation to be given in Week 2.

### Provisional topics for student group presentations

- Is there a conflict between ensuring security of energy supplies (keeping the lights on) and lower carbon futures?
- Discuss the balance between supplying the energy needs of today's poor and those of everyone in future generations.
- Which will make the biggest contribution to lower carbon futures: educating the public or technological improvement?
- Would personal carbon quotas be an appropriate policy for lower carbon futures?
- Discuss the proposition that lower carbon emissions will automatically follow as fossil fuels become scarcer. No further action will be required for climate change mitigation = the market will deliver.
- Is it possible to have sufficient climate change mitigation whilst maintaining economic growth?

## WEEKS 3-8

### MONDAY – Environmental Economics

2.00-4.00pm, Beckett Room

#### Rationale, Aims and Objectives

Environmental issues are prominent in public discourse and will remain so for the foreseeable future. They raise fundamental questions about valuation, justice between generations, decision-making under uncertainty, international collective action and the roles of market-based solutions and regulation.

*Aims.* The aims of the module are to provide students with (i) an understanding of the economics of the environment, and (ii) the ability to analyse critically key conceptual and applied issues in this field using both a theoretical and empirical tools of economics.

*Objectives.* At the end of the course, students should have a knowledge of the economics of the environment, including theories of value, decision-making under uncertainty, market failures, international environmental agreements, the choice of instruments, how human life and how nature may be valued, the foundations of cost-benefit analysis, and intergenerational ethics and discounting.

The module will cover, as appropriate, applications to environmental problems such as climate change, acid rain, and local water and air pollution. In order to retain flexibility, however, these are not included in the rubric.

**Lecturers:** Dr. Robert Metcalfe

#### **Lecture Topics:**

Week	Lecture Date	Topic	Lecturer
3	30 Jan	Why, what, who, and how	Robert Metcalfe
4	6 Feb	Terrestrial Species Loss	Robert Metcalfe
5	13 Feb	Marine Depletion	Robert Metcalfe
6	20 Feb	Pollution	Robert Metcalfe
7	27 Feb	Global Warming	Robert Metcalfe
8	5 Mar	CBA	Robert Metcalfe

## Preparatory reading list

There are a few textbooks that cover most of the basic material in this course. The following textbooks are highly recommended:

Hanley, Shogren and White. *Introduction to Environmental Economics*.

Tietenberg, Tom. *Environmental and Natural Resource Economics*.

Perman, R.J., Y. Ma, J. McGilvray and M. Common (2003) *Natural Resource and Environmental Economics*. Addison Wesley Longman.

The course rubric is given below. The readings provided are further readings that will supplement the above textbooks. The readings are variable in terms of their difficulty, and some involve calculus. But the articles are worth reading nonetheless. Generally, it is worth going through the journals with an interest in applied economic analysis of environmental and climate change issues. These are: Review of Environmental Economics and Policy; Climate Policy; Oxford Review of Economic Policy; Environmental and Resource Economics; Journal of Environmental Economics and Management; and Environmental and Development Economics.

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### 1. Why, what, who and how

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1.1 Theories of value and behaviour

1.2 Preferences

Any basic or intermediate microeconomics textbook will give a good grounding on this topic.

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### 2. Economics of environment problems

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2.1 Externalities

2.2 Public goods

2.3 International environmental agreements

Hanley, N., Shogren, J.F. & White, B. (2007), *Environmental Economics in Theory and Practice*. 2nd Edition. Palgrave Macmillan.

Barrett, S. (2007). *Why cooperate? The incentives to supply global public goods*. Oxford, OUP.

Baumol, W.J. & Oates, W.E. (1988). *The Theory of Environmental Policy: Externalities, Public Outlays and the Quality of Life*. Prentice Hall.

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### 3. Economic tools

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3.1 Taxes versus permits, command and control

3.2 Environmental instruments in practice

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Weitzman, M. (1974), "Prices vs Quantities", *Review of Economic Studies*, 41, pp 477-491

Hepburn, C. (2009), Carbon taxes, emissions trading, and hybrid schemes. In *The Economics and Politics of Climate Change* ed. Helm and Hepburn, 2009, OUP.

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#### 4. Monetary valuation of the environment

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4.1 Valuing human life and nature

4.2 Controversies in valuation

MacLean, Doug, 'Environmental ethics and human values', in C. Richard Couthern (ed.), *Handbook for Environmental Risk Decision Making: Values, Perceptions and Ethics*, Lewis Publishers, 1995, pp. 177-93.

Næss, A., 1973. "The Shallow and the Deep, Long-Range Ecology Movement", *Inquiry* 16, reprinted in *Sessions 1995*, pp. 151-5.

Williams, B., 1992. "Must a Concern for the Environment be Centred on Human Beings?", reprinted in his *Making Sense of Humanity and Other Philosophical Papers*, Cambridge: Cambridge University Press, 1995: 233-40.

Barbier, E.B., Burgess, J.C. & Folke, C. (1994). *Paradise Lost? The Ecological Economics of Biodiversity*. Earthscan: London.

Broome, J. 'Trying to value a life', *Journal of Public Economics*, 9 (1978), pp. 91-100, reprinted in J. Broome, *Ethics Out of Economics*, pp. 177-82.

Ready, R.C. (1995). Environmental valuation under uncertainty. In Bromley D.W. (Ed.). *The Handbook of Environmental Economics*. Blackwell: Oxford.

Champ, P.A., Boyle, K.J. & Brown, T.C. (Eds.) (2003). *A Primer on Nonmarket Valuation*. Kluwer Academic Publishers.

Carson, Richard T., Nicholas E. Flores and Norman F. Meade, (2001). *Contingent Valuation: Controversies and Evidence*. *Environmental and Resource Economics* 19: 173 - 210.

Diamond, P. A. and J. A. Hausman (1994). *Contingent Valuation: Is Some Number Better than No Number?* *Journal of Economic Perspectives* 8: 45-64.

'Contingent Valuation' in D. W. Bromley *A Handbook of Environmental Economics*

Dolan, P. and Kahneman, D. (2008), "Interpretations of utility and their implications for the valuation of health", *Economic Journal*, 118: 215-234.

Kahneman, D. and Tversky, A. (2003). *Choices, Values and Frames*. OUP.

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## 5. Cost-benefit analysis

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### 5.1 Foundations

### 5.2 Critiques

### 5.3 Issues and alternatives

Jean Dreze and Nicholas Stern, 'The theory of cost-benefit analysis', in Alan J. Auerback and Martin Feldstein (eds), *Handbook of Public Economics*, Volume II, North-Holland, 1987, pp. 909-89.

Kahneman, Daniel, and Knetsch, Jack L., 'Valuing public goods: the purchase of moral satisfaction', *Journal of Environmental Economics and Management*, 22 (1992), pp. 57-70.

Brekke, K. (1997), "The Numeraire Matters in Cost-Benefit Analysis", *Journal of Public Economics*, 64(1): 117-23.

Kahneman, D. and Pollak, R.A. (1998), "Imagined Risks and Cost-Benefit Analysis", *American Economic Review*, p and p, May, 376-380.

Gowdy, J. (2004). The revolution in welfare economics and its implications for environmental valuation and policy. *Land Economics*, 80: 239-257.

O'Neill, J. 'Markets and the Environment: The Solution is the Problem' *Economic and Political Weekly*, 36, 2001, pp.1865-1873 J.

Holland A. (1995) 'The Assumptions of Cost-Benefit Analysis: A Philosopher's View' in K. Willis and J. Corkindale eds. *Environmental Valuation: New Perspectives*

Pearce, D., Atkinson, G. & Mourato, S. (2006). *Cost-Benefit Analysis and the Environment: Recent developments*. OECD: Paris.

Just, R., Hueth, D. & Schmitz, A. (2004), *The Welfare Economics of Public Policy: a Practical Guide to Project and Policy Evaluation*, Cheltenham, Edward Elgar.

Mishan, E. and E. Quah (2007), *Cost Benefit Analysis*, Routledge.

Miller, D. (2009) 'Global Justice and climate change: how should responsibilities Be Distributed?' in *Tanner Lectures on Human Values* 28, 117-156

Groom, B., Hepburn, C., Koundouri, P. and Pearce, D. (2005), "Declining Discount Rates: The Long and Short of it", *Environmental and Resource Economics*, 32(4): 445-93.

Laibson, D. (1997), "Golden Eggs and Hyperbolic Discounting", *Quarterly Journal of Economics*, 112: 443-477.

Shahar, D.C. (2009) 'Justice and Climate Change: Toward a Libertarian Analysis', *Independent Review* 14, 2009, 219-238

Neumayer, E. (2000) 'In Defence of Historical Accountability for Greenhouse Gas Emissions', *Ecological Economics* 33, 185-192.

Parfit, D. (1984) *Reasons and Persons* Part 4 and Appendix F

Hanser, M. (1990) 'Harming future people' *Philosophy and Public Affairs* 19, pp.47-70

O'Neill, I. Bateman and R. K. Turner eds. *Environmental Ethics and Philosophy*.

The Stern Review, chapter 2A

John Broome, 'Discounting the future', *Philosophy and Public Affairs*, 23 (1994), pp. 128-56. Reprinted in J. Broome, *Ethics Out of Economics*, pp. 44-67.

Cowen, T. and Parfit, D. 'Against the Social Discount Rate' In Peter Laslett and James Fishkin, editors, *Philosophy, Politics, and Society*, sixth series 1992, 144-161.

TUESDAY – Environmental Values, Behaviour, and Governance  
2.00–4.00pm, Becket Room

**Short Description:** Knowledge systems, perceptions and roles of governmental and non-governmental actors in environmental management.

**Lecturers:** Tom Thornton, Connie McDermott, Geoff Lye, Kersty Hobson

**Lecture Topics:**

Week	Lecture Date	Topic	Lecturer
3	31 Jan	Environmental knowledge, values and perceptions. The relationship of cultural models to attitudes and behaviour	Tom Thornton
4	7 Feb	Conservation and sustainability behaviour in small-scale societies and beyond	Tom Thornton
5	14 Feb	REDD+ as global forest governance	Connie McDermott
6	21 Feb	Certification schemes	Connie McDermott, et al.
7	28 Feb	Civil society: what is it, why does it matter and how do we conduct research into it?	Kersty Hobson
8	6 Mar	Democracy and the environment: 'local' deliberation and participation as a means of environmental governance	Kersty Hobson

**Preparatory reading list**

Additional readings may be made available prior to the lectures.

**Week 3 Environmental Knowledge, Values and Perceptions: Cultural Models**

Atran S and D. Medin. 2008. *The Native mind and the cultural construction of nature*. Cambridge and London: The MIT Press. Selections.

Ingold, T. 2000. *The Perception of the Environment: Essays in Livelihood, Dwelling, and Skill*. Selections.

Kempton, W., J.S. Boster, and J. A. Hartley. 1995. *Environmental Values in American Culture*. MIT Press.

Milton, K. 2002. *Loving Nature: Towards and Ecology of Emotion*. Routledge. Introduction, Chapters 3–4.

Robbins, P. 2004. *Political Ecology*, Chapter 6.

Schelhas, J. and M.J. Pfeffer. 2005. Forest Values of National Park Neighbors in Costa Rica. *Human Organization* 64(4): 385:397.

Thornton, T. F. 2010. Anatomy of a Traditional Cultural Property: The Saga of Auke Cape. *George Wright Forum* 29(1):64–75.



#### **Week 4 The Evolution of Conservation and Sustainability Behaviour in Small-scale Societies and Beyond**

- Atran, S, D. Medin, N. Ross, D. E. Lynch. 2002. Folkecology, cultural epidemiology, and the commons spirit. *Current Anthropology* 43(3): 421-450.
- Berkes, F. 2008. *Sacred Ecology*. Routledge. Chapter 6.
- Berkes, F. 2009. Community-based conservation in a globalized world. *Proceedings of the National Academy of Sciences* 104(39).
- Hunn, E.S., Johnson, D.R., Russell, P.N. and Thornton, T.F. (2003) Huna Tlingit traditional environmental knowledge, conservation, and the management of a "Wilderness" Park.. *Current Anthropology*, 44 (Supp.): S79-S103.
- Ostrom, E. A General Framework for Analyzing Sustainability of Social-Ecological Systems. *Science*.
- Thornton, T. F. 2008. *Being and Place among the Tlingit*. University of Washington Press, Chapter 4.
- Thornton, T.F. 2007. Alaska Native Corporations and Subsistence: Paradoxical forces in the construction of sustainable communities. In, Maida, C. (ed.) *Sustainability and Communities of Place*. Berghahn, pp. 41-62.

#### **Week 5: Actors and Institutions in Environmental Mangement**

- Corbera, E., and Heike Schroeder. "Governing and implementing REDD+." *Environmental Science and Policy* (2010).
- Kanowski, P; C McDermott and B. Cashore. 2010. *Implementing REDD+: Lessons from analysis of forest governance*. *Environmental Science and Policy*. doi:10.1016/j.envsci.2010.11.007
- McDermott, C; A. Helfgott; H. Schroeder and L. Coad. In progress. Operationalizing Social Safeguards in REDD+: Actors, interests and ideas.
- Young, O.R., L.A. King, and H. Schroeder, *Institutions and Environmental Change*. Cambridge: MIT Press.

#### **Week 6-7: Business: Corporate Accountability and the Triple Bottom Line OR CERTIFICATION in BRAZIL, visiting scholar Luis Pinto**

Any pertinent readings will be provided ahead of the lecture.

#### **Week 7: Civil Society**

- Gemmill, Barbara and Abimbola Bamidele-Izu (2002) The Role of NGOs and Civil Society in Global Environmental Governance. In Esty, Daniel C. and Maria H. Ivanova (eds.) *Global Environmental Governance: Options & Opportunities*. New Haven: Yale Center for Environmental Law & Policy, pp. 77-100.
- Ho, P. (2001). "Greening Without Conflict? Environmentalism, NGOs and Civil Society in China." *Development and Change* 32: 893-921.
- Agyeman, J. and B. Angus (2003). "The role of civic environmentalism in the pursuit of sustainable communities." *Journal of Environmental Planning and Management* 46(3): 345-363.

#### **Week 8: Democracy and the Environment**

- Dryzek, J. (2005) *The Politics of the Earth: Environmental Discourses* (2<sup>nd</sup> edition). Oxford University Press.
- Niemeyer, S. (2004). "Deliberation in the Wilderness: Displacing Symbolic Politics." *Environmental Politics* 13(2): 347-372.

## WEDNESDAY: Terrestrial and Marine Ecology

2.00–4.00pm, Beckett Room

**Lecturers:** Nick Brown, Peter Henderson, Tom Thornton

### Lecture Topics:

Week	Lecture Date	Topic	Lecturer
3	1 Feb	Introduction to Ecology I	Nick Brown, Plant Sciences
4	8 Feb	Population Ecology I	Peter Henderson, Zoology
5	15 Feb	Introduction to Ecology II	Nick Brown, Plant Sciences
6	22 Feb	Population Ecology II	Peter Henderson, Zoology
7	29 Feb	Historical and Event Ecology	Tom Thornton, ECI
8	7 Mar	Brussels Field Trip	Phil Mann and Tom Thornton, ECI

### Preparatory reading list

Additional readings may be made available prior to the lectures.

- Henderson, P.A. (2002). *Practical Methods in Ecology*. Blackwell Scientific
- Kent, M. & Coker, P. (1994) *Vegetation description and analysis: a practical approach*. John Wiley, Chichester.
- Hagen, J.B. (1986) Ecologists and taxonomists: Divergent traditions in twentieth-century plant geography. *Journal of the history of biology* 19 (2): 197–214 (RSL Open Shelf Hist. Per. 28 copy 1).
- Begon, M., Harper, J.L., & Townsend, C.R. (1986) *Ecology. Individuals, Populations and Communities*. Blackwell, Oxford.
- Lambin, E. F and Geist, H. J. (2003) Regional Differences in Tropical Deforestation. *Environment* 45, 6 ([www.heldref.org/html/env.html](http://www.heldref.org/html/env.html))
- Lambin, E. F and Geist, H. J. (2002) Proximate Causes and Underlying Driving Forces of Tropical Deforestation. *BioScience* Vol. 52 No 2. 143–150
- Balée, W. 2006. The Research Program of Historical Ecology." *Annual Review of Anthropology* 35:75–98
- Thornton, T. F., et al. 2010. Local and Traditional Knowledge and the Historical Ecology of Pacific Herring in Alaska. *Journal of Ecological Anthropology* 14(1):81–88.
- Walters, B.B. and Vayda, A. P. 2009. Event Ecology, Causal Historical Analysis, and Human–Environment Research. *Annals of the Association of American Geographers* 99(3): 534 – 553.

## THURSDAY – Environmental Geography and Driving Forces

2.00–4.00pm, Becket Room

**Short Description:** This course covers the critical issues in current and future environmental change in terrestrial and marine systems, and the forces driving change, including land use change and climate.

**Lecturers:** David Thomas, John Boardman, Jim Hall

### Lecture Topics:

Week	Lecture date	Topic	Lecturer
3	2 Feb	Soil Erosion	John Boardman, ECI
4	9 Feb	Land use and climate change in Karoo, South Africa	John Boardman, ECI
5	16 Feb	Global climate change & geomorphological consequences	David Thomas, SoGE
6	23 Feb	Desertification & salinisation	David Thomas, SoGE
7	1 Mar	Sea level change and coastal impacts	Jim Hall, ECI
8	8 Mar	Brussels field course	Staff

### Preparatory reading list

Additional readings may be made available prior to the lectures.

- Batterbury, S. and Warren, A. (2001). The African Sahel 25 years after the great drought: assessing progress and moving towards new agendas and approaches. *Global Environmental Change* 11: 1–8. (and other papers in this volume).
- Goudie, A.S. (1990) (ed). *Desert Reclamation*, Wiley
- Morgan, R.P.C. (2005). *Soil Erosion and Conservation*. (3<sup>rd</sup> Edition). Longman
- Stocking, M. (1995). Soil erosion and land degradation. In, *Environmental Science for Environmental Management*. T. O'Riordan (ed), Longman: 223–242.
- Boardman, J and Poesen, J (2006) *Soil Erosion in Europe*. Wiley, Chichester

## FRIDAY WORKSHOPS

### Rationale

This elective module brings together academics, professionals and students in a series of workshops to examine and discuss a range of issues in contemporary policy. The choice of workshop topics is designed to a) address policy-related themes and debates not addressed in the core teaching modules, b) engage students with the research of policy-related research in the ECI and elsewhere in Oxford, and c) through interactions with policy practitioners, academics and fellow students generate insights and ideas for further research and enquiry.

### Teaching approach

These will generally be full-day workshops on Fridays. Workshops will normally start with an overview seminar on the issues and involve some preparatory work on the part of participants. Most workshops will require students to conduct a group study exercise beforehand. Changes to these workshops may be necessary depending on the schedules of external speakers. There is a maximum group size of 25 students per workshop. Names will be collected in advance by the MSc Course Coordinator.

### Michaelmas Term 2011

#### **Week 5 – 11 Nov : Innovation Forum** (Paul Jepson (chair) OPEN)

The purpose of this annual event is to strengthen links between the international graduate student body of the OUCE and Oxford-based organisations at the cutting edge of environmental policy and practice. The afternoon will profile the innovative work going on in Oxford and will provide an opportunity for students and presenters to meet and discuss current policy initiatives and ideas for future dissertation research.

#### **Week 6 – 18 Nov: To be confirmed**

#### **Week 7 – 25 Nov: Ocean's Policy Symposium** (Martha Lang, Tom Thornton)

The ocean's epitomise the problems of common pool resources, a problem that is exacerbated by the fact that the impacts of pollution and destructive resource extraction practices have until recently been invisible for all but the specialists. This symposium will hear from academics and practitioners at the cutting-edge of initiatives to create meaningful governance approaches in the marine environment.

#### **Week 8 – 2 Dec: A convergence of arts and sciences for the environment** (The Prince's School of Traditional Arts)

### Hilary Term (to be confirmed)

#### **Week 3 – 3 Feb: Sustainable Business** (Martin Chilcott)

#### **Week 4 – 10 Feb: Corporate Sustainability and Corporate Environmental Accounting** (Geoff Lye)

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**Week 5 – 17 Feb: Environmental Education** (John Parry)

**Week 6 – 24 Feb: Water** (Mike Edmunds)

**Week 7 – 2 Mar: Designing Sustainable Organisations** (Anton Camarota)

## RESEARCH METHODS AND SKILLS

Michaelmas, Hilary and Trinity Terms

**Module leader:** Shonil Bhagwat

### Module rationale

In order to equip students skills necessary to undertake high quality research, a suite of training activities are provided in a linked Research Methods and Skills programme. The aim is to develop key transferable skills in order for students to be able to execute high quality independent and original research, and expose them to applied research methods used widely in academic research.

Core faculty staff will lead a series of classes that will build core transferable skills in the natural and social sciences. The process of conceptualising, designing, executing, analysing and writing up academic research will be covered in a sequence of linked sessions. The core principles of research ethics and working with human subjects will be introduced and discussed, including the process of research risk assessment. Social science approaches for data collection by quantitative and qualitative methods will be illustrated, including lab-based classes on statistical software (SPSS). In addition to these, the Research Methods and Skills will also include basic GIS and statistics as well as advanced modules on these topics. The skills training will have both focus on strengthening capabilities to conduct high quality research for their dissertation and future professional development.

### Teaching approach

Most of the module will be taught through a series of lectures and workshops. The module is somewhat unusual being split between Michaelmas, Hilary and Trinity terms but, given the nature and importance of the material, this has been designed to provide the best possible training for your research dissertation. The Course Director of your MSc course will suggest which components are required and which are optional.



Module outline (for Hilary and Trinity to followed)

Michaelmas Term	Description	Lecturer
Week 2	<b>Basic Bibliographic Skills (Mon 4-5 pm)</b>	Sue Bird
	This session will cover (1) Plagiarism v. Referencing; (2) Organizing your research and managing your database of references; (3) using Refworks or EndNote (3) Reference works (4) Brief introduction to Databases covering various databases & platforms & saying why Google is no use at this level of research	
Week 3	<b>Statistics Basic (Mon 4-5 pm)</b>	Richard Bailey
	<b>Introduction to Qualitative Techniques I (Tue 4-5 pm)</b> The session will begin with a brief introduction to qualitative research design and the role and importance of interviews for geographical research. In particular we will address questions of Why? Who? What? and How? with respect to interviews. The session will also include discussion in smaller groups.	Craig Jeffrey
Week 4	<b>Statistics Basic (Mon 4-5 pm)</b>	Richard Bailey
	<b>Introduction to Qualitative Techniques II (Tue 4-5 pm)</b> This session will introducing ethnography and participant observation within the context of other qualitative techniques. The session will involve the interpretation and analysis of some observational field notes and will consider the relative merits of qualitative methods.	Richard Powell
Week 5	<b>Bibliographic skills (Tue 4-5 pm)</b> This session will cover advanced bibliographic skills with examples relevant to ECM MSc & include (1)Searching techniques: wild cards, truncation, boolean operators, exact phrases, synonyms, etc.; (2)Saving & rerunning searches to keep up to date.	Sue Bird
Week 6	<b>Policy Analysis I (Mon 4-5 pm)</b> This session will discuss methods and frameworks for analyzing environmental policies using techniques that include critical analysis of the media, texts, web pages, government reports and statistics and that do not necessarily involve fieldwork.	Diana Liverman
Week 7	<b>Policy Analysis II (Mon 4-5 pm)</b> This session will discuss methods of understanding how to evaluate the success and failures of environmental policy at the local level including approaches to research design, case studies, fieldwork and combining natural and social science analysis using examples from projects on climate and development	Diana Liverman
Week 8	<b>Science Writing (Mon 4-5pm)</b> Preparing papers for submission to scientific journals & insights into the peer review process	Robert Whittaker



## RESIDENTIAL FIELD COURSES

An integral and compulsory part of the MSc ECM is the short residential field courses. These are designed to illustrate aspects of the main course and in particular to introduce students to management issues and to professionals who are dealing with these issues in complex settings. The cost of the courses are covered by the ECI (except for the field visit to Brussels-see below). **However, we retain the right to charge students for the full cost of a field course if they do not attend and do not provide medical evidence for non-attendance.**

Field courses for 2011-2012

**Friday 30 September – Sunday 2 October 2011**

*Slapton Field Centre, south Devon*

Management issues in a National Nature Reserve and along a changing coastline

**Friday 28 October 2010**

*Wytham Woods, Oxford*

Woodland ecology and management.

**Friday 4 November – Sunday 6 November 2011**

*Dale Fort, Pembrokeshire*

Management issues in environmentally sensitive marine areas. Techniques in marine science and policy.

**Wednesday 25 January – Saturday 28 January 2012**

*Centre for Alternative Technology, Machynlleth, Wales*

Evaluating alternative energy sources and their impacts

**Wednesday 7 March – Saturday 10 March 2012** (Leaving from Oxford Wednesday pm)

*Brussels, Belgium*

European Environment Policy

**NB** : This field trip is voluntary and not paid for by the ECI.

**You may require a visa, and it is your responsibility to organise one.**

**Sunday 29 April – Wednesday 2 May 2012**

*Blencathra Field Centre, Threlkeld, Cumbria*

Management issues in a National Park (Lake District)

## GENERAL INFORMATION

### Printing

5p/sheet for black and white  
£1 per sheet for colour laser  
printing £20 for an A0 poster

The cost of paper is approx 0.33p per sheet - ie 33p for 100 sheets. The paper we use is recycled paper.

This SoGE price is set in order to cover the cost of toner, and of depreciation of the machines. Please note: it is hugely cheaper to print one colour copy on a networked printer and then to colour photocopy the document, than it is to print off several copies. Please also note that if one line of print = i.e., an email address - is in colour, then the whole page will be classed as a colour print. For further information on printing at SoGE please refer to the following webpage (IT FAQ's) [http://itfaq.ouce.ox.ac.uk/index\\_bak.php](http://itfaq.ouce.ox.ac.uk/index_bak.php)

### ECI Library Resources

#### Books

The ECI has a small MSc library with books and journals relevant to the MSc ECM course, located in the MOA Room. This library works on an 'honesty policy', whereby students can take books from the library after signing out the book in the library loans folder (located in the library). Please be responsible for returning the books in a timely manner, and also be considerate of your classmates, as there is a limited supply of books which are for everyone to share.

### Assessed Essays

The MSc ECM has a library of past assessed essays. Essays from the last couple of years that have received distinctions are on WeLearn:

(<https://weblearn.ox.ac.uk/portal/hierarchy/socsci/geog/ecm/page/resources>).

A more comprehensive collection of older essays are located in dissertation library (ECI reception). These essays can be used for interest, and can be taken on a '**short loan basis**' for **one day**, but cannot leave the building. Please take care of this resource.

### MSc Dissertations

The MSc ECM has a complete library of past dissertations. These are located in the dissertation library (ECI reception). These dissertations can be loaned and used for your interest and reference, and can be borrowed for short periods of **up to one week**. There is a folder which is used to sign out dissertations; please use this system so that we can keep track of the dissertations. **Please ensure that these are returned as soon as you are finished with them, and please look after them as they are a valuable resource.** MSc dissertation titles can be viewed on Weblearn.

Some MSc dissertations can also be viewed in the RSL Library however you will not be able to take them away.

## The House Rules

The SoGE is intended for the instruction of undergraduates and postgraduates, and for research carried out by postgraduate students, staff and authorised visitors. Please abide by the house rules which you can review here, once you log into the intranet: <http://www.ouce.ox.ac.uk/intranet/house-rules.html>

## Health and Safety

Safety information for fieldwork, laboratory and working in the SoGE is detailed on the website. You must read this section at the start of the course and can access this page once you log into the intranet: <http://www.ouce.ox.ac.uk/intranet/safety/>

## Parking

Postgraduate students are **NOT** allowed to park anywhere in the Science Area.

## Out of hours access

The building can be accessed outside of normal hours, using the University card access system. Cards can be encoded at the SoGE reception desk. Entrance is to the left of the main doors. Please ensure that it is closed behind you if leaving the building late.

## Risk Assessment for Fieldwork

The Safety Committee of the SoGE, on the advice of the University Safety Office, has recommended that the School introduce risk assessments for all fieldwork undertaken by members of the SoGE. This applies to all members of the School: undergraduates, postgraduates and staff; and applies to all forms of fieldwork whether undertaken individually or as part of a group.

For most of the fieldwork undertaken by members of the School, the risk assessments should be straightforward to complete. An example of the risk assessment form is available on the School's website. This must be completed by all graduate students before undertaking field work. It will be required in order to arrange travel insurance for overseas trips. Failure to complete the form before a trip will be treated seriously. Please liaise with the MSc coordinator about this.

## Personal Development

Whilst at Oxford there are several resources which are available to you. Here are some:

- Oxford University Computing Services

This is based on Banbury Road and has a wide range of IT courses for postgraduate study. The most popular courses are Word: Managing your Thesis, and courses on statistics packages such as SPSS, PowerPoint or Excel. [www.oucs.ox.ac.uk](http://www.oucs.ox.ac.uk)

- Aspire

Aspire is Oxford University's personal development planning system. With so many opportunities to learn and thrive at Oxford, this system helps you to make the most of your time here. Aspire offers a skills analysis, a means of recording and reflecting on your experiences, a planning development section, facilities to produce reports (including a range of CVs) and a gateway to formal and informal development opportunities, including training courses and physical and online resources. [www.aspire.ox.ac.uk](http://www.aspire.ox.ac.uk)

- Careers Service

This is based at 56 Banbury Road, and aims to provide comprehensive information and impartial guidance to students and graduates of Oxford University. They have weekly emails, newsletters and events, and can also offer one-to-one guidance and careers advice. [www.careers.ox.ac.uk](http://www.careers.ox.ac.uk)



## APPENDICES

### DISSERTATION PROCEDURE: REGULATIONS AND GUIDELINES

#### Timetable

- Research Design in Michaelmas Term is designed to stimulate your thinking about potential research topics and methods. By early **Hilary Term**, preliminary ideas should be discussed with your personal tutor in order to work out the practicality, feasibility and probable intellectual viability of your subject. ECM Alumni and LEAD (Leadership in Environment and Development) networks are good sources for fleshing out potential dissertation topics and logistics.
- A firm proposal of approximately 500 words to be handed in to the MSc Course Coordinator **by 12 noon, Friday of Week 5 Hilary Term**. It should include for following:
  - Aims (framed in terms of addressing a key ECM problem)
  - Objectives
  - Methodology
  - Work Plan (i.e. schedule)
  - Budget
  - Risk assessment details
  - Names and contact details for suggested supervisor/s
  - List of any references quoted
- Once the topic is agreed a Supervisor will be appointed.
- Candidates will be asked to give a formal public presentation on their topic of no more **than 15 minutes during 0th week of Trinity Term (19<sup>th</sup>, 20<sup>th</sup> April 2012)**.
- Candidates must submit their completed and bound Dissertation (3 copies) **not later than 12 noon on Friday, 7<sup>th</sup> September 2012** to The Clerk of Schools, Examination Schools, University of Oxford, High Street, Oxford, OX1 4BG, and marked for the attention of the Chair of Examiners (Environmental Change and Management) a receipt will be issued for it. All 3 copies must be put in an envelope and must be accompanied by loose completed Plagiarism Declaration form. One soft PDF copy is also required to be supplied to Ussanee Sparrow, MSc Coordinator by the same deadline.
- The Examiners shall retain one copy of the dissertation for possible deposit in an appropriate university library.
- **Late submissions are considered a serious breach of regulations. In the event of a late submission the candidate must make application for consideration via the Senior Tutor of the candidate's College to the University Proctors. Marks will be deducted for late submission and the proctor will impose a fine. The examiners will reduce the awarded mark by 1% per day late. In more serious cases the dissertation may not be accepted for marking or the mark may be reduced by 10%. For further information see your copy of the Examination Regulations book.**



## Presentational details

- 15, 000 words including footnotes and excluding references and appendices. If more than six tables each table counts as 200 words.
- If the 15,000 word limit is exceeded candidates will be penalised. The examiners will reduce the awarded mark by 1% percentage point per 100 words over limit. In more serious cases the dissertation may not be accepted for marking or the mark may be reduced by 10% (Examination Regulations p 44)
- The dissertation must be single sided, typed in double-spacing on A4 paper and firmly bound. Pages should be numbered and an exact word-count should be included on the front cover. No other paper format will be accepted (i.e. N American size)
- The dissertation title page should include: title, candidate number, word count, and a comment similar to "Submitted in partial fulfilment of the requirements for the degree of Master of Science in Environmental Change and Management, University of Oxford"
- An abstract should be included in the Dissertation.
- Where relevant, maps, diagrams and photographs should be included in the body of the work. Each should be clearly titled or annotated, be strictly relevant to their purpose, and some form of reference should be made to each in the text.
- Tables should be typed, given self-contained headings and referred to in the text.
- Footnotes should be kept to an absolute minimum.
- Referencing: A complete list of references limited to those works referred to in the text should be included at the end of the Dissertation.

For best practice regarding referencing, we suggest you buy the following booklet from Blackwells bookshop.  
Fisher, D. & Harrison, T. (1998). Citing References. Blackwell Publishing.

## Examples of referencing:

- a book:  
Meggers, B.J. (1979) Prehistoric America: An ecological perspective. New York: Aldine Publishing Co.
- a chapter in a book:  
Van der Wee, H. (1977) Money, credit and banking systems. In Rich, E.E. and Wilson, C.H. (eds) Cambridge Economic History of Europe, Vol 5. Economic Organization of Early Modern Europe. Cambridge: Cambridge University Press. pp. 290-393.



- an article:  
Burgess, J (1990) The production and consumption of environmental meanings in the mass media: a research agenda for the 1990s. Transactions of the Institute of British Geographers, 15: 139- 61.
- References to web pages must include the date the website was accessed.
- References in the text. Whether for a book, chapter, or article, the name and date should be inserted at the appropriate place in the text, e.g. (Meggers, 1979); (Burgess, 1990). References to the work or opinions of another writer (or discussions with other persons who are prime sources of information) must always be acknowledged.

### IMPORTANT INFORMATION – PLAGARISM

The university's code of conduct concerning academic integrity is set out on the website at [www.admin.ox.ac.uk/rso/policy/conduct.shtml](http://www.admin.ox.ac.uk/rso/policy/conduct.shtml), and, while the code's principles relate specifically to the conduct of research, all graduate students are advised to make themselves aware of the document's contents. You will need to exercise judgement in determining when a reference is required, and when material may be taken to be so much a part of the 'general knowledge' of your subject that formal citation would not be expected.

By following the above citation principles and practices in place, you will develop a rigorous approach to academic referencing, and avoid inadvertent plagiarism. Cases of apparently deliberate plagiarism, while happily infrequent in the University, are taken extremely seriously, and where examiners suspect that this has occurred, they bring this to the attention of the Proctors.

### The Assessment of the Dissertation

- In general the Examiners will be expecting a balanced and appropriately referenced piece of work, with a proper sequence of chapters which develop the argument, engage in its analysis, and come to a conclusion, all presented in an acceptable academic fashion.
- The appropriate methodology should be described and their use justified. A critical approach is expected. Appropriate use should be made of relevant techniques in the interpretation, analysis, and presentation of data, in an acceptable academic fashion. This applies to graphical, cartographical, and statistical techniques, computer programmes or field methods.
- It is expected that the best of the dissertations will be worthy of publication, and all should show originality and/or competent and creative scholarship. All dissertations will be judged on the degree to which they represent a logical, thorough, and intelligible report on a piece of work, of a standard expected of an Oxford Master's student, completed in a work-woman or work-man like fashion.
- Consequently Examiners will assess it under three broad headings.
- Aim and Concept. What does it set out to do, what is its relationship to environmental
- change and/or management, how well is that aim/concept given an intellectual and practical context by reference to literature, case studies, etc.?
- Execution. What is the research method and design, what are the data sources, quantity

- and quality of effort involved in getting and applying, choice of appropriate analytical techniques, Does it have a research argument, is the reasoning clear, is the argument logical?
- Presentation. Is the physical presentation (e.g. format, illustrations, bibliography, etc) of an acceptable and consistent standard?
- Examiners will then give a final\_overall assessment and conclusion based on a combination of the above for the final grade.

### Selecting a topic

There is no set pattern for a dissertation and variety is encouraged. To that extent the following notes are for guidance only:

The topic can be in any field of environmental change and/or its management. It is difficult to prescribe area and subject limits but limited rather than large areas, and highly focused rather than diffuse global topics are more likely to allow for adequate depth of study. Ideally, the dissertation uses a limited, focused study to say something of broader significance about an important environmental change and management issue or problem. Field experiments, analysis of specific data sources, laboratory analysis, interviews, are to be encouraged as evidence of first hand investigation and engaging with "primary" data and its interpretation, but they cannot be the exclusive content of the thesis. Thorough and critical reviews of a considerable literature on a clearly defined topic are also acceptable. Other possibilities are: the testing of theories, concepts and techniques and their application to a discrete environmental problem, or an evaluative report based on a placement with the management of a commercial organisation or voluntary agency.

### Dissertation Supervision Advice

- Supervisors are usually appointed in May after a period of discussion between the student, potential supervisor/s and the Course Director.
- Supervisors are appointed to provide UP TO EIGHT HOURS OF TUTORIAL-TYPE SUPERVISION between May and the hand-in date in early September.
- It is absolutely vital that the supervisor and student are clear about when the supervisor is available during that period and how contact will be maintained if either or both are not in Oxford.
- Students should realise that supervisors are busy and appointments need to be made in good time to see them.
- Supervisors must inform the Course Director if students are experiencing significant difficulties or are contemplating late-stage changes of direction in their dissertation.
- Students should realise that they are responsible for their dissertation. Supervisors are there to offer advice and direction.



## Viva Information

Under extraordinary circumstances, a viva may be initiated as part of the examination process. A viva is an interview between the External Examiner and the candidate, and it takes place after all marks have been collated, when the Final Examination Board meets in late September. A viva interview will combine all aspects of your MSc course, and you should be prepared to discuss your essays, examinations and dissertation research. The objective of the interview is to confirm the final grade to be awarded. Under most circumstances a viva is not necessary. The examiner does, however, reserve the right to call any student to a viva examination.

Details will be posted on the notice board in the SoGE, at 4.30 p.m. on the **day before the vivas. It is your responsibility to see if you are required for a viva, and you should make every effort to ensure that you are available on the date of the vivas.** If you must declare yourself unavailable for a viva, please give adequate notice in advance to the Environmental Change Institute office. **The provisional date for Vivas will be on the morning following the meeting of the Examination Board in late September.**

Full Academic dress should be worn.

## MSc MARKING GUIDELINES

CLASS OR GRADE	MARK RANGE %	DESCRIPTIVE EQUIVALENT FOR EXAMS	DESCRIPTIVE EQUIVALENT FOR PROJECTS/ESSAY	DESCRIPTIVE EQUIVALENT FOR DISSERTATIONS
DISTINCTION	81+	A comprehensive and complete answer that clearly demonstrates a deep understanding of the subject, high intellectual quality and comprehensive knowledge of the facts. As good as could have been expected under examination conditions.	Worthy of retaining for future reference and application to teaching or research. Outstanding work based on a critical appraisal of a good volume of material that makes an original contribution to the subject.	Outstanding independent research of a standard equivalent to work published in leading academic journals in the field.
	80	Goes beyond simply answering the question. Perceptive focused use of a good depth of material. Original ideas or structure of argument and critical evaluation of the literature.	Wide breadth and intensity of accessed data or literature plus critical contribution or original finding relevant to the topic.	Identification with professional research approach. Full completion of task, achievement of stated objectives and good philosophical review of shortcomings. Clear critical appreciation of subject, study methods and findings.
	70			
MSc PASS	69	Perceptive analytical and critical understanding of the issues plus a coherent, well read and good presentation. MUST show evidence of wide background reading around the subject and a deep approach to study that goes beyond reproducing material given in lectures and seminars.	Thorough, clear treatment showing an understanding of arguments, contribution and context. Efficient use of literature. No serious flaws or misconceptions. Engages with the major issues and comes to sound and coherently argued conclusion.	Clear programme of study and worthwhile objectives. Well conceived and executed. A highly satisfactory piece of work but with some unfulfilled potential.
	63			
MSc PASS	62	A "correct" answer based largely on lecture material. Little detail or originality but presented in an adequate framework. Lacks evidence of significant outside reading and, while sound, does not penetrate the subject sufficiently, nor display much critical evaluation.	Adequate treatment of literature or data but with little spark or critical insight. Efficiently reproduces material covered in lectures/seminars but adds only a little that comes from the student's own course of personal research and investigation.	Good effort and sound outcome but pedestrian or lacking in imagination and critical insight. Failure to achieve objectives fully. Programme of work not particularly ambitious or innovative. Satisfactory, but not stylish or perceptive.
	58			
	55			
	50			
FAIL	49	Engages with question but is a poorly structured answer based entirely on lecture material and containing several important errors of concept and/or fact. Overall, concepts are disordered or flawed, factual material is poorly presented and there is only shallow consideration of issues.	Basic approach to a narrow or misguided selection of material. Lacking in background or flawed in arguments. Lines of thought are not sustained and conclusions and not supported by the text/project analysis.	Deficient in effort or arguments/discussions poorly resourced. Uncritical use of literature. Little sign of analytical techniques or depth. No clear programme of work and insufficiently clear objectives.
	45			
	40			
FAIL	39	Attempts to engage with the question but with significant errors of content and scope, or poor in knowledge, structure and expression. No evidence of relevant outside reading.	Work is shallow and poorly presented. Lacking in sustained lines of thought or reasoning. No conclusions or conclusions incorrect. No evidence or relevant outside reading.	Low input of effort and superficial write-up conveying little of the context or value of the research. Barely adequate effort given the dissertation's importance.
	30			
FAIL	29-	Significant inability to engage with the question. Either, an answer to an imaginary question, or mostly irrelevant material to the question posed.	Inadequate and without any serious scholarly content.	Insufficient effort to complete a reasonable piece of work. An inadequate thesis.
	0	Copied or plagiarised answer with no intellectual input from the student resulting in immediate academic failure from the module, OR work penalised for late submission submitted without the granting of a specific dated extension by the lecturer of the appropriate module.		

## IMPORTANT DATES 2011-2012

Welcome Party	Thursday 29 September 2011, 6.30pm, Location TBD
Field trip 1, Slapton	Friday 30 September – Sunday 2 October
Department & College Induction	Monday 3 October – Friday 7 October (Week 0)
<b>Michaelmas Term begins</b>	<b>Monday 10 October, 9am (Week 1)</b>
Climate Change Module	Monday 10 October – Friday 14 October (Week 1)
Field trip 2, Dale Fort	Friday 4 November – Sunday 6 November
Ocean's Symposium	Friday 25 November
<i>Michaelmas Vacation</i>	<i>Sunday 4 December – Sunday 15 January 2012</i>
LEAD Week	Thursday 12 January – Sunday 15 January 2011
<b>Hilary Term begins</b>	<b>Monday 16 January, 9am (Week 1)</b>
Assessed Essay 1 hand in	Monday 16 January, 12 noon (Week 1)
Energy Module	Monday 16 January – Friday 27 January (Week 1&2)
Field trip 3, Wales (CAT)	Wednesday 25 January – Saturday 28 January
Field trip 4, Brussels (optional)	Wednesday 7 March – Saturday 10 March
<i>Hilary Vacation</i>	<i>Sunday 11 March – Sunday 22 April</i>
Dissertation proposal	Thursday 19 and Friday 20 April (Week 0) public presentations
<b>Trinity Term begins</b>	<b>Monday 23 April (Week 1)</b>
Assessed Essay 2 hand in	Monday 23 April, 12 noon (Week 1)
Field trip 5, Lake District	Sunday 29 April – Wednesday 2 May (Week 2)
Examinations	23, 24, 25 May, 9.30am – 12.30pm. TBC
Class Photo	Friday 25 May, 1.15pm, Harris Manchester College Gardens
MSc BBQ / Party	Friday 25 May, Location & Time TBD
<b>Dissertation research period</b>	<b>Saturday 26 May – Thursday 6 September</b>
Dissertation hand-in day	Friday 7 September, 12noon
Alumni Dinner	Saturday 8 September. Venue TBD
Viva list to students	Monday 24 September
Viva Examination	Tuesday 25 September
MSc Results posted	Wednesday 26 September





## MSc ENVIRONMENTAL CHANGE AND MANAGEMENT

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