MSC/MPHIL COURSES | SCHOOL OF GEOGRAPHY & THE ENVIRONMENT

MSC/MPHIL ELECTIVES HANDBOOK 2019-20
This handbook applies to students starting the MSc and MPhil courses in the School of Geography and the Environment in Michaelmas Term 2019.

The information in this handbook may be different for students starting in other years.

The Examination Regulations relating to this course are available at www.admin.ox.ac.uk/examregs/

If there is a conflict between information in this handbook and the Examination Regulations then you should follow the Examinations Regulations. If you have any concerns please contact the Academic Administrator Dr Lorraine Wild lorraine.wild@ouce.ox.ac.uk

Disclaimer

The information in this handbook is accurate as at 1st October 2019 however it may be necessary for changes to be made in certain circumstances, as explained at http://www.graduate.ox.ac.uk/coursechanges . If such changes are made the department will publish a new version of this handbook together with a list of the changes and students will be informed.

MSc and MPhil Courses Elective Modules Booklet

2019: version 1.0

For the latest version of this handbook please see the MSc webpages: www.geoq.ox.ac.uk/graduate/
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ELECTIVE MODULES 2019-2020

General Information
Electives provide a small-group forum for learning within the MSc/MPhil programme. MSc students select one assessed elective in Michaelmas Term and one in Hilary Term, and MPhil students select an additional elective in their second year. Electives are led by tutors and provide 8 hours of teaching spread over 4-6 weeks. In most cases, the maximum number of students per elective is ten. We reserve the right not to run an elective if it is under-subscribed.

Students will not be allowed to change electives after the initial meeting, except under exceptional circumstances. Although we do our best to place each student in their preferred elective, with the overriding aim of providing small group teaching we cannot guarantee matching elective places with preferences due to differential demand.

Assessment

Formative Assessment
To prepare students for their assessed essays, elective leaders will set and give written feedback on at least one written formative assignment. The formative essay should be on a subject relevant to the elective but NOT directly related to the topic of their summative assessment.

Summative Assessment
Electives are assessed on the basis of a final essay of up to 4,000 words (exclusive of references and appendices), plus a 150-word abstract. The topic for the essay must be approved by the elective leader before the end of the term and essays are due at the beginning of the next term. Students are required to work independently on their assignments.

The topic should be independent of the formative essay and should not involve primary research or any research necessitating CUREC clearance. It is fine to use secondary data as long as permissions have been cleared for its use, or use of the data is covered by previous CUREC approval. The essay must represent an original and stand-alone piece of work and should not use research previously undertaken by the student. Students are required to work independently on their assignments and will not receive feedback on the final drafts of their summative essays.

Full details on the required format and how to submit the elective essays can be found at: https://intranet.ouce.ox.ac.uk/msc/submission/electives.html

Assessed essays must be submitted by 12 noon on the following dates:

Michaelmas Term elective  Monday 20th January 2020
Hilary Term elective  Monday 27th April 2020

Formative Assessment
To prepare students for their assessed essays, elective leaders will set and give written feedback on at least one written assignment.
MICHAELMAS TERM

Animal Controversies

Elective Leaders: Dr Reuben Message, Dr Ally Palmer

Elective Rationale

Human and animal lives are fundamentally intertwined, and human understandings of, treatment of and dependencies upon non-human animals are often a source of environmental controversy and conflict. There are many different kinds of animals, and many different forms such controversies take. Drawing on theories and ideas from social studies of science and nature, this elective asks how can we better understand, critically engage with and intervene in animal controversies to the benefit of both humans and animals? Taking a geographical approach, the course explores four key sites of human-animal relations and the controversies that arise within each. The seminars are designed to provide you with:

1. An overview of a number of key animal controversies in a range of contexts, including conservation, farm animal welfare, the use of animals in scientific research and zoo species;
2. an introduction to the ways in which social scientists have studied these controversies as a resource for developing a critical perspective on human-animal relations;
3. an appreciation of importance of context in shaping how animal controversies arise and the diverse forms they take.

Elective Outline

This elective consists of four 90-minute seminars, based around key readings, each of which explores a different site of human-animal controversy.

Key introductory readings:


Herzog H (2011) Some We Love, Some We Hate, Some We Eat: Why It’s So Hard to Think Straight About Animals (Harper Perennial) (Popular science take on many of the issues covered in the course)

Adsal K, Druglitro T Hinchliffe S (2016) Humans, Animals and Biopolitics (Multispecies Encounters) (Routledge) (Good introduction to biopolitics as applied to animal studies)

Kalof L and Fitzgerald A (2007) The Animals Reader (Berg) (Useful reader containing short pieces by many of the key figures in animal studies)


1. Conservation and animals in the wild
This seminar will explore how human understandings and aesthetics of nature and wilderness shape conservation practices and the treatment of diverse species in conservation settings.

Readings:


2. Farm animals
This seminar will focus on farm animals, drawing on contemporary debates about the commercialisation and industrialisation of farming practices, farm animal welfare and biosecurity.

Readings:


3. Zoos
This seminar will focus on modern zoos and debates around breeding, aesthetics, and the zoo’s role in conservation; species preservation.

Readings:


4. Laboratory animal welfare
Rather than revise established pro and anti-vivisection debates, the session will look at the response to these debates seen in the development of Laboratory Animal Science and the guiding principles (3Rs) for laboratory animal welfare, and focus on how animal welfare is practiced in the laboratory setting.
Readings:


Henry Buller. 2014 “Animal geographies II: Methods” *Progress in Human Geography* 
[https://doi.org/10.1177/0309132514527401](https://doi.org/10.1177/0309132514527401)


Elective leaders

**Dr Alexandra (Ally) Palmer** is a Postdoctoral Research Assistant in Geography and Associate Fellow of Keble College at the University of Oxford. Ally’s background is in social anthropology and primatology; her work centres around ethical dimensions of human relationships with other animals, especially non-human primates. Using ethnographic and ethological methods, Ally’s previous research has explored human-orangutan relationships in zoos and conservation. Her current work on the ‘Animal Research Nexus’ project, conducted alongside Reuben Message and Associate Professor Beth Greenhough, explores animal research outside of the laboratory such as in veterinary clinics, farms, conservation sites, and zoos.

**Dr Reuben Message** is a Postdoctoral Research Assistant in Geography and Associate Fellow of Keble College at the University of Oxford. His doctoral thesis examined 19th century aquaculture techniques through the lens of the social studies of reproduction. He is working alongside Associate Professor Beth Greenhough and Dr Alexandra on the ‘Animal Research Nexus Project’, where his current research focuses on the introduction of zebrafish into laboratories and what their growing prominence in science means for practices of ethical review, the 3Rs, animal care and public engagements with animal research. He is also the lead researcher on separate project entitled “Suffer the little fishes?: UK biologists’ perception of the fish pain controversy”. Drawing on science studies and sociology, Reuben is especially interested in the relationship between epistemology and social power in the biological sciences, human-animal relations (especially human-fish relations) in cultural and historical context, as well as the affective and material dimensions of laboratory practice.
ASEAN Environments

Elective Leaders: Dr Mari Mulyani and Dr Connie McDermott

Elective rationale
The formation of the Association of Southeast Asian Nations (ASEAN) in 1967 and the European Union in 1993 is constitutive of a move to a world order where regional groupings of countries form a ‘second’ level of government located between international institutions and the nation state. Looking ahead it is expected that the Community of Latin American and Caribbean States (CELAC) established in 2011 may result in deeper integration within Latin America and a third major supra-national political unit. This elective explores the implications of this trend for international environmental governance. Specifically, it examines the complex interplay between the principles of ASEAN cooperation, politics, society and natural resources, and the governance of environmental issues of regional and international concern. Moreover, with the UK voting to leave the EU, this elective discusses what these regional groupings can learn from each other’s successes and failures.

ASEAN comprises the nations of Indonesia, Malaysia, the Philippines, Singapore, Thailand, Brunei, Viet Nam, Lao PDR, Myanmar and Cambodia. The ASEAN region is rich in natural resources. Together these ten countries support 10% of the world’s remaining forests, 60% of global tropical peatland (vital for carbon management), and represent the world’s top twenty fishing economies and some of the most diverse terrestrial and marine ecosystems in the world. ASEAN is also the World’s seventh largest economic power (GDP US$2.89 trillion in 2018) with a rapidly growing population predicted to reach 650 Million by 2020, of which 450 million are ‘forest-dependent’ and ‘indigenous’ peoples. ASEAN’s environment and economic potential is challenged by persistent environmental degradation and complex politics. For these reasons, and with recurrent conflict in the ‘South China Sea’, ASEAN countries have long been a focus for international environmental policy and, as governments become more tolerant to academic analysis, the region is becoming a focus for progressive research on approaches to environmental governance.

ASEAN countries exhibit great cultural diversity, with politics amongst member countries varying from liberal democracy to authoritarianism and totalitarianism. Six countries - Vietnam, Indonesia, Myanmar, Thailand, Malaysia, and the Philippines - have experienced major political and institutional reforms in the last thirty years. This Module explores the political dynamics amongst policy actors and the underlying political economy that governs the region’s environment and natural resources. It asks: what is the future for the environment in a region whose countries strive to become ‘developed’ and are undergoing rapid structural, political and economic change? It also examines the relationship between the path-dependence of the countries’ political economy and environmental decline, and its impact on the well-being of local people.

Teaching approach
The elective leaders have long histories of engagement in these issues with a particular focus on Indonesia. The elective draws on and profiles academic research produced in the region by ASEAN and international scholars. The course will run for six weeks. Each class will run for ninety minutes and include a lecture, a presentation by one or more students, followed by discussion. We expect that all students will read the core text each week, and that those presenting will read more widely. Case studies will be used to relate theory and practice. As you read on you will see that each class covers a large topic though obviously there is a limit to the detail and depth we can address. The goal of this elective is to introduce conceptual frameworks and case study evidence that will enable you to ‘gain traction’ on the governance dynamics at play for further study and contemplation.
**Formative assessment**

For the formative assessments, students will conduct a short presentation of five to ten minutes each and write a short essay of 1000 words. On the latter, the elective leader(s) will provide feedback in preparation for the students to write their final essay.

**Elective outline**

**Class 1: Introduction to ASEAN**

This class will introduce and discuss the rationale behind ASEAN’s creation, followed by examination of the key environmental issues in the region. Drawing on the concept of ‘institutional interplay’ within institutional theory, we will examine the heterogeneity of governance systems, the variation of political economic interests in member countries, and their impact on the environment and natural resources. The class will deepen your understanding of the interplay between environmental institutions established at the international and regional levels and those within ASEAN as a supra-national grouping. Specifically, how does ASEAN’s founding principle of “non-interference” in each other’s affairs affect environmental governance as a transnational issue?

**Key readings**

These two key papers discuss (i) ASEAN’s founding principle of “non-interference” in its members’ domestic affairs, and seeking ”consensus and cooperation“, (ii) the discourse on the ‘ASEAN Way’ and the changes over the years, including the rationale of non-interference, and (iii) its environmental management and the interplay with relevant institutions at the global level.


**Class 2: Transboundary Haze Pollution; the failure of ‘environmental regionalism’?**

Smoke haze from forest fires is a major regional, socio-economic, and environmental problem in Southeast Asia. This pollution has endangered human health and harmed living resources and ecosystems. In 2002 ASEAN created an ‘Agreement for Transboundary Haze Pollution’ but this was unable to prevent further haze events that occurred between 2004 and 2010, and more recently in 2014 and 2015. Historical institutionalism perspectives assume that individuals’ behaviour is based not only on a rational calculation (utilitarian) but also on the logic of appropriateness. Taking this as our point of departure we will explore the nature of ‘environmental regionalism’ and the key barriers affecting ASEAN’s ability to mobilise national institutions to govern haze pollution as a transboundary issue. We will discuss to what extent the ASEAN Ministerial Steering Committee on Transboundary Haze Pollution (i.e., a ‘soft governance’ approach) represents an adequate response to this regional transboundary issue.

**Key readings**

These key readings discuss the issue of trans-boundary haze pollution resulting from forest fires in Indonesia, and questions the effectiveness of ASEAN environmental governance and South East Asia regionalism in general. They highlight the dynamics of policy-making, including the clientelist system within Indonesia’s forestry institutions, and argue that the causes of forest fires are deeply embedded within the political economy of the country.

Class 3: The Interplay of Global Governance with Domestic and Local Access: Insights from the FLEGT VPAs in Indonesia

This class will discuss how scale and sources of authority shape access to forest resources. Following Ribot and Peluso (2003), access involves a diverse array of means, relations, and processes which shape people’s “ability to derive benefits from things”. While the dynamics of access are complex and context-specific, the EU Forest Law Enforcement, Governance and Trade (FLEGT) is discussed whether its international scale and reliance on state, market and donor-based authority serve as overarching factors that determine access. In particular, the EU FLEGT Voluntary Partnership Agreements (VPAs) with Ghana and Indonesia are discussed to unpack significant differences in the design of their verification systems and the attention given to local and domestic forest access. VPAs require the development of internationally recognized legality verification systems to eliminate trade in illegal wood and thus aim to reinforce state law while opening it to broader national and international scrutiny. Yet in both countries, a strong focus on legality verification, coupled with a lack of key governance reforms, favors international trade over local access. This calls into question the EU’s growing legality agenda and highlights the need for alternative approaches to reforming domestic resource governance that are more appropriate and beneficial for local forest users.

Key readings

Class 4: Transnational environmental crime and the response of transnational networks

The ‘policy network’ literature posits that government should no longer be considered a unitary, hierarchically-organised entity, but rather a lead actor in networks involving multiple state and non-state organisations and markets. This perspective is particularly relevant with increasing regional and global problems such as transboundary haze pollution, marine plastic pollution, climate change and transnational environmental crime. This class will discuss transnational environmental crime, including activities such as illegal logging, timber smuggling, wildlife smuggling, sand smuggling and the dumping of hazardous waste and chemicals. In addition, the recent issue that has captured huge attention from the media and scholars is 'cross-border illegal fishing' and the related maritime security issue. We will assess the roles of transnational networks that contribute to processes for establishing the norms and rules within environmental institutions and how these institutions respond to the relevant crimes. Is this transnational crime adequately scrutinised? What are the barriers to solving persistent problems? If not, what needs to happen?

Key readings
These key readings argue that 'transnational environmental crime', such as illegal logging, timber smuggling, and wildlife smuggling, has been un(der)securitised and why this is so. It resulted in an inadequate level of resources being dedicated to solving the problem, and hence the continuation of this crime. A more recent
article, Elliott (2017), highlights the absence of international legal frameworks and the complexity within international institutional settings and policy networks characterised by regime density and a growing number of transnational actors.


**Class 5: Path dependence of natural resource management: land control, land grab and social unrest**

Informed by the lens of the political economy, we will discuss the role of natural resources in the economic and social development of certain ASEAN members. Moreover, the 'path dependence' perspective posits that institutions are persistent, particularly when powerful actors collude over ideas, core beliefs and economic interests. In this class we will consider the case of 'land grabs' to examine the relationship between a country's political economy, environmental decline and the impact on the well-being of rural people. Natural resources, in particular forest conversion, have been used as a means to stabilise political and economic power at the expense of marginalising people and the environment. Agricultural 'land grabs' associated with the 'crop commodity boom' started in the early 1990s (associated with cocoa, coffee, timber plantations and notably oil palm), led to the transformation of landscapes and associated conflicts over land, ethnic tension and social unrest. This class will unpack the 'land grab' label to reveal the dynamics of the interplay between states, transnational corporations, domestic investors and smallholders, that underlies agricultural expansion.

**Key readings**

Hall’s paper highlights the contemporary 'land grabbing' phenomenon and the interdependence between the global demand for food and energy within the locality of a ‘land grab and control in ASEAN member countries. McCarthy at al. presents a case study and investigates the trajectories of land acquisition and enclosure processes in Indonesia associated with rice, oil palm, Jatropha and carbon sequestration. A more-recent article, Schoenberger et al., (2017), highlights the extent to which the regional literature on agrarian and environmental transformation in Southeast Asia has responded and contributed to 'land grab' studies.


**Class 6: ‘Participation’ and ‘social learning’, how do local communities adapt and respond to environmental change?**

In this last session we will engage with the concepts of 'participation' (a norm within 'good governance principles') and 'social learning' in the management of natural resources in certain ASEAN countries. We will explore how 'social learning' plays an important role for both maintaining stability and changing environmental institutions, and how this collective learning is essential for developing the capacity of local
communities to negotiate rules, norms and interests with outsiders. The case studies centre around the opportunity and constraints of social learning within certain development and conservation projects including water management in Mekong and a REDD+ project in Indonesia. This is particularly relevant given that this region has become the focus of transnational networks seeking to implement governance reform through development and conservation projects.

**Key readings**

Lebel et al. (2010) developed the notion of adaptiveness, which relates to the role of social learning and applies this concept to a case study of water management in Mekong. Mulyani and Jepson (2015) contributed an empirical understanding of the relationship between well-designed and implemented community participation with the creation of social learning through a REDD+ case study in Kalimantan Indonesia. A more-recent article, Tran et al. (2017), highlights the learning processes which occurred in rural communities in Vietnam’s Mekong Delta, to adapt to changing conditions in their social-ecological systems, driven by the accelerating impact of climate change, upstream hydropower development, and local flood management policies.


**Teaching staff**

**Dr Mari Mulyani** received her DPhil from the School of Geography and the Environment, University of Oxford. She holds a BA (International Relations) from Gadjah Mada University and an MPhil (Environmental Science) from the University of Indonesia. She has a long history of engagement with issues related to environmental management, particularly with the political dynamic amongst policy actors, and the underlying political economy governing the environment and natural resources in Indonesia. Her research focuses on the interplay between environmental institutions developed at the international and regional levels and those at the national and sub-national levels, including informal institutions deeply-embedded within local communities and indigenous people. Mulyani is a trustee of Oxford Project Southeast Asia and also lectures at the University of Indonesia’s School of Environmental Science.

**Dr Constance McDermott** is a Jackson Senior Research Fellow in Land Use and Environmental Change and chairs the ECI’s *Ecosystems Governance Group*. Her research addresses the linkages among diverse local, regional and global priorities for sustainable forest management. It examines both "new" and "old" institutions of forest governance, from market-based initiatives such as forest and carbon certification to sovereign state-based and traditional community-based approaches, to better understand how dynamics of trust and power shape environmental and social policies and facilitate or inhibit desired outcomes. Her methods range from locally focused case studies to large-scale comparative research examining cross-institutional and cross-boundary interactions, including the integration of forest governance into the global climate regime. Before beginning at Oxford in April 2009, McDermott worked for five years at the Yale School of Forestry and Environmental Studies. She has conducted research and applied work in multi-stakeholder processes, forest and green building certification, intergovernmental forest-related governance, and international development in North and Central America, South Asia, Indonesia, and globally. McDermott is a trustee of Oxford Project Southeast Asia.
Climate Change Law: From the Global to the Local

Elective Leader: Professor Cinnamon Carlarne

Elective Rationale
Climate change has quickly become one of the most pressing social, environmental, and economic challenges confronting the international community. The Climate Change Law elective explores the legal, political, and scientific challenges involved in responding to climate change. The elective introduces students to key international and domestic legal systems designed to address climate change. It begins by introducing students to the international legal framework for climate change, including the United Nations Framework Convention on Climate Change, the Kyoto Protocol and the Paris Agreement before examining the evolution of mitigation and adaptation regimes worldwide. Once students have a solid footing in the overarching legal and regulatory regimes, we will analyse climate change laws and policies from a comparative perspective, looking at the varied and evolving approaches that key states/supranational actors are taking to address climate change. From there, we will explore the rise of climate localism and the evolving role of sub-state and non-state actors in addressing climate change. Finally, at the end of the elective, students will engage in a set of mock international negotiations designed to allow students to develop a deeper understanding of the legal, political, scientific, economic, and ethical dimensions that complicate efforts to structure and effectuate international legal responses to climate change.

Elective Objectives
- to provide an understanding of the philosophical underpinnings and the political and legal processes that shape climate change law and policy at multiple levels of governance;
- to develop a solid doctrinal footing in existing and proposed laws and policies at the international level and to explore existing and emerging laws at the state and sub-state levels;
- to explore the relationship between international, national, sub-national legal systems and between public and private actors;
- to cultivate students’ understanding of the role of law in addressing complex international environmental challenges;
- to develop students’ ability to undertake independent legal research using primary and secondary legal sources.

Teaching Approach
There will be four 2-hour sessions. Prior study of law is not required but students must be willing to read widely and actively engage in group discussions and negotiations. The first two sessions will consist primarily of interactive lectures. The third and fourth sessions will include a mixture of instructor directed lectures and active student participation through presentations and negotiations. Prior to the third session, students will be divided into small groups, with each group designated a specific state(s) to study. Each group will be assigned a state-specific reading before class and will be asked to present a summary of the reading and pose questions for class discussions. During the fourth and final session, following a brief lecture and discussion on climate localism, the students will engage in a set of mock climate negotiations wherein they will be representing their assigned state(s) as they debate a series of pre-set questions.

Formative assessment:
Students will present on a designated set of readings during the third session and will participate in mock negotiations during the fourth session. In terms of written product, students will write one formative 3000-word essay during the course of the term.
Primary Text


Background Readings

The readings below provide a helpful introduction to the topics that we will be focusing on over the course of the term. These readings are not mandatory but provide helpful background information.


Elective Outline

<table>
<thead>
<tr>
<th>1</th>
<th>History, Development, Sources and Principles of International Climate Change Law</th>
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<tbody>
<tr>
<td>This session will introduce students to the architecture of international climate change law, including its origins and evolution over time. During this first meeting, we will also explore the role of key state actors in shaping climate law, and the underlying principles that have come to define international climate law.</td>
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<tr>
<td>Readings:</td>
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<tr>
<td>- Text Ch 1 &amp; 3, Introduction (pp 1-28); The International Climate Change Regime (pp 57-89)</td>
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<tr>
<td>- The Kyoto Protocol: <a href="http://unfccc.int/kyoto_protocol/items/2830.php">http://unfccc.int/kyoto_protocol/items/2830.php</a></td>
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</tbody>
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<th>2</th>
<th>Evolving Mitigation &amp; Adaptation Regimes</th>
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<tbody>
<tr>
<td>During our second session, we will discuss the concepts of mitigation, adaptation, loss and damage and geoengineering before exploring the key ways in which mitigation, adaptation, and loss and damage regimes have emerged and evolved at the international and state levels. We will also discuss the dominant categories of geoengineering – i.e., carbon dioxide removal and solar radiation management – before exploring the governance challenges geoengineering presents and debating the role of geoengineering tools and techniques in addressing climate change.</td>
<td></td>
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<tr>
<td>Readings:</td>
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<tr>
<td>- Introduction to Mitigation &amp; Adaptation: Text Ch. 4, 5, 8: Putting a Price on Carbon (pp. 91-113); Tools for Reducing Emissions: Energy (pp. 117-148); Climate Impacts and Adaptation (pp. 211-242)</td>
<td></td>
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</tbody>
</table>
• Geoengineering: Text Ch. 9, Geoengineering (pp. 243-274)

3 Comparative Climate Change Law & the Role of Climate Litigation

During this session, we will explore the steps key state actors and groups of state actors – e.g., the United States, European Union, China, India, Alliance of Small Island States – are taking to address climate change and reflect on what these efforts suggest for collective international efforts to limit warming. We will also discuss the important and evolving role of the courts in addressing climate change.

Readings:
State specific readings to be assigned.

Climate Change Litigation:

4 Climate Change Localism & Climate Change Negotiations

During our final session, we will delve into the important role that sub-state actors (public and private) play in shaping local, state, and international approaches to climate change. We will then engage in a set of mock international climate negotiations.

Readings:

Negotiation Readings: TBD based on State(s) Assignment

Teaching Staff

Professor Cinnamon Carlarne is the Keeley Visiting Fellow at Wadham College, Oxford and the Alumni Society Designated Professor of Law at the Moritz College of Law at the Ohio State University. Carlarne’s scholarship focuses on the evolution of system of domestic and international environmental law and includes a book on comparative climate change law and policy with Oxford University Press; a Foundation Press text on climate law; the Oxford Handbook of International Climate Change Law; a series of journal articles and book chapters exploring questions of domestic and international environmental law; and a textbook on oceans and human health. She is currently working on a new book about the future of climate law, titled Hot Law. She is on the editorial board for Transnational Environmental Law (Cambridge University Press) and the academic advisory board for Climate Law (IOS Press). Carlarne earned her BCL (law) and an MSc in Environmental Change and Management from the University of Oxford; a JD from Berkeley Law; and her BA from Baylor University. Prior to joining the Moritz College of Law, she was an Assistant Professor at the University of South Carolina School of Law and the Harold Woods Fellow in Environmental Law at Wadham College, Oxford. Prior to entering academia, she was an associate attorney at Akin Gump Strauss Hauer & Feld in Washington, D.C.
Energy and the Environment

Elective Leaders: Dr Christian N. Jardine and Dr Sarah Darby

Elective Rational
The energy services available to humans are increasing, while there is a pressing need to reduce the climate impacts from providing these services: fossil fuel burning is the greatest single contributor to accelerated climate change. This elective explores issues of energy demand, supply and infrastructure, and examines policies and economic instruments for achieving a lower carbon future.

The ECM course does have some dedicated core lectures on energy, which this course is designed to complement with minimal overlap. The other Masters courses do not have any dedicated energy teaching, and so this course serves as a useful introduction to a major environmental topic.

Teaching Approach
The tutorials run as four 2-hour sessions and explore energy issues by examining different aspects of a socio-technical energy system: energy demand (personal consumption in context); energy supply (where fuel and electricity come from, and associated geopolitical and climate change issues); energy economics and equity issues; and energy policy.

Tutorials will explain broad underlying concepts that are transferrable to international locations, but the majority of case studies are drawn from the UK. Students are encouraged to contribute examples from their own backgrounds, and these international comparisons often form the basis of group discussion.

Formative assessment
A formative essay is set on each of the four topics above in advance of the tutorial, during which the marked essays will be discussed.

Elective Outline

<table>
<thead>
<tr>
<th>Lecture</th>
<th>Description</th>
</tr>
</thead>
</table>
| 1       | **Energy Demand**  
Energy concepts and footprinting methodology. How we use energy as individuals. Infrastructures of demand, and what ‘behaviour change’ and ‘low carbon transitions’ might mean in practical and theoretical terms. How macro-levels of energy demand are the sum of many individual micro-demands, practices and decisions. |
| 2       | **Energy Supply**  
The geopolitics of energy, especially the price of primary fuels. The issue of peak oil. Fossil fuel reserves and their climate implications. |
| 3       | **Energy Economics**  
Carbon trading schemes and carbon taxes. The economics of energy use, and equity considerations. |
| 4       | **Energy Policy**  
What policies can governments implement to alter the way we view and use energy? What are the relative merits of energy taxation, regulation, voluntary agreements and market transformation? |
Introductory Readings

The list below is a mix of books and papers that serve as a good introduction to the topics we will be discussing. We don’t expect you to read all of the items on the list. Part of the skill we are trying to teach is for you to find and evaluate available material, so we also expect you to search out your own sources. The books are in the Bodleian Library, with the possible exception of the book by David Elliott.

General


Demand for energy services, energy-using practices


Supply


Economics, equity


Policy design and implementation


**Electricity infrastructure, smart grids** (some supplementary reading for those interested in grid developments)


**Teaching Staff**

**Dr Christian Jardine** is a Senior Researcher in the Environmental Change Institute with 11 years of research experience of renewable energy technologies and policies. Christian’s work has focused on small scale renewables, especially the outdoor performance of solar photovoltaics, the integration of renewables into the building stock and their impact on the electricity network. Christian’s work at ECI is now dedicated solely to Masters’ teaching, with his remaining time working for a solar PV installation company.

**Dr Sarah Darby** is Associate Professor in smart energy systems and everyday life at the ECI, investigating the social aspects of energy use and, in particular, the development of smart grids in relation to patterns of demand and energy literacy.
Flood Risk Management: Water Security in Theory and Practice

Elective Leader: Professor Edmund Penning-Rowsell

Elective Rationale
Central to water management is the management of extremes. Floods are one such extreme. Science contributes to this management by reducing uncertainty, but many issues remain:

- What do we mean by an “extreme”?
- What are the alternative strategies for ‘tackling’ floods as extremes?
- What is meant by flood ‘defence’, ‘flood security’, and ‘flood risk management’?
- What is efficient risk reduction?
- What is the characteristic of public expectations?
- What social justice issues are raised, and which can be tackled?
- What flood risk reduction measures exacerbate environmental harm?
- What governance issues are raised by the need to manage flood risk?

Climate change appears to increase the threat of greater flood incidence and severity, and this greater threat raises questions as to the role of the state and the individual in risk mitigation strategies. Market-based approaches also have a role as well as regulation, but many non-governmental policy instruments appear to be weak and ineffective. Yet governments are short of money, and often have other priorities.

This elective looks critically at current policies and practices (mainly in the UK today but with 10 international ‘mini’ case studies and comparisons). The analysis is framed within a global context of changing climate, changing public expectations and contested views as to the role of the state. It takes the viewpoint that examining extremes (in this case floods) provides a ‘magnifying glass’ with which to examine water/human relations generally, with all the inherent contradictions and complexities that this involves.

Teaching Approach
A series of six 2-hour classes will be given on a weekly basis. In each case there will be a brief formal ‘lecture’ for 30-35 minutes, followed by a ‘Reading Workshop’ based on students each reading one or two key selected research papers. Within the ‘lecture’ time, there is a short session on the mini case studies from countries such as China, Bangladesh, South Africa, Argentina, Canada and Taiwan. Many of these case studies are based on previous high quality students’ dissertations or elective essays.

Students will be expected to be familiar with their ‘Reading Workshop’ readings prior to attending classes, and be able to summarize the key ideas and arguments. Detailed reading lists will be provided at least one week prior to each class. Students will be allocated readings before the class, and will be expected to summarize the key contents of – and lessons from – the papers allocated to them in a 5-minute session at the start of each ‘Reading Workshop’. One student will be nominated the week before to summarize the ‘lessons learnt’ at the end of each session.

Formative assessment:
A short “trial essay” will be required about two thirds of the way through the program, with immediate feedback, and a “Mystery Task” is also set, to be undertaken collectively by the whole group.
<table>
<thead>
<tr>
<th>Lecture</th>
<th>Description</th>
</tr>
</thead>
</table>
| 1       | What is an extreme such as a flood, and how does science and policy development help us to enhance flood risk management?  
Discussion topic: The role of the private sector: flood insurance |
| 2       | Who has power in flood risk management and why?  
Discussion topic: Theories of policy evolution and their philosophical underpinnings |
| 3       | How can risk be assessed, and what are the implications  
Discussion topic: The role of spatial planning in managing this field of water security: UK and international comparisons |
| 4       | What is efficient flood risk management, and why.  
Discussion topic: Risk communication and warning |
| 5       | Flood risk and people: strategies, expectations, and delivery  
Trial essay feedback and discussion |
| 6       | How can we manage the flood risk to London?  
Discussion topic: EITHER: Social justice and flood risk management  
OR: The wider international context: who does what, where and why? |

**Introductory Readings: Classic Texts**

Teaching Staff

Professor Edmund Penning-Rowsell is a Distinguished Research Associate at OUCE and a geographer by discipline, taking his PhD from University College London. His research interests are the political economy of major hazards and how this affects decisions about investment in hazard mitigation. He has more than 40 years’ experience of research and teaching in the flood hazard field, analysing floods and investment in flood alleviation, river management, water planning, and landscape assessment. His focus is on the social impact of floods, and the policy response from regional, national and international organisations. He has published several books and many papers on his research, and acted as consultant to numerous national and international environmental agencies, including the OECD, the Red Cross/Crescent, the UN, the World Bank, and the World Health Organisation.

Edmund founded the Flood Hazard Research Centre at Middlesex University in 1970. The Centre has been an acknowledged world leader in the socio-economic analysis of flood hazards, and a British flagship in international research on natural disasters, risk and urban pollution. This was recognized in 2000 by the Centre’s prestigious Queen’s Anniversary Prize for Further and Higher Education and the Centre’s 2002-04 leadership role in Sir David King’s ‘Future Flooding’ Foresight project. In addition, the Centre’s research over 22 years on flooding and health led to its inclusion in 2006 in the Eureka100 list of Universities UK’s 100 most important research projects of the last 50 years. Edmund was awarded an OBE by the Queen in 2006 for “services to flood risk management”.
Political Ecologies of Food: Justice, Governance, Transformation

Elective Leader: Dr Nathan Clay

Elective Rationale
Ensuring access to adequate nutritious food that is produced in socially just and environmentally sustainable ways is a crucial challenge that cuts across ‘human’ and ‘environmental’ dimensions, spans urban and rural spaces, and intersects the ‘global’ and the ‘local’. Given entrenched inequalities and unsustainable practices, food systems arguably require comprehensive transformation. This module engages food system transformation through the lens of political ecology. We will focus on the challenges and opportunities of ‘alternative’ modes of food production, distribution, and consumption (often referred to as Alternative Food Networks) such as organic, local, or community supported agriculture. Political ecology and critical food studies readings enable us to examine issues of power and justice in food systems and alternatives through discussion about rural livelihoods, environmental governance, marginalization, and sustainability. Students will further their understanding of key concepts and topics in the geographies of food and agriculture as well as how food issues intersect with broader processes of social-environmental change. Students will become familiar with the following literatures and conceptual tools:

- Environmental social science approaches to studying agro-food systems and the challenges and opportunities of their transformation; particularly alternative food networks.
- Political ecology as an approach food systems in research and practice.
- Key concepts and food-centred social movements, including food security, food sovereignty, and food justice.
- Conceptual tools to critically assess food governance and to envision more just and sustainable food futures.

Teaching Approach
This module is taught across five two-hour seminars. Each seminar covers a set of core concepts and issues in the political ecologies of food and agriculture. Seminars centre on critical discussion of readings, with brief (10-20 minute) overviews given by the elective leader to situate readings within broader geographic themes. For each seminar, students are expected to read the articles and write a short reflection on the readings, tying them into course themes, individual interests, and experiences (200-300 words, due at the beginning of each seminar).

Formative assessment:
At the beginning of Week 4, students will submit a formative essay (1,500 words) that outlines plans for writing the assessed essay, a brief review of concepts/topics and includes a hypothetical bibliography that will be the basis for the assessed essay (approximately 15 papers/books). Students will receive feedback on this formative assignment the following week. More information about the formative and assessed essays will be provided during the first seminar.

Elective Outline

<table>
<thead>
<tr>
<th>Session</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><strong>Key concepts and debates in the political ecology of food</strong>&lt;br&gt;This introduction provides topical and conceptual foundations for the module, particularly about food governance and analyses of power dynamics at the interface of society and the environment. Readings provide background on food security and food sovereignty discourses as well as agroecology and food movements. Readings help develop understanding of the political ecology of agro-food systems and key questions and methods of this research approach.</td>
</tr>
</tbody>
</table>
Readings are mainly conceptual in nature and will help nurture a shared dialogue that we can use to address empirical case studies in subsequent seminars.

**Key Readings**


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### 2 Alternative food networks

Much has been said about what is wrong with food systems, and there have also been innumerable attempts to change things. ‘Alternative food networks’ (AFNs) have been the subject of much geographic scholarship over the past few decades. We consider the political ecologies of AFNs via discussion of a few representative papers that critically assess organic and local food, mainly through case studies.

**Key Readings**


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### 3 Feeling food (alternatives)

This seminar follows closely from the previous week by considering the complex social-environmental processes that underlie food systems and alternatives. Through case studies, these readings address how producers and consumers engage with and experience food systems (including alternatives) in more-than-rational ways, engaging food and food networks as complex, sensory experiences. Papers discuss further examples of AFNs (permaculture and school garden and cooking programs) as well as the work done in industrial food systems to make food appear unproblematic.

**Key Readings**

Food justice

Political ecologists often consider how uneven power dynamics shape who wins and who loses in food systems. In this seminar, we consider a recent strand of literature that asks how we can cultivate more just food systems, particularly with respect to race, class and gender. Readings address issues of race and ethnicity in alternative food networks and outline key questions in this emerging field.

Key Readings


Imagining/governing food futures: transformation in a time of climate change

This seminar encourages us to reflect on this module by way of imagining and considering how to enact food futures in a time of global climate change. Agriculture as we know it is immanently threatened by global warming. At the same time, food systems emit a huge share of greenhouse gases. This seminar considers how food futures are being imagined (and governed). Readings address the challenges of changing meat and dairy production systems, the promises and perils of alternative proteins, the mirage of ‘climate-smart agriculture’, and how we might transition to becoming ‘ecological citizens’.

Key Readings


Supplementary readings (Not required; elective leader will advise which may be of use to students depending on interests)


**Teaching Staff**

Dr Nathan Clay is a postdoctoral researcher in the School of Geography and the Environment and the Oxford Martin Program on the Future of Food. His research focuses on environmental justice, food systems, and rural livelihoods within contexts of rapid social and environmental change. He has conducted fieldwork in Europe, sub-Saharan Africa, and Latin America and worked as a visiting researcher with the International Center for Tropical Agriculture in Colombia and Rwanda. His MSc (environment and resources) and PhD (geography) research considered shifts in rural institutions and livelihoods amid broader governance changes and climate change in Cameroon, the Republic of Congo, and Rwanda. His current work considers the political ecologies surrounding ‘plant-based’ milk and meat.
International Environmental Law

Elective Leader: Dr Catherine MacKenzie

**Elective rationale**
This elective introduces students to international environmental law. It commences with an overview of the international legal system in the context of environmental protection. It then discusses the history, development, sources and principles of international environmental law and reviews the role of the UN, corporations and NGOs in the context of international environmental protection. Next, it explores international environmental law on:

- Biodiversity (including endangered species and deforestation) and cultural heritage;
- Freshwater and oceans;
- Peace, war and the environment (including international environmental crimes, UN peace-keeping and state reconstruction).

**Elective Aims:**
- to provide an understanding of the sources, principles and institutions of international environmental law;
- to provide knowledge of key legal concepts (e.g. territory, borders, sovereignty) in the context of international environmental issues (e.g. atmosphere and climate, pollution, hazardous waste)
- to explore the implementation and effectiveness of international environmental agreements and the role of international courts;
- to develop in students the capacity to undertake independent legal research using primary and secondary legal sources, including legal databases.

This elective is likely to be of particular interest to students who are seeking a career in the UN, multilateral development banks, international relations, international organizations and international NGOs, and/or to any student who wishes to develop the capacity to read and understand international legal documents.

**Teaching approach**
There will be four sessions. This elective is open to all students. Prior study of law is not required but students must be willing to read widely.

**Formative assessment**
A formative question will be set during the elective.

**Readings**

Textbooks:

Other useful books and websites:
- GlobaLex: A Basic Guide to International Environmental Law
  [http://www.nyulawglobal.org/globalex/International_Environmental_Legal_Research1.html](http://www.nyulawglobal.org/globalex/International_Environmental_Legal_Research1.html)
- ASIL Electronic Resource Guide to International Environmental Law:
- EcoLex: Gateway to Environmental Law [www.ecolex.org](http://www.ecolex.org)
- United Nations Environment Program [www.unep.org](http://www.unep.org)
- International Criminal Court [https://www.icc-cpi.int/](https://www.icc-cpi.int/)

**Elective outline**

<table>
<thead>
<tr>
<th>Seminar</th>
<th>Description</th>
</tr>
</thead>
</table>
| **1**   | History, Development, Sources and Principles of Int. Environmental Law  
This session provides an overview of the international legal system, discusses the sources and principles of international environmental law and introduces students to international environmental law-making.  
Reading: BBR Chapters 1-4 and/or S & P Chapters 1-5  
Review UN Charter, Articles 1-111  
| **2**   | Biodiversity (including endangered species and deforestation) and Cultural Heritage  
This session explores the conservation of biodiversity in international law, biotechnology and GMOs, considers the role of the precautionary principle in the regulation of biotechnology and GMOs, and reviews the international protection of forests and deforestation from a legal point of view.  
Reading: BBR Chapters 11-12 and/or S & P Chapter 10  
| **3**   | Water and Oceans  
This session discusses the law of water management, the law of the sea (including maritime delineation, protection of the marine environment, shipping, maritime trade, whaling), and the law of hazardous waste (including marine and land-based pollution).  
Reading: BBR Chapters 7-8 and/or S & P Chapters 11-12  
| **4**   | Peace, War and the Environment  
This session discusses the role of environment in peace, war and state reconstruction. It considers international law on intentional environmental damage and environmental modification in peace and war, reviews the role of environmental protection in UN peacekeeping and evaluates the role of the International Criminal Court in the prosecution of environmental offences. |
Reading: S & P pp820-828
UN Peacekeeping https://peacekeeping.un.org/en
UNEP Protecting the Environment During Armed Conflict
UNEP Post-Conflict and Disaster Management Branch
https://postconflict.unep.ch/about.php

Teaching Staff

Dr Catherine MacKenzie is Dean of Degrees of Green Templeton College, Oxford, Director of Studies in Law at Clare Hall and Homerton College, Cambridge, a member of the Cambridge Faculty of Law and Visiting Professor of International Environmental Law at the University of San Diego and at Vermont Law School. A member of the English and Australian Bars, she was formerly employed by the World Bank, the Asian Development Bank and the United Nations in Washington DC, Tokyo, Manila, Hong Kong, and the Middle East. She also served in UN peace-keeping in West Africa, advised on the establishment of the first women’s law school in Saudi Arabia and now advises on legal education throughout the Middle East. A Commonwealth Scholar, Dr MacKenzie graduated from Oxford, London, the Inns of Court School of Law, Sydney University, the Royal Military College of Australia and the Australian National University. She has taught at the School of Geography and the Environment since 2005. Her research focuses on international environmental treaties, international forest law and war and post-conflict state reconstruction. She is co-editor of the book, Law, Tropical Forests and Carbon: the case of REDD+ (CUP) and her monograph, International Law and the Protection of Forests will be published by OUP.
International Wildlife Trade

Elective Leaders: Dr Dan Challender, Dr Amy Hinsley and Dr Diogo Veríssimo

Elective Rationale
International wildlife trade is top of the global biodiversity conservation agenda. This is largely because high volumes of illegal wildlife trade currently take place globally, involving iconic species such as elephants and rhinos, but also lesser known species including orchids, seahorses and pangolins among many others. This illegal trade is estimated to be worth billions of dollars annually and is one of the highest valued illicit trade sectors in the world. It threatens the existence of many species and the functioning of ecosystems, but also poses disease and human health risks, undermines good governance and threatens the livelihood strategies of millions of people worldwide.

Ensuring sustainability in international wildlife trade is critical to biodiversity conservation. The predominant approach to controlling international trade in wildlife historically has been through the enforcement of laws and regulations, including CITES, the Convention on International Trade in Endangered Species of Wild Fauna and Flora, which entered into force in 1975. However, the limitations of a predominantly law enforcement focused response are increasingly being recognised because this approach inherently discounts the social, cultural and economic drivers of wildlife trade locally, nationally and internationally.

The diversity of uses and trades in wildlife, ranging from food, medicine and ornaments to apparel and manufacturing and construction, and the complex dynamics of international wildlife trade, makes devising interventions to ensure legal trade is sustainable and that illegal trade is prevented, incredibly challenging. However, it is now recognised that alongside law enforcement and regulation, interventions are needed that are built around the needs of local communities and indigenous peoples at the supply end of trade chains, and crucially, that demand for wildlife products should also be addressed, for instance through changing consumer behaviour.

This elective will provide students with a challenging module on international wildlife trade as a contemporary and pervasive issue. It will explore key themes including consumer behaviour change, supply-side interventions and the effectiveness, or not, of regulation-based approaches, drawing on theory and principles from conservation science, behavioural economics, psychology, anthropology, law and policy. The goal of this elective is to introduce participants to the concepts and frameworks that will enable them to gain a broad understanding of the global dynamics behind the wildlife trade, legal and illegal, and interventions to ensure it is sustainable.

Teaching Approach
This elective draws on and profiles academic research produced by the session leaders as well as a broad range of global scholars. The course will run for five weeks, with each session running for 2 hours. Each session will include a presentation by one of the session leaders, often drawing on evidence-based case studies, followed by group work and interactive class discussion.

Pre-class preparation, including reading key texts, carrying out small research projects, preparing presentations, and finding examples for discussion will ensure that each student is able to engage in critical debate during class time.

Formative assessment
The formative assessment will be announced at the start of the elective.
Elective Outline and Core Readings

Session 1. Introduction (AH, DC)
Thousands of species of animals, fungi and plants have been harvested, used, and traded by a huge variety of people for millennia, including for food, medicine, shelter and tools, among endless other applications. The drivers and markets for wildlife trade are complex: in some cases, such as in Asian traditional medicine, wildlife-use is deeply rooted in culture, but there are also new commercial uses for wildlife constantly developing, such as the use of wild plants as ingredients in cosmetic and food products. Most wildlife trade takes place within the country of harvest, but up to 100 million organisms are traded internationally each year in the legal market, with many also traded illegally. Whilst this illegal trade is often the focus of conservation attention, wild-sourced trade can often be legal and sustainable if managed well, meaning that the key conservation consideration should be ensuring that overexploitation does not threaten species survival. This requires careful monitoring, which is done nationally and internationally through CITES, the Convention on International Trade in Endangered Species of Wild Fauna and Flora. This session will explore the reality of wildlife trade, the different forms it can take, and how and when it can be a conservation issue.

Pre-class preparation
- Visit the Pitt Rivers museum and choose one item made of any kind of wildlife (animal, plant or fungi) that is traded in some form (i.e. as opposed to collected for only local use). Come prepared to discuss the item you found, what it is traded for, and what the conservation implications of the trade might be if it became unsustainable. Take a picture of the item and email it to the course leaders before the session, so that it can be shown to the rest of the group.

Key readings

Supplementary readings
Class structure - Session 1. Introduction

<table>
<thead>
<tr>
<th>Description</th>
<th>Time (minutes)</th>
<th>Lecturer/Chair</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction to the module</td>
<td>10</td>
<td>AH, DC</td>
</tr>
<tr>
<td>Overview of different uses and wildlife trades</td>
<td>20 (10 presentation + 10 Q and A)</td>
<td>AH</td>
</tr>
<tr>
<td>Group discussion of Pitt Rivers items</td>
<td>40 minutes</td>
<td>AH, DC</td>
</tr>
<tr>
<td>Wrap up</td>
<td>10</td>
<td>DC</td>
</tr>
</tbody>
</table>

Session 2 - Consumers and behaviour change (DV, AH)

Consumer demand is a fundamental part of any market and, short of species extinction, reducing the demand for wildlife products is the only way of permanently closing down the market. Yet, efforts to address unsustainable wildlife trade have largely focused on the supply-side, through regulation and law enforcement, both of which can be undermined by weak governance. Where demand-side interventions have taken place, they have focussed on awareness raising or information provision campaigns, which have largely been shown to deliver limited results when it comes to changes in actual behaviour. To go beyond this approach and formulate an effective strategy to address unsustainable trade we must understand the consumer, through an analysis of consumption, demand elasticities, consumer preferences, and markets characteristics. This requires an interdisciplinary approach, drawing on fields such as social marketing, economics, anthropology and psychology to enable conservationists to understand the values and motivations of consumers. There will no doubt be enormous challenges, from the resistance to change that is common to all areas of human behaviour, especially when practices have long-established cultural and social roots, to the active marketing activities of crime syndicates and traders whose livelihoods depend on sales of these illegal wildlife products.

Pre-class preparation

Please read key readings.

Key readings


Supplementary readings

Class structure - Session 2. Consumers and behaviour change

<table>
<thead>
<tr>
<th>Description</th>
<th>Time (minutes)</th>
<th>Lecturer/Chair</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intros</td>
<td>5</td>
<td>DV (+AH)</td>
</tr>
<tr>
<td>Consumer types</td>
<td>15 Presentation (+10 Q&amp;A)</td>
<td>AH</td>
</tr>
<tr>
<td>Group work - Pick a consumer type, think through what types of products they may be linked to and how you could reduce demand</td>
<td>35</td>
<td>DV + AH</td>
</tr>
<tr>
<td>Characterising demand reduction interventions</td>
<td>15 Presentation (+10 Q&amp;A)</td>
<td>DV</td>
</tr>
</tbody>
</table>

Session 3. Supply-side interventions (DC, AH)
Supply-side interventions (e.g., artificial propagation, wildlife farming) are proposed as a conservation solution to address illegal wildlife trade and as a tool to meet market demand for wildlife products. Economic theory suggests that flooding the market with cheaply produced substitutes will result in lower market prices for poached wildlife thereby reducing poaching incentives and alleviating pressure on wild populations. Although this approach has worked in a few cases historically (e.g., crocodiles), little is known and understood about the conditions under which supply-side interventions will work. Various other factors should also be considered, such as who benefits from trade once it is formalised. This session will examine the application of supply-side interventions as conservation solutions.

Pre-class preparation
Please read key readings

Key readings

Supplementary readings
Class structure - Session 3. Supply-side interventions

<table>
<thead>
<tr>
<th>Description</th>
<th>Time (minutes)</th>
<th>Lecturer/Chair</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction to session</td>
<td>5</td>
<td>AH, DC</td>
</tr>
<tr>
<td>Background presentation</td>
<td>10</td>
<td>AH, DC</td>
</tr>
<tr>
<td>In pairs, consider whether a supply-side intervention for a chosen species would be likely to be effective or not and the reasons why</td>
<td>30</td>
<td>AH, DC</td>
</tr>
<tr>
<td>Present back to plenary</td>
<td>40 (5 mins each pair + questions)</td>
<td></td>
</tr>
<tr>
<td>Discussion around presentation case studies</td>
<td>25</td>
<td>AH, DC</td>
</tr>
<tr>
<td>Introduction to essay for Session 4</td>
<td>10</td>
<td>AH</td>
</tr>
</tbody>
</table>

Session 4. Do trade bans work? (DC, DV)
Enforcement of laws and regulation have been the predominant form of controlling international trade in wildlife historically. Since 1975, CITES, the Convention on International Trade in Endangered Species of Wild Fauna and Flora, has controlled international trade in wildlife, which today includes 35,000 species. The Convention has 183 member states (Parties) and its purpose is to ensure that international trade is not detrimental to the survival of species in the wild. The strictest form of control in CITES is through the listing of species in Appendix I, which means international trade in wild caught specimens and their parts for commercial purposes is prohibited. It has been used for various species including elephants, rhinos, big cats and whales. But, do trade bans work? During this session we will examine whether international trade bans have worked and the underlying reasons why or why not, linked to economic theory. For instance, what are the actual impacts of trade bans? Can they stimulate illegal trade by incentivising poaching? Do they merely drive trade onto the black market? It will also consider the limitations of bans inherently discounting the drivers of trade, both in supply and demand terms, and explore potential alternatives approaches.

Pre-class preparation
- Background reading on trade bans
- Choose a species subject to an international trade ban and familiarize yourself with the circumstances surrounding its Appendix I listing and the impact it has had on the species (e.g., conservation status, population levels).

Key readings
Supplementary readings


Reference text:


Class structure - Session 4. Do trade bans work?

<table>
<thead>
<tr>
<th>Description</th>
<th>Time (minutes)</th>
<th>Lecturer/Chair</th>
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</thead>
<tbody>
<tr>
<td>Introduction to the issue; CITES context</td>
<td>5</td>
<td>DC, DV</td>
</tr>
<tr>
<td>Students give 3 minute introduction to the species subject to the trade ban and conclude on its effectiveness, or not, and reasons why</td>
<td>30</td>
<td>DC, DV</td>
</tr>
<tr>
<td>Feedback from module leaders</td>
<td>10</td>
<td>DC, DV</td>
</tr>
<tr>
<td>In pairs, students pick a species for which a trade ban is being proposed from the CITES CoP18 website, examine the listing proposal (plus other information they can find) and propose potential implications of the trade ban being adopted AND alternatives to adoption of the trade ban.</td>
<td>30</td>
<td>DC, DV</td>
</tr>
<tr>
<td>Students feedback proposed measures to plenary in 5 minute presentation</td>
<td>30</td>
<td>DC, DV</td>
</tr>
<tr>
<td>Discussion around proposed measures</td>
<td>15</td>
<td>DC, DV</td>
</tr>
</tbody>
</table>

Class structure - Session 5. Final session and presentations (DV, DC, AH)

As shown in previous sessions, the wildlife trade is diverse and complex, and the interventions that can be used to control it, including addressing illegal wildlife trade specifically, have different strengths and weaknesses. There is no perfect intervention that can be used to reduce all illegal and unsustainable wildlife trade, and conservationists therefore must take a tailored approach, one that takes into consideration not just the product itself, but why, where, and how it is traded, and who is likely to be buying it. Unintended consequences, such as shifting demand to a different threatened species or removing sustainable livelihood opportunities, must also be considered. In this session students will choose a real species in trade that has been the subject of some kind of intervention (e.g. demand reduction, farming, or a trade ban). This could include the introduction of farming to address illegal bear bile trade, the uplisting of pangolins to CITES Appendix I, or the recent efforts to reduce ivory or rhino horn demand using consumer behaviour change campaigns. They will prepare a short presentation...
(assessed) covering the species use and trade, the intervention applied, an evaluation of how suitable/successful it was, and their recommendations for how it could have been improved.

**Pre-class preparation**
- Prepare a 5-minute presentation on your chosen species and intervention.

**Key readings**
See previous sessions.

**Supplementary readings**
No specific text set, but the student should read around the wildlife product chosen, to get a better idea of the background of the trade in order to recommend an intervention.

<table>
<thead>
<tr>
<th>Description</th>
<th>Time (minutes)</th>
<th>Lecturer/Chair</th>
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</thead>
<tbody>
<tr>
<td>Intro</td>
<td>10</td>
<td>DV, DC, AH</td>
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<tr>
<td>Student presentations</td>
<td>5 minutes each + 4 minutes questions each (100 minutes in total)</td>
<td>-</td>
</tr>
<tr>
<td>Wrap up</td>
<td>10</td>
<td>DV, DC, AH</td>
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</table>

**Teaching Staff**

**Dr Dan Challender** is an interdisciplinary conservation scientist interested in wildlife trade and use, its sustainability, governance and economics, including human behaviour, and pangolins and their conservation. He completed his PhD, ‘Reforming international wildlife trade interventions in CITES’, at DICE, University of Kent in 2014 and subsequently joined IUCN (International Union for Conservation of Nature) where he led the organisation’s contribution to CITES and broader illegal wildlife trade work, prior to joining the University of Oxford. His current research involves understanding consumer demand for pangolin products in Vietnam, evaluating the effectiveness of celebrities as a tool to change consumer behaviour, and evaluating the impact of pangolin farming on demand and wild populations. In 2012, Dan re-formed the IUCN SSC Pangolin Specialist Group and has served as its Chair since.

**Dr Amy Hinsley** uses interdisciplinary methods to research the legal and illegal wildlife trades, and has been working collaboratively with the Chinese government and IUCN to understand the complex relationship between the markets for farmed and wild bear bile. As a Senior Research Fellow in Conservation Geopolitics, she is developing work to look at how China’s Belt & Road Initiative is affecting wildlife trade globally. Before joining Oxford in 2017 she worked at the UNEP World Conservation Monitoring Centre on projects related to international wildlife trade policy, including CITES. Amy has a PhD from the Durrell Institute of Conservation and Ecology (DICE) at the University of Kent, on the use of the internet by consumers and traders in the international wildlife trade, with a focus on the trade in ornamental orchids. Amy is the co-chair and founder of the IUCN SSC Orchid Specialist Group’s Global Trade Programme.

**Dr Diogo Veríssimo** is a behaviour change specialist with 15 years of experience in the fields of social marketing and community-based conservation. Diogo is a global leader in the design and evaluation of interventions to change environmentally relevant human behaviours, having authored more than 60 peer-reviewed publications and book chapters. Diogo holds a PhD in Biodiversity Management, from the University of Kent, UK, where he explored the links between marketing theory and practice and biodiversity conservation. In 2016, Diogo was recognized by the IUCN Commission of Education & Communication with their Young Professional Award and in
2017 by the Society for Conservation Biology, with their Early Career Conservationist Award. At the Oxford Martin School, Diogo will focus his work on the design and evaluation of behaviour change interventions to influence consumers of wildlife products, with the goal of mitigating the impact these products have on biodiversity.

**Ideas for dissertation**

**Understand the impact of celebrities names on species conservation**

It has become increasingly common for species to be named after celebrities, from Lady Gaga and Beyoncé, to Barack Obama and David Attenborough there have been dozens if not hundreds of species named after people that distinguished themselves in one area of another of human endeavour. Recently this has increasingly been done to bring attention to that species, particularly in the case of obscure invertebrates or other species that have received little or no conservation attention. This project will work to describe the extent of naming species after celebrities and use a counterfactual approach to understand the impact of this on the species public profile and conservation status.

**Understanding global attitudes towards wildlife using big data**

The relationships between wildlife and humans are complex and likely to vary across cultures, countries and biome. The arrival of the internet has given us unprecedented access to information about how people relate wildlife, as well the ability to understand how these attitude change over time and space. This project will use sentiment analysis, the process of computationally identifying and categorizing opinions expressed in a piece of text, especially in order to determine whether the writer’s attitude towards a particular topic is positive, negative, or neutral, to characterize how attitudes towards different groups of species vary across the globe. This project is ideal for a committed researcher with good analytical skills (or the desire to acquire them) looking for the ability to use big data to tackle global challenges. This work has the potential to link up closely to areas such as human-wildlife conflict and the illegal wildlife trade.

**How will the Belt and Road Initiative’s promotion of Traditional Chinese Medicine change demand for wild medicinal species?**

President Xi Jinping’s US$900 billion Belt and Road Initiative will be one of the largest global infrastructure projects ever developed, connecting China directly with more than 70 countries in Asia, Africa, the Middle East and Europe. A core component of the BRI is the promotion of Traditional Chinese Medicine (TCM) in every country along its route, but will people in these countries be receptive to consuming TCM, and will these markets, where they do develop, lead to an increase in unsustainable collection of wildlife products? This project will use interdisciplinary methods to investigate the potential markets for TCM in BRI countries (country TBC based on the student’s interests and experience) and the likelihood that these markets will put pressure on wild medicinal species.

**Using patents to study the evolution of commercial wildlife trade**

Every commercial innovation is patented, even new bear farming methods, or new drugs containing pangolin scales. This project will carry out an analysis of patents for both bears and pangolins in trade, to look at how this novel method can be used to study new developments, and predict future directions for these markets. This is only the second time this method has been applied to the study of wildlife trade, so this work will be novel, publishable, and will contribute to our knowledge of the legal and illegal wildlife trade, and how they overlap.

**Understanding celebrity and its implications for consumer behaviour change for illegal wildlife products**

Demand reduction is now recognised as a key component of strategies to combat illegal trade in wildlife and celebrities are often used to convey campaign messages in a range of countries including China and Vietnam among others. However, the definition of celebrity and ‘what makes a celebrity?’ likely differs by country. This project will use interdisciplinary methods to investigate ‘what makes a celebrity?’ and how western celebrities are perceived in collectivist societies such as China or Vietnam and evaluate the implications for celebrity associated demand reduction campaigns in that country.
Making Worlds at the End of the World

Elective Leader: Professor Derek McCormack

Elective Rationale
This elective examines the value of the concept of ‘world’ at a time when different versions of the end of the world have become more common and urgent across various domains of experience and expertise. One version of the end of the world can be found in scientific arguments about the scale and extent of the impact of human activity upon the ecology, geology, and climate of the Earth. Others can be found in various forms of public and political discourse particularly in relation to the prospect of climate change. Many other versions of the end of the world are represented in a range of different popular cultural genres. And, to make things even more challenging, a range of philosophers and other thinkers are questioning the value of world as a concept with which to understand what it means to live on a planet in crisis.

Against this background this elective considers a range of arguments about the value of world as a concept for understanding the conditions of the present. Some of these arguments radically challenge the validity of world, claiming that it remains too focused on human experience. Others argue that it is precisely the experience of our affective attachment to worlds that allows us to commit to various ethical and political projects. And yet others encourage us to expand the scope of the participants (human and non-human) that we recognise as contributors to the composition of worlds.

Teaching Approach
The course is intended to provide an opportunity to engage with a range of ideas and arguments about contemporary worlds across the social sciences and humanities. It draws deliberately upon perspectives in contemporary human geography, anthropology, philosophy, and the environmental humanities. Participants on the course will be expected to have a commitment to read and engage with this work.

The course will be organized into 4 two-hour sessions. These sessions will normally include; an introductory overview of the context for the themes of the session; student-let discussion of the key reading; and, where appropriate, engagement with popular cultural representations.

Formative assessment
Formative assessment will be provided on two pieces of writing (max 1500 words each) to be handed in during class 2 and class 3.

General Reading
The readings from the course will be drawn from various sources, and there is no single introductory text for the course. The following may be worth ordering for your college library, however.

<table>
<thead>
<tr>
<th>Session</th>
<th>Description</th>
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<tbody>
<tr>
<td>1</td>
<td>Thinking after the End of the World</td>
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<td></td>
<td>This session will consider how, in the wake of evidence and arguments that point to the degradation of the biophysical environment, we might want to give up on the concept of world. We will focus in particular on the arguments of philosopher Timothy Morton.</td>
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<tr>
<td></td>
<td><strong>Key Reading</strong></td>
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<td></td>
<td><strong>Supplementary Reading</strong></td>
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<td></td>
<td>• Book/Film: <em>The Road</em> (2006 Novel) by Cormac McCarthy.</td>
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<td>2</td>
<td>Affective Worlds</td>
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<td></td>
<td>This session considers arguments about the ongoing value of world as a concept for helping us think about the importance of affective attachments to space and place. We focus in particular on the writings of Kathleen Stewart and Christina Sharpe to think about worlds in atmospheric terms.</td>
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<tr>
<td></td>
<td><strong>Key Reading</strong></td>
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<td><strong>Supplementary Reading</strong></td>
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<tr>
<td>3</td>
<td>Indigenous Worlds</td>
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<td>Pushing further against claims about the end of the world as a concept, this session considers efforts to think across and between diverse worlds. It focuses in particular on anthropological efforts to trace indigenous worlds composed of diverse entities that do not obey divisions between nature and culture.</td>
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<tr>
<td>Key Reading</td>
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<td>Supplementary Reading</td>
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<th>4</th>
<th>Composing worlds</th>
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<td>If we do not take the existence of a common world for granted then how might it be possible to experiment with practices for making different kinds of worlds? This session considers a number of such examples.</td>
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<tr>
<td>Key Reading</td>
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<td>Supplementary Reading</td>
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</table>
Teaching Staff

Derek McCormack is Professor of Cultural Geography at the School of Geography and Environment. He has written on non-representational theory, theories of affect, atmospheres, and the elemental. He is the author of *Refrains for Moving Bodies: Experience and Experiment in Affective Spaces* (Duke University Press, 2013) and *Atmospheric Things: On the Allure of Elemental Envelopment* (Duke University Press, 2018)
The Politics of Environmental Expertise

Elective Leader: Dr Jasper Montana

Elective Rationale
Who can and should speak for the environment? What questions should they be answering? Who should listen to them and why? Environmental expertise is often taken for granted. The physical and natural sciences of the global north are often considered to be the key to understanding environmental change and the best human response to it. However, for decades, scientific controversies, protests, and the continued degradation of the biosphere has drawn attention to the politics of environmental expertise. It is now recognised that the social sciences, humanities, and indigenous and local knowledge can and should have a core part to play in understanding and responding to environmental change. The public – once perceived as an undifferentiated mass waiting to be informed – are also now recognized as diverse, discerning and most importantly direct contributors to making sense of societal challenges. These developments challenge the status of traditional forms of expertise and might even lead some to question: are we all environmental experts now? Whatever the case, we are at a critical juncture. High profile claims that ‘people have had enough of experts’ are countered by reports of thousands marching in the streets in support of science. Ultimately, mixed messages about what expertise matters makes understanding and evaluating the politics of environmental expertise a central concern for present-day environmental governance.

This elective offers an overview to contemporary debates about the nature of expertise, and the role of experts in addressing environmental change. Through the exploration of a set of pertinent case studies, an interactive exercise, and student-led discussions, this course will challenge students to think critically about environmental expertise, recognize the need for careful consideration in soliciting or convening expert advice, and develop their skills of argumentation around this current topic.

Teaching Approach
This elective is taught over 5 sessions (4 x 90 minutes, and 1 x 120 minutes). The sessions will be comprised of an introductory lecture followed by student-led discussion of set reading. Lectures will provide students with a structured account of foundational scholarship on environmental expertise, as well as introduce relevant concepts and theories. The interactive seminars will focus on core readings and will be led by a pair of students that will be allocated in advance of each class to provide their own summary of readings and lead the class through exploratory questions. In session 3, students will participate in a simulated intergovernmental negotiation drawing on discussions from previous weeks.

Before each session, students will be expected to use the readings and previous in-class discussions to write short (400 word) responses to one of three set questions and post them on the virtual learning environment, Canvas, as talking points for in-class discussion.

Formative assessment
There will be opportunity for feedback through regular formative mini-essays that are due at 8pm the evening before each class (except session 1). For these, students will be expected to use the readings for each week and any previous in-class discussions to write a short (400 word) response to a set weekly question. These are to be posted on the virtual learning environment, Canvas, as talking points for in-class discussion and weekly feedback will also be provided. Students will be expected to complete four of these in total, relating to sessions 2, 3, 4 and 5. There is no assignment for session 1.
<table>
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<tr>
<th>Tutorial</th>
<th>Description</th>
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| 1        | **Controversy, crisis, and trust in experts**<br>(90 minutes) | Who should be called upon when things go wrong? This class aims to draw attention to the role that experts play in responding to environmental challenges at times of crisis. Focusing on the case of the BSE (mad cow disease) outbreak at the turn of the millennium, this class will examine scientific controversies as critical junctures in which trust in experts is brought into question. Through this historical case, we will identify some of the implications the study of controversies has had on the theory and practice of environmental expertise in the twenty-first century.  
**Readings:**  
**Supplementary:**  
- The Inquiry into BSE and Variant CJD in the United Kingdom. Volume 1: Findings and Conclusions. Section 1: Executive Summary  
| 2        | **Science and the state**<br>(90 minutes) | The perceived universality of science has led some to consider it to be ‘stateless’, however scientific knowledge is also recognized to be powerfully influenced by national cultures and implicated in the very production of the nation state. This class will explore the connections between science and the state through a set of historical and contemporary case studies: from forestry to climate science. The persistent entanglements of science and the state examined in this class, include: the relationship between expert advisors and governments; the reasons why ostensibly similar Western democratic countries have different expectations of expertise; and the role of governments in funding and facilitating environmental research.  
**Readings:**  
### Making global knowledge

(120 minutes)

Recognising differences among national cultures of science, this class will examine what happens when environmental expertise is called for at the global scale. What does it mean to create ‘global knowledge’? How are divergent perspectives accounted for? Is global knowledge even needed for environmental issues? This interactive class will include a simulated intergovernmental negotiation in order to draw attention to the challenges and opportunities of producing global environmental expertise. Through the case study of biodiversity loss, the class will critically examine global expert bodies as experiments in environmental governance.

**Readings:**

### Lay, local and indigenous expertise

(90 minutes)

Are we all environmental experts now? One of the most contentious debates around expertise in recent years has been the question of who should be seen as an expert. Exemplified in recent political discourse around ‘post truth’, the question of how lay, local and indigenous expertises can be recognized alongside Western scientific knowledge while maintaining the ‘authority’ of science has been an issue in both scholarship and practice on environmental governance. Through the historical and contemporary case studies of sheep farming and biodiversity loss, this class will examine the arguments emerging around these issues.

**Readings:**

**Case: Sheep Farming**

**Case: Biodiversity**
### Environmental expertise and the senses

**[90 minutes]**

While environmental issues can often seem distant and abstract, the immediacy of the senses play an important role in how environmental expertise is received and perceived. From the origins of modern science, the perceptual experience offered by the senses has been integral to creating collective understanding of the world and catalyzing action. Focusing on sensitization, sense-making and consensus, this class will reflect upon the role of the senses in the reception of global environmental assessments, the attribution of extreme weather events, and the rise of new representations of ‘environmental crisis’ in the media and environmental activism.

**Readings:**

- Guardian. (2019) Extinction Rebellion arrests pass 1,000 on eighth day of protests. 22 April 2019. [https://www.theguardian.com/environment/2019/apr/22/people-arrested-at-london-climate-protests](https://www.theguardian.com/environment/2019/apr/22/people-arrested-at-london-climate-protests)

**Further Readings:**


**Teaching Staff**

**Dr Jasper Montana** is a Research Fellow at SoGE interested in the role of scientific and other knowledges in responding to environmental change. He is particularly interested in the way environmental expertise is shifting in response to recent calls for interdisciplinarity and intercultural knowledges at the international level. His past research focused on the structure and function of global biodiversity expertise in a UN expert panel, the Intergovernmental Platform on Biodiversity and Ecosystem Services. His current research, funded by the Leverhulme Trust, examines the organisational networks involved in governing nature in the UK Overseas Territories.
Poverty, Justice and the Environment

Elective Leader: Dr Mark Hirons

Elective Rationale

Issues of poverty, justice and the environmental change are intertwined in complex ways. In attempting to make sense of the complex interactions between people and their environments, the field of political ecology engages ‘the concerns of ecology with a broadly defined political economy’ (after Blaikie and Brookfield, 1987). This elective draws on a critical political ecology approach to provide students with the ability to navigate through the diverse and complex terrains associated with efforts to pursue poverty reduction and environmental justice.

In doing so, the course encourages reflection on key questions concerning the role of environmental science in politics and policy-making, how to understand scale, the importance of philosophical foundations for interpreting how different disciplines approach environmental problems, and how power operates to shape understandings of, and attempts to address, socio-ecological problems.

The first session provides a review of the historical evolution of political ecology and the value of critical realist philosophy as a framing for understanding different approaches to, and interactions between, poverty, justice and the environment. The subsequent sessions build on these foundations and draw on research conducted by the elective leader to examine first, in the arena of agricultural development in a changing climate and, second, efforts to tackle deforestation. The final session draws the class together for a debate and reflection on the role of knowledge and the value of political ecology for contemporary debates on questions of poverty and justice in the context of environmental change.

Participation in this elective will equip students with the conceptual tools to engage with contemporary debates within political ecology. In doing so students will develop the skills to think critically and comprehensively about approaches to tackling the complex issues associated with the development agenda and how it links with environmental concerns. Students will also deepen their understanding of the value of interdisciplinary research for picking apart seemingly intractable development/environmental challenges.

Teaching Approach

This course will be presented in four 2-hour seminars through a combination of short instructor-led presentations and guided group discussions based on the presentation and the week’s readings.

Formative assessment

The course will involve a formative assignment consisting of a 1000-word essay on a ‘key word’ and a short 8-10-minute presentation.

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<tr>
<th>Session</th>
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<tr>
<td>1</td>
<td><strong>Situating the debates – insights from a critical political ecology</strong></td>
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This session situates contemporary debates concerning poverty and its intersection with justice and environmental concerns. In particular, it traces how these issues have been tackled within the field of political ecology and highlights the importance of questions concerning what we know and how.

2 Poverty-Environment Linkages: Examining climate resilience in agricultural communities

Drawing on work undertaken on coffee production in Ethiopia, this session explores the practice of critical political ecology and provides an illustration of the insights it can provide. It draws on work engaging with agricultural development models, theories of poverty alleviation, ecosystem services and climate resilience to provoke difficult discussions concerning how to approach complex socio-ecological challenges.

Readings


3 Social and Environmental Justice: interrogating efforts to address deforestation

This session examines the concepts of justice and equity with respect environment and development debates. It focuses on contemporary efforts to address deforestation. In doing so, the session particularly engages with broader debates about the role of law in pursuing justice.

Readings:


4 Environmental knowledge and the pursuit of poverty alleviation

This final session provides space for students to reflect on their own engagement with issues raised in the preceding sessions and how they might shape their future work on environment-development challenges. In particular, the discussion will assess the prospects for interdisciplinary research and the role of knowledge in addressing intertwined social and environmental problems.
Readings:

Student presentations

Teaching Staff
Mark Hirons is the Course Director of the MSc in Environmental Change and Management. He is interested in addressing inter-linked social and environmental challenges through interdisciplinary research. His work broadly engages with issues of well-being, inequality and justice with respect to climate change and natural resource governance. He is interested how different values and knowledges interact with institutional and cultural contexts in driving the governance decisions which underpin environmental and social change across a range of scales.

Previously Mark worked as a post-doctoral researcher working on the Ecosystem Services and Poverty Alleviation (ESPA) ECOLIMITS project. This interdisciplinary project investigated the linkages between ecosystem service provision and the multiple dimensions of poverty in coffee- and cocoa-dominated agricultural settings, focusing on Ethiopia and Ghana respectively. The project used a range of methods to develop a holistic understanding of how ecosystems influence, and are influenced by, socio-economic, political and cultural conditions across various scales. Mark completed his PhD at the University of Reading which examined land-use conflicts between mining and forests in Ghana.
**Social Dimensions of Climate Change in Developing Countries: Adaptation and Vulnerability**

**Elective Leader:** Dr Lisa Schipper

**Elective Rational**

Understanding how climate change affects society and what can be done about it, is a key global political and scientific priority. A widely accepted narrative points to the poorest people as being the most adversely affected by climate change now and in the future, because they are the ‘most vulnerable’ to climate change. Decision makers are thus earmarking significant sums of money for implementing adaptation projects in developing countries. But there is far from a single scientific approach regarding how best to reduce vulnerability, let alone assess it through adaptation strategies, and policy and practice are frequently at odds with scientific understandings anyway. This elective focuses on the social dimensions of climate change impacts in developing countries, to examine who is most likely to be affected, how and why, as well as what the options are for responding. The purpose of this elective is to examine adaptation, vulnerability, resilience and disaster risk reduction – terms frequently thrown around in professional environment and development circles, but defined in multiple different ways – and to understand the scientific, as well as the policy debates.

The lectures address the key concepts, actors and policy related to adaptation to climate change, as well as discussing in depth the notion of vulnerability and the many debates around how to understand it, with a more extended examination of socio-cultural issues such as gender, migration, marginalisation and religion and how they contribute to determining how climate change is experienced in developing countries. We will also explore contested narratives around ideas such as ‘sinking islands’, ‘climate refugees’ and that ‘women are the most vulnerable’.

An important issue related to climate change responses in developing countries is whether adaptation is the same as development, and whether development approaches are the cause of or solution to vulnerability to climate change. To illustrate how governments, confront this, we will explore the UK’s own assessment of its climate change aid projects and the extent to which these are having a meaningful impact. An external speaker working at the policy and practice interface will be invited for Lecture 4 or 5 to give an overview of a specific adaptation/development project, and discuss how the academic concepts translate into reality.

The course will consist of 6 sessions, which will emphasise discussion and debate. In Lecture 1, students will be presented with three possible case study countries to follow throughout the course, and for each session, they will be expected to present how the theme of the day relates to their case study. The case studies for 2019-2020 are Living with chronic drought in Cape Verde, Climate change and migration in Central America, and Development vs adaptation in Vietnam. Readings have been selected to reflect diverse perspectives from around the world, and students will be encouraged to suggest additional readings or discussion topics.

**Formative assessment**

A 1500-word formative essay will be assigned mid-way through the course.

Two optional books to compliment readings are:

Lecture 1: Mapping the Concepts, Actors, Policy
This lecture introduces concepts adaptation, maladaptation, climate change, disaster risk reduction, resilience and vulnerability. In then discusses who the actors are that influence the way the concepts get defined and implemented, including the Intergovernmental Panel on Climate Change. There is also discussion of the international policy architecture that drives action, as well as momentum outside that framework, and how they relate to each other.

Required reading:

Optional readings:

Lecture 2: Vulnerability: From Entitlements and Famine to Indexes and Metrics
This lecture focuses on vulnerability, mapping the concept from its roots in Sen’s entitlements discussions to the context of famine through to discussions on how to measure and quantify vulnerability specifically in the context of climate change.

Required reading:

Optional reading:

Lecture 3: Vulnerability: Gender, Culture and Migration
This lecture goes more in depth in the discussion on vulnerability, and focuses on case studies and the socio-cultural dimensions of vulnerability. This includes discussions about gender, culture and religion as drivers of
vulnerability to climate change, and the many nuances of migration and climate change. The purpose is to understand the complexity and differential nature of vulnerability.

Key readings:

Optional:

Lecture 4: Adaptation and Development
What is unique about responding to climate change in developing countries? This lecture discusses the links and conflicts between adaptation and development, both in terms of practice, as well as financing. It starts with a historical perspective and looks at some of the contemporary research approaches and policy strategies.

Required reading

Lecture 5: Adaptation: Linkages in science, policy and practice
This lecture examines the linkages – and lack thereof – between different spheres of adaptation, namely science, policy and practice. We will discuss what each of these mean, and go back to the discussion under lecture 1 with respect to actors and their influence. The lecture also discusses linkages between disaster risk reduction and adaptation, contested narratives around adaptation and ‘the most vulnerable’ as well as discusses the role played by the IPCC in influencing adaptation research. This lecture also touches on adaptation decision-making.

Required reading:


Optional Reading:


**Lecture 6: Case Study and Key Themes Discussions**

This week, students will present on their case studies based on the different concepts that we have discussed. We will discuss key themes that students have identified during the term and want to discuss in greater depth.

**Teaching Staff**

**Dr Lisa Schipper** is Environmental Social Science Research Fellow in the Environmental Change Institute, with disciplinary home in development studies and many years of experience working on climate change, both following policy development as well as researching the linkages between climate change and development. Her work focuses on the drivers of social vulnerability to climate change and natural hazards in developing countries, and the role that adaptation can play in reducing that vulnerability. Her research has three themes: (1) the linkages between adaptation to climate change and development; (2) socio-cultural drivers of vulnerability to climate change and natural hazards (particularly religion and gender); and (3) migration and climate change. She is currently Co-ordinating Lead Author for the chapter on ‘Climate-Resilient Development Pathways’ in the upcoming IPCC 6th Assessment Report (Working Group 2) and Co-Editor of the journal *Climate and Development*. 
Techniques for Monitoring and Modelling responses of Terrestrial Ecosystems to Global Change

Elective Leaders: Dr Imma Oliveras, Dr Jian Peng and Dr Jesús Aguirre-Gutiérrez

Elective Rationale
This elective would focus on techniques for assessing ecological responses of ecosystems to global change at different scales. The elective is intended to provide practical tools for performing analyses on the ecological responses of ecosystems to global change.

Terrestrial plant communities provide many ecosystems services such as carbon sequestration, biodiversity provision, and water delivery. Plant communities play a key role in global biogeochemical cycles, with feedbacks to the oceans, atmosphere and climate. On the other hand, the distribution of animals is often influenced by the distribution of the vegetation. Changes in the Earth vegetation in response to climate change, and associated faunal changes, will have major consequences on the provision of these ecosystem services as well as in the local and global economy, because many economic activities depend direct or indirectly from plant communities. Global change includes the human-induced effects of rising atmospheric concentrations of CO₂, changes in the climate, as well as nitrogen deposition, biotic invasions, altered disturbance regimes, and land-use change.

Scientific advances in developing robust tools for understanding and anticipating futures changes include detection methods through remote sensing techniques, experimental manipulative experiments and different modelling frameworks. This elective aims at exploring the different available methods and at providing basic skills on remote sensing and ecological modelling.

Teaching approach
The course is open to any interested students, and no prior knowledge of ecological methods is required although previous skills in geospatial analyses (GIS, Earth observation) and/or on programming (R, Python) are recommended. This is a technical skills course and will require to take time outside of their allocated teaching hours for the development of the new skills. Nevertheless, it provides powerful tools that you can apply in your dissertations and take beyond your MSc.

The module will include of 6 sessions. Sessions will include and introduction and overview to the Methods and Techniques for ecological responses followed by an overview of remote sensing theory. In the following sessions, we will work with Remote Sensing (Sessions 3-6) and Ecological Modelling (Week 7).

The sessions on remote sensing applied to vegetation will cover a range of analyses and datasets to analyse land cover, vegetation indices and landscape analyses through a series of techniques such as masking, classification and spectral unmixing. The session on remote sensing applied to hydrology will provide an overview of satellite-based products of water cycle components for flood and droughts applications. The ecological modelling session will provide a guideline into the modelling of biodiversity distributions using a diverse set of modelling techniques. This session will have an emphasis on Joint Species Distribution Models and the more common single species niche modelling.

The expected learning outcomes of the module are: 1) acquire a general understanding of the different satellite-based products and their applications for landscape (satellite images, spectral indices, land cover, products) and hydrological analyses (precipitation, soil moisture, evaporation etc.); 2) master the Google Earth Engine for data collection and visualization. 3) perform spatial-temporal analysis of multi-source satellite-based products with Google Earth Engine; 4) apply Google Earth Engine for to detect vegetation and land use change and for hydrological extremes analysis based on satellite products across scales; 5) develop an understanding on the
building and application of species distribution models for understanding impacts of environmental changes on the distribution of biodiversity.

**Formative assessment**
For the Remote Sensing sessions, each student will work independently through a series of worked tutorials that takes them step-by-step through the tools required to perform remote sensing analyses, as well as the different breadth of available satellite-derived data. Students will work with the open source Google Earth Engine.

Students will have to choose an analysis technique for their final assessment.

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<tr>
<th>Week</th>
<th>Description</th>
<th>Readings</th>
<th>Lecturer</th>
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**Teaching Staff**

**Dr Imma Oliveras** is Departmental Research Lecturer in Ecosystem Science and Deputy Programme Leader on Ecosystems. Imma’s research interests are to decipher how and why tropical vegetation structure and dynamic changes across abiotic gradients and what are the consequences of these changes at the community and at the ecosystem scale. As such, her work focuses on exploring how changes in the abiotic conditions driven by global change – and particularly increases in extreme drought events and modified fire regimes – affect plant functional traits and how this aggregates to ecosystem functioning. She did her PhD on Environmental Sciences in the Autonomous University of Barcelona with a thesis focusing on the fire ecology of Mediterranean ecosystems. She worked at the University of São Paulo (Brazil) as a Beatriu de Pinós Research Fellow (2007-2009), at the Ecosystems Lab as a postdoctoral researcher (2009-2013) and at the Wageningen University (Netherlands) as a Marie Curie Research Fellow (2013-2015). During this time, she performed research in Brazil, Peru and Ghana related to fire effects on tropical ecosystem dynamics using methodologies from field observations and experimental manipulations to remote sensing.
Dr Jian Peng is a Senior Research Associate in Hydrological Modelling. He gained a Ph.D. in Earth Science from the Max Planck Institute for Meteorology (MPI-M). Before joining the University of Oxford, he was a research scientist at the University of Munich (LMU) and a post-doc researcher at MPI-M. In his research, he aims to use satellite remote sensing (optical/thermal/microwave) to monitor the Earth’s water cycle and to understand the variability of hydrological processes across multiple space and time scales. He has developed novel approaches to quantifying the water cycle’s components, such as soil moisture, evaporation, and precipitation from satellite observations. In particular, he has combined multiple data sources together to improve the spatial resolution of satellite-based soil moisture and developed a novel framework for the generation of high-resolution land surface water and energy fluxes from state-of-the-art satellite data. His current research focuses on exploring the teleconnection between hydrological variability and climate oscillations based on satellite observations. He is also working towards using satellite data to quantify the spatial–temporal patterns of hydroclimatic extremes, and to assess their impacts on agriculture, environment, and society.

Dr Jesús Aguirre-Gutiérrez is a Post-doctoral researcher interested in understanding how environmental condition shape the distribution of species at local and global spatial extends. To investigate this Jesús has used pollinators as case study species and past, present and projected future environmental conditions to model the pollinators’ ecological niches and spatial distribution. His interest in biodiversity responses to environmental conditions brought him to the Ecosystem Lab at the Environmental Change Institute to investigate the relationship between plant functional trait diversity, climate, LiDAR derived vegetation structure and the plants’ spectral reflectance obtained from remote sensing data.

Jesús obtained his License degree in Biology from the University of Guadalajara, Mexico and his Master degree in Ecology and Evolution -Tropical Ecology from the University of Amsterdam, the Netherlands. At the end of 2015 he got his PhD in Ecology at the University of Amsterdam and worked as a Post Doc at the Dutch Natural History Museum, Naturalis before joining the University of Oxford with a Rubicon grant from the Dutch NWO science foundation to further develop his research.
HILARY TERM

Advanced environmental economics: growth, distribution and welfare – and its implications for designing policy instruments

Elective Leader: Dr Linus Mattauch

Elective rationale
Textbook economics is often seen as mechanically calculating an answer to questions about optimal policy. This also applies to economic approaches to environmental protection. The rationale of this module is to bring back into economic discussions of the environment elements that make the determination of adequate policy responses more like the real world: different normative positions, distributonal conflict, uncertainty, political economy and the choice of certain models over others.

The module bridges the gap between the introductory environmental economics module for the MSc programmes and research projects in environmental economics. Its purpose is also to introduce students to some mathematical tools standard in contemporary environmental economics and to selected topics in current research.

The intended learning outcome is to familiarise students with methods in environmental and public economics, particularly growth theory, economic inequality and welfare analysis so that they can cogently evaluate policy choices. The course shall also serve as an introduction to some debates in current research on how environmental policy is justified from various normative standpoints, drawing from moral philosophy.

Teaching Approach
The first two sessions of the module will consist of an introduction to intertemporal optimisation problems in environmental economics. This includes growth and resource depletion models and their applications to integrated assessment, the carbon budget, discounting and theories of sustainability. Based on this, the second half of the module will consist of a discussion of normative questions with regards justifying environmental policy, including intergenerational equity, the welfare theory of behavioural economics and designing policy instruments in unequal societies. Climate policy will be the primary domain to which theories and methods are applied.

The module builds on the “Modelling and quantitative analysis” track of the “Economics of the Environment” module offered across MScs. It is a prerequisite to have knowledge similar to the concepts introduced there. That is, the module will assume familiarity with basic constrained optimization and differential equations, while optimal control theory will be introduced.

Each session will consist of two parts. In the first part the lecturer will introduce the topic of the session. The second part will consist of either mathematical exercises or student presentations of key articles for the topic, with a view to the formative and summative assessments. Potential topics for essays include, but are not limited to: the suitability of growth models given long-term macroeconomic trends, the debate about discounting climate change, using economic theory to express critiques of consumerism and designing environmental policy in an unequal world.
Formative assessment
The formative assessment consists of an essay of no more than 1500 words. Depending on students interests and needs, some sessions could feature informal presentations on articles from students or active participation in mathematical exercises.

Elective outline

<table>
<thead>
<tr>
<th>Session</th>
<th>Description</th>
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| 1       | **Intertemporal problems in environmental economics.** Brief revision of standard constrained optimization and cost-benefit analysis. Intertemporal optimisation. The “cake-eating problem”, revision of Solow model and introduction of the Ramsey model of economic growth. Logistics for the further module. **Main readings:**  
| 2       | **The carbon budget approach and strong sustainability: A formal economic treatment.** The Ramsey model of economic growth (continued). The Dasgupta-Heal-Solow-Stiglitz model of exhaustible resources and economic growth. Application to Integrated Assessment models and technological change, application to climate policy, notably the carbon budget approach. Applications to the discounting debate. **Main readings:**  
| 3       | **Uncertainty: catastrophic climate change and loss aversion in environmental policy-making.** Revision of Expected Utility Theory and Prospect Theory, as introduced in SREC and Quantitative Skills core modules. Translation to evaluating the risk of human extinction. The Dismal Theorem. Application of loss aversion to fuel price uncertainty and discussion. **Main readings:**  
| 4       | **Sustainability: Theory and accounting.** |

Main readings:

5 Welfare theory and critiques of consumerism.

Is growth desirable? Brief introduction to economics of happiness. Normative viewpoints of what is good for the individual and their consequences for justifying environmental policy. A model of “happy degrowth”.

Main readings:

6 Environmental policy and inequality.

Current global trends in income and wealth inequality. Distributional effects of economic instruments for protecting the environment and some remedies.

Main readings:

### Indicative readings


### Teaching Staff

**Dr Linus Mattauch** is Departmental Research Lecturer in the Economics of Environmental Change. He is also Deputy Director of the “Economics of Sustainability” Programme in the Institute for New Economic Thinking at the Oxford Martin School. His research interests are in climate change economics, public finance and welfare theory, theories of economic growth and low-carbon transport. Linus holds a doctorate in economics from the Technical University of Berlin and the Mercator Institute of Global Commons and Climate Change.
China’s environment and environmental movements

Elective Leader: Prof. Anna Lora-Wainwright

Elective rationale
China’s rapid emergence as an economic power over the past quarter century has been accompanied by growing understanding of its environmental impacts, ranging from land expropriation, major infrastructural developments (dam building) and pollution. China has developed a relatively impressive body of environmental protection policies and legislation since the late 1970s, and recently turned towards the rhetoric of ‘sustainable’ and ‘scientific development’ harboured within an ‘ecological society’. Yet, it is widely agreed that there is a serious ‘implementation gap’ so that central government policies and national laws are often not well enforced in the localities. There have been recurrent reports of large-scale pollution accidents and also of widespread, persistent and routine pollution through industrial waste in water and through air pollution from industry and transport.

The challenges to enforcing environmental protection are more than ever a vibrant topic of debate for academics, civil society agents and for Chinese policy makers alike. This course will consider how these problems are framed by different stakeholders and with what effects. We will begin by focusing on how particular types of ‘nature’ and the environment are constructed as objects for protection and conservation while others are seen as opportunities for development. Against this backdrop, we will consider the various governance challenges to environmental protection, as well as the ways in which citizens demand a cleaner environment, they ways in which they do so, and the circumstances in which they do not. Case studies of waste, e-waste and incineration as well as urbanisation will be examined to explore the particular challenges they pose.

Research to date has documented that citizens have become increasingly vociferous about environmental concerns, ranging from food safety to occupational health, waste, and industrial pollution. They have increasingly taken action against pollution through civil litigation, complaints and petitions to state institutions, environmental NGOs involvement, resort to the media, and demonstrations. We will examine the role that these various types of environmental movements might play in aiding (or halting) environmental protection and sustainable development. This in turn sheds light on topics of great currency in the study of contemporary China more broadly, such as the relationships between state and society, state legitimacy, social justice and welfare.

Teaching format
This elective is open to students from both the School of Global and Area Studies and from the School of Geography.
For OSGA students: This elective is structured as 8 seminar-style meetings of two hours each.
For SOGE students: This elective is structured as 4 seminar-style meetings of two hours each in weeks 3, 4, 5 and 6.
NOTE: SOGE students are welcome (but not expected or required) to attend the additional sessions in weeks 1, 2, 7 and 8.

Formative Assessment
In the course of the term, each student is expected to prepare one 15-minute presentation and a 1000-word essay to be pre-circulated with the class by email. All students are also expected to submit to the rest of the group a one-page comment sheet on some of the readings the day before class. This will form the basis for some of the discussion. Students (particularly those presenting and submitting a short essay) will be responsible for steering the discussion.
During some of the classes we may review multimedia material, in particular clips from films, documentaries or web-based resources. The reading list provided in advance of the course may be supplemented during the course if new and interesting material is published. Students are also encouraged to pursue relevant readings beyond the list provided.

**Potential topic list for the summative essay:**

Wk 1 Inventing ‘nature’ and place  
Wk 2: Environmental consciousness  
Wk 3: Managing the environment and sustainability  
Wk 4: NGOs, the media and the rise of a green public sphere  
Wk 5: Engaging the law and collective contention  
Wk 6: Varieties of activism and the case of environmental health  
Wk 7: Waste and waste management: electronic waste and incineration as case studies  
Wk 8: Rural transitions, urbanisation and land grabs as livelihood challenges

**Key readings**

- *China’s Local Environmental Politics* (2013), Special collection of articles in the *Journal of Environmental Policy & Planning* (Vol. 15, No. 1)  
Teaching staff

Anna Lora-Wainwright is Professor of the Human Geography of China. She is the author of *Fighting for Breath: Living Morally and Dying of Cancer in a Chinese Village* (2013), and of *Resigned Activism: Living with Pollution in Rural China* (2017), which was awarded the BSA/BBC Thinking Allowed Prize for Ethnography 2018. Anna is director of a Leverhulme Trust-funded project on Circuits of Waste and Value: Making E-waste Subjects in China and Japan.
Cities, Mobility and Climate Change

Elective Leaders: Dr Debbie Hopkins and Prof. Tim Schwanen

**Elective Rationale**

While societies and cities benefit enormously from transport, mobility patterns across the world are deeply unsustainable. Dependence on the private car has myriad adverse effects, including climate change: transport is one of the very few sectors where CO₂ emissions continue to increase in absolute and relative terms, and in the UK transport is now the biggest source of such emissions. The situation is particularly bleak given that across most of the world motorisation remains tied to collectively held notions of progress and upward social mobility. At the same time, evidence is accruing that (urban) mobility systems are very vulnerable to climate change-related changes such as sea level rise, intensification of storms, and extreme heat.

Action to wean urban mobility off fossil fuels is now common across the planet. Particularly in cities and urban areas, policymakers and other stakeholders seek to reduce mobility’s dependence on fossil fuels and adverse consequences in many different ways. Nevertheless, these are often based on narrow understandings of mobility as movement from A to B and rooted in economic theory, characterised by strong dependence on technological advances, and limited to interventions in transport systems and the physical structure of cities.

In this elective it is argued that a broader approach to understanding transport and cities is required to achieve the required major changes – transitions – to mobility’s fossil fuel dependence and resilience to climate change. This broader approach understands mobility as central to the fabric of cities and as emerging from urban assemblages. The latter are intrinsically dynamic, spatially differentiated networks of human agents, infrastructures, technologies, institutions, practices, knowledges and values. This thinking builds on recent thinking from across geography and the social sciences, including innovation studies and urban studies, and opens up new ways of achieving change in mobility.

The aim of ‘Cities, Mobility and Climate Change’ is to introduce this broader understanding of urban mobility. The elective explicitly seeks to be global in scope and orientation, moving beyond the common focus on Europe and North America for empirical illustration and as basis of conceptualisation of the salient issues. More specifically, we will:

- Investigate the challenges of overcoming automobile dominance in cities and of realising radical changes in how urban mobility is configured and governed;
- Explore multiple innovations and experiments with low-carbon urban mobility (cycling, bus rapid transit, smartphone enabled shared mobilities, etcetera), their potentials, and the barriers they face;
- Work with different understandings of the city and the ‘urban’, and identify the implications of these for thinking about change in urban mobility;
- Examine the use of transport as part of everyday urban life and how this affects attempts to make urban mobility more sustainable; and
- Discuss how urban mobility can be made more resilient in light of ongoing climate change.

**Prerequisite**

There is substantial engagement with various strands of social and urban theory (e.g. on sustainable transitions theory and on post-colonial urbanism) as part of this elective, which offers a series of theoretically oriented reflections on change in urban mobility. In-depth knowledge of these strands of theory is not required but openness to engage with their reasoning and associated readings is essential.
Teaching Approach
The elective consists of six sessions of 1.5 hours, each focusing on different aspects of sustainable cities, transport and mobilities. A detailed outline of each session is given below. Sessions will be interactive: the tutors will introduce the topic and students are expected to deliver active inputs throughout the session. This means that students have to prepare themselves before the session by reading the literature and identifying topics for discussion.

Formative assessment
There are two formative essays of 1,500 each: 1. An essay comparing and contrasting two key readings (set by tutors), and 2. An outline plan for the summative essay (including title, motivation, research question and main arguments)

Elective Outline

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<tr>
<th>Session</th>
<th>Description</th>
<th>Tutor</th>
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<tr>
<td>1</td>
<td>The Mobility Challenge</td>
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<td>This session will explore the key issues the elective seeks to address and offer a framework in which the other sessions can be placed. It will start by a discussion of transport’s overwhelming dependence on fossil fuel. This will be followed by a conceptualisation of ‘automobility’ as a path-dependent, socio-technical, complex system that has arisen around the private car with its particular infrastructures, built environments, institutions, cultural values and practices, and social stratifications. The session will also offer a critical examination of the rather limited set of options that tend to be pursued by policy makers and other stakeholders to overcome fossil fuel dependence and to reconfigure automobility.</td>
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<td>Key Readings</td>
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<td>2</td>
<td>Innovations, Experiments and Transitions in Urban Mobility</td>
<td>DH</td>
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<td>Cities are increasingly seen as the places where innovations that can trigger a transition towards low-carbon mobility are emerging and maturing, and success stories of cities experimenting with specific types of low-carbon mobility abound in the academic literature. This session will examine such innovation processes. The potential contribution to a transition towards more sustainable urban mobility will be evaluated critically, and some of the challenges and barriers against diffusion and uptake of innovations will explored. Particular emphasis will be placed on the importance of funding and political support, as well as attunement to the specific characteristics of the place in which innovations and experiments are unfolding. The focus will be on a range of UK cities, including Oxford, although attention will also be paid to innovation processes in non-WestERN cities.</td>
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<td></td>
<td>Key Readings</td>
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• Geels, F. (2018) Low-carbon transition via system reconfiguration? A socio-
technical whole system analysis of passenger mobility in Great Britain
• Ghosh, B. and Schot, J. (2019) Towards a novel regime change framework:
Studying mobility transitions in public transport regimes in an Indian

3 Beyond the (Western) City

It is often taken for granted what a city is and definitions usually revolve around
concentrations of population, activity and infrastructures. In a world of global
connections and flow such understandings have become increasingly problematic,
and geographers have been at the forefront of attempts to rethink cities and the
broader category of the urban. This session will first introduce some of these
attempts, most notably through a discussion of recent work on planetary
urbanisation and on the need to ‘provincialise’ European and North American
cities. It will be argued that in a globalised world of automobility in which the
largest growth in transport volumes now occur across the global South, European
and North American cities can no longer be seen as the golden standard and sole
basis for theorising urban mobility. In the second hour of the session we will begin
to draw out implications of the recent theorisations of cities and urbanisation for
thinking about achieving change in urban transport. It will be argued, amongst
others, that research on sustainable and low-carbon urban mobility is decentring
away from its traditional global North core, but that ‘western’ onto-
epistemological perspectives continue to dominate the thinking of academics and
practitioners.

**Key Readings**


4 Urban Mobility Initiatives on the Move

In this session we will zoom out from a focus on individual cities (session 3) to
connections between cities and the ways in which low-carbon mobility initiatives
move across space and time. This is important because, as will be argued, few
initiatives regarding urban rail, cycling and so forth are genuinely new and specific
to individual cities: there is extensive copying from activities elsewhere and spatial
diffusion of innovations. The recent literature on policy mobilities in geography
and urban studies will be utilised to explore these activities, and the
‘Copenhagenisation’ of cycling and the introduction of Bus Rapid Transit in South
Africa will be used as examples.

**Key Readings**

and policy mobilities. In: Schwanen, T., Van Kempen, R. (Eds) *Handbook of
Urban Geography*, pp. 103-118.
- Monteiro, S. (2016) Worlding Bogotá’s ciclovía: from urban experiment to
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<th>5</th>
<th>Choices, Habits and Practices</th>
<th>DH/TS</th>
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<td>This session will consider the use of particular forms of transport by individuals as part of their everyday lives as this is key to the success or failure of low-carbon forms of mobility. An overview of different ways of conceptualisations of ‘behaviour change’ in academia (economics, psychology, geography and sociology) will be provided, and their implications for achieving more sustainable mobility patterns explored. The extent to which these conceptualisations, whose origins lie squarely in the global North, need to provincialised will be examined as well.</td>
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<td><strong>Key Readings</strong></td>
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<th>6</th>
<th>Vulnerability, Resilience and Adaption to Climate Change</th>
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<td>Research on mobility and anthropogenic climate change has overwhelmingly focused on how the former’s contribution to the latter can be minimised, and with good reason: transport remains one of the biggest and most difficult to reconfigure sources of greenhouse gas emissions. However, it can be argued that given past carbon consumption and with the current normalisation of ‘extreme’ weather events, the transport sector needs to adapt to ongoing climatic changes, reduce vulnerabilities and increase its resilience. This session will critically examine current modes of thinking among researchers and policymakers about these issues, arguing for a need to move beyond technocratic approaches and techno-optimism and for due attention to the politics of adaptation and the role of mobility in people’s everyday lives. Examples from the UK and the Philippines will be discussed.</td>
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<td><strong>Key Readings</strong></td>
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Teaching Staff

Dr Debbie Hopkins is Associate Professor in Human Geography jointly appointed between the Sustainable Urban Development programme (Continuing Education) and the School of Geography and the Environment (SoGE). Debbie was previously a Departmental Research Lecturer at the Transport Studies Unit (TSU) and SoGE and continues to work with the TSU as part of the Centre for Research on Energy Demand Solutions (CREDS). Her research is broadly focused on low-carbon transitions and responses to climate change, with active projects examining active transport to school, automation of freight vehicles, and testing mobile methods with truck drivers.

Prof. Tim Schwanen is Professor of Transport Studies and Geography and Director of the Transport Studies Unit (TSU). Before taking up his current role, he worked as a senior researcher and Departmental Lecturer at the TSU and School of Geography (2009-2015). He had previously worked as a Lecturer in Urban Geography at Utrecht University, the Netherlands. Tim’s research can be positioned at the intersection of urban, transport, cultural and political and economic geography. It is international in outlook, interdisciplinary in scope, and both theoretically oriented and empirically informed. Key research interests include: geographies of mobility; socially just transitions to low-carbon societies; geographies of well-being and inequality; and the philosophy of transport and mobility.
Climate Change and Extreme Weather

Elective Leader: Prof. Myles Allen

**Selective Rationale**
This course will introduce the principles behind the numerical simulation of climate and climate change, focussing on how climate models can be used to inform climate policy and in particular to answer the question whether and to what extent climate change plays a role in different types of extreme weather events. The elective is designed to give students an insight into how climate research and data analysis is done in practice, including an introduction to code written in R. Students will have the option to do hands-on data analysis for their submitted work.

**Teaching Approach**
The course will be delivered through eight hours of interactive classes.

The first classes will provide an overview of the principles underlying the simulation of weather and climate with chaotic three-dimensional general circulation models, focussing on characteristic scales in the atmosphere and ocean, the concept of resolved behaviour and the role of unresolved processes and parameterisation. The emphasis will be on the origins of uncertainty in these models and objective measures of model quality and reliability. Examples will be drawn from the CMIP-5 model inter-comparison projects, and the climateprediction.net perturbed-physics ensemble experiments. The focus of the second of these lectures will be on regional climate modelling.

The second half of the elective will focus on the attribution and interpretation of extreme weather events. Building on the understanding of regional climate modelling we will explore how these models can be used to not only detect changes but also attribute causes of changes in extreme weather events. You will be given the opportunity to explore the importance of ensemble size and need for model validation working with output of climateprediction.net experiments.

The attribution of extreme events is not just becoming scientifically more robust but also increasingly important politically. Mitigation efforts have failed to prevent the continued increase of anthropogenic greenhouse gas (GHG) emissions and adaptation measures are unlikely to be sufficient to prevent negative impacts from current and future climate change. In this context, vulnerable nations argue that existing frameworks to promote mitigation and adaptation are inadequate, and have called for a third international mechanism to deal with residual climate change impacts, or “loss and damage”. Attribution of extreme events is the only way of providing scientific evidence to the loss and damage agenda, however, whether it is supposed to play a role in the politics is highly debated.

**Formative assessment**
A formative assignment will be announced when the module begins.

The summative essay may comprise an exploration of the behaviour of the idealised Earth System model or the analysis of datasets from existing coupled model experiments including CMIP5 or climateprediction.net. Some familiarity with computing will therefore be an advantage for this elective, although the code will also be talked through in class.

**Introductory Readings**

**Case studies and event attribution**


Teaching Staff
Professor Myles R. Allen is the Principal Investigator of climateprediction.net and was the first to propose the use of Probabilistic Event Attribution to quantify the contribution of human and other external influences on climate to specific individual weather events. He is Professor of Geosystem Science in the School of Geography and the Environment, University of Oxford and Head of the Climate Dynamics Group.
Climate Change, Communication and the Media

Elective Leader: Dr James Painter

Elective Rationale

Most people in most countries of the world get their news about scientific and environmental issues, including climate change, from the mainstream media. Despite the rapid increase in the use of online and social media, television and other traditional media remain used and trusted sources. But climate change science reporting poses a difficult challenge: the science remains complex, incremental and at times uncertain, whereas the media are attracted to certainty, drama, novelty and contrarian views, even though they may be unrepresentative. The recent surge in climate change demonstrations around the world has been matched by more volume of coverage in mainstream and discussion on social media. But the relationship between climate change information and public responses is complex and non-linear. There are also important differences in the way climate change is reported around the world. For example, why is climate denialism prevalent in the media in most Anglo-phone countries (UK, Australia, USA), but not elsewhere?

In the seminars, we will focus on:

- The drivers and shapers of media coverage of climate science, and the obstacles to better reporting.
- The dominant themes which journalists use to cover climate change, and the relationship between these media treatments and public attitudes, understanding and engagement.
- The media are often accused of ‘false balance’ by giving too much attention to sceptical viewpoints – what accounts for their presence, and for the differences between countries in their prevalence?
- How online and social media may be changing the way people consume information about climate change.

Teaching Approach

This course will be taught over four weeks in two-hour sessions. The sessions will be run as a discussion. Please come prepared to talk about the core readings.

Formative assessment

Each week two students will be asked to briefly discuss an assigned reading on a special topic, and submit a 1,000-word essay based upon this. Each student should also submit an additional essay (over the course of the term), based upon the core readings assigned each week. You may choose these based upon personal preference. These essays are an opportunity for you to practice writing and to get informal feedback from me.

Elective Outline Session Description

Session 1: Trends and obstacles in international climate change reporting

What are the main drivers of the type and volume of climate change reporting? What are the obstacles to better, or more frequent, reporting of climate change in the mainstream media? Is it primarily the media’s fault?
Session 2: Climate change reporting and public responses

What are the main themes that journalists use when they cover climate change issues? Are they changing? What do we know about the effect of different types of climate change reporting on public attitudes and behaviour? What are the possible impacts of fear-based reporting?

Session 3: Balance and bias

Balance and bias in the reporting of climate change are hotly contested issues. At what point should journalists stop quoting sceptics? All sceptics or just some types of sceptics? Are the media guilty of the ‘bias of balance’? Should the media call them ‘sceptics’? Special attention will be paid to the inter- and intra-country differences, and what explains them.

Session 4: Online and social media

Most people under 35 now get their news from online sites or social media. How does that change the way they consume and process information about climate change? Does the boom in ‘digital natives’ like the Huffington Post, BuzzFeed or Vice add plurality or promote likeminded thinking? Do niche sites improve coverage or make climate change more of a specialist topic?

Introductory Readings


Teaching Staff

Dr James Painter is a research associate at the Reuters Institute for the Study of Journalism (RISJ), which belongs to the Department of Politics and International Relations. He is the author of five RISJ publications on climate change in the international media: Summoned by Science: Reporting Climate Change at
Copenhagen and Beyond (2010); Poles Apart: the international reporting of climate scepticism (2011); Climate Change in the Media: reporting risk and uncertainty (2013); Disaster Adverted? Television coverage of the 2013/14 IPCC climate change reports (2014); and Something Old, Something New: Digital media and the coverage of climate change. His current areas of research are the way journalists report the following issues: climate denialism, animal agriculture and climate change, lab-grown meat, extreme weather events, and biodiversity loss.

See: https://reutersinstitute.politics.ox.ac.uk/people/dr-james-painter. Formerly James worked at the BBC World Service from 1992, where he was head of the Spanish American Service, head of the BBC Miami office, and Executive Editor Americas.
Development, Environment and Health

Elective leaders: Dr Proochista Ariana and Dr Katrina Charles

Elective Rationale
This module applies a multidisciplinary framework to examine the complex relationships between economic development, environmental degradation and public health. Students will be introduced to various bodies of evidence linking development process, environmental factors and human health, as well as current policy debates on the interrelationship between development, environmental change and health. Key issues regarding (a) the nature of evidence; (b) risk; and (c) governance will be reviewed through a focus on the Sustainable Development Goals, particularly Goal 1 (no poverty), Goal 2 (zero hunger), Goal 3 (good health and well-being) and Goal 6 (clean water and sanitation).

There is a rapidly growing body of literature examining the relationship between processes of economic development and environmental change, reflecting the progress made in understanding the linkages between environmental health hazards and developmental pathways. There is also abundant literature investigating the health implications of environmental change. However, there is often a lack of effective communication between environmental scientists, public health researchers and development economists. Whereas a number of authors rely largely on economic methods and discourse, others work within the scope of epidemiology and toxicology.

It is estimated that approximately one-quarter of the global disease burden is due to modifiable environmental factors, and that the incidence of ‘environmentally-mediated’ diseases is much higher in the resource limited contexts than their resource rich counterparts. Moreover, recent studies suggest that new integrative policies are needed to improve the lives of people in the low-income countries and tackle large-scale environmental risks and emerging infectious diseases.

By the end of the module, students will be able to:
• Explain the intersections between development processes, environmental changes and health outcomes.
• Assess the strengths and weaknesses of methodological approaches used to assess such intersections
• Identify contributing policy processes and the policy implications resulting from an understanding of the intersections between development, environment and health.

Teaching Approach
This innovative option brings together students (and teachers) from Geography and International Health to engage in discussions illustrating the intersection between processes of development, environmental changes and health with a focus on the Sustainable Development Goals. The course will be taught through tutorials in a way that encourages active, interactive and deep learning. There will be a total of six sessions taking place Mondays 9-11 in Hilary Term starting in week 3. Four session will be thematic discussions with readings outlined below; these sessions will not be taught in discrete sessions, but will foster discussions of interactions with other aspects of the module.

Formative assessment
Two sessions will be discussions of the students’ own work, based on submitted 1,500-word essays. Written feedback and peer feedback will be provided on these short essays.
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<th>Session</th>
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| 1       | **Introduction (Proochista Ariana and Katrina Charles)**  
This session will introduce students to the general structure of the module and provide an introduction to the Sustainable Development Goals and elaboration of the main themes which will run through the module: (a) the nature of evidence; (b) risk; and (c) governance. Not only will we define these terms but also encourage a multidisciplinary debate on the contentious nature of these concepts. |
| 2       | **SDG 2: Zero hunger (Proochista Ariana and Katrina Charles)**  
In this session we will use a focus on SDG 2 to explore the nature of evidence through the indicators adopted to measure progress. |
| 3       | **Tutorial 1: Discussion of Student Essays (Proochista Ariana and Katrina Charles)**  
Topic: Critically engage with indicators proposed to measure achievements towards SDG 2 (each pair of students will be assigned a different indicator) and its potential implications for health, environment and development. Refer to concepts introduced regarding the nature of evidence (1500 word limit).  
Each student will be tasked with peer-reviewing a colleague’s essay in advance of the session. Guidance on the structure of the peer review will be provided. |
| 4       | **SDG 6: Clean water and sanitation (Proochista Ariana and Katrina Charles)**  
Goal 6 seeks to advance the management of water services and water resources to provide water for health and development. As with many of the other SDGs, this goal will require targeting of programmes to particular populations and subgroups. In this session we will explore how different conceptualisations of risk impact on delivery of development projects to achieve this goal. This will consider health risks, environmental risks, uncertainty and trade-offs in development. |
| 5       | **SDG 1: No poverty (Proochista Ariana and Katrina Charles)**  
At the cores of the SDGs is the recognition that “eradicating poverty in all its forms and dimensions, including extreme poverty, is the greatest global challenge and an indispensable requirement for sustainable development”. However, as discussed in previous sessions, setting the indicators and the targeting the programmes pose various challenges. In this session we will focus on the particular challenges with implementation and governance. |
| 6       | **Tutorial 2: Discussion of Student Essays (Proochista Ariana and Katrina Charles)**  
Topic: Critically discuss one SDG target, in relation to a particular case study, highlighting the nature of evidence, risk and governance as it relates to the development, environment and health implications (1500 word limit).  
Each student will be tasked with peer-reviewing a colleague’s essay in advance of the session. Guidance on the structure of the peer review will be provided. |
Introductory readings
A more detailed reading list will be provided at the start of the term.

**Teaching Staff**

**Dr Proochista Ariana** is course director for the MSc in International Health and Tropical Medicine, Centre for Tropical Medicine and Global Health, Nuffield Department of Medicine. Her research empirically examines the relationship between processes of development and health in resource limited and transition contexts, appreciating the multidimensionality of both development and health. Proochista holds a Masters in International Health from Harvard University, a Doctorate in International Development from University of Oxford as well as a Post Graduate Diploma in Learning and Teaching in Higher Education, also from Oxford.

**Dr Katrina Charles** is the co-director of the REACH: Improving Water Security for the Poor research programme. She is an environmental engineer who focuses on improving access to safe drinking water and sanitation. Throughout her career she has worked on issues related to water and sanitation that include: public health, environmental fate and transport of pathogens, impacts of climate change on access, and barriers to adequate sanitation in informal settlements. Her work has been funded by the World Health Organization, DFID, UK Research Councils (NERC/ESRC), and the Bill & Melinda Gates Foundation, and includes work in Kenya, Rwanda, and Uganda.
Finance and Sustainability

Elective Leader: Dr Ben Caldecott

Elective Rationale

Finance impacts the natural environment directly and indirectly. The environment also directly and indirectly impacts finance and the performance of investments. There is significant and growing interest from policymakers and practitioners in the relationship between the environment, sustainability, and finance.

Aligning finance and investment with sustainability is a necessary condition for tackling the environmental challenges facing humanity. It is also necessary for financial institutions (and policymakers and regulators) to manage both discrete and systematic environment-related risks, as well as capture opportunities associated with the transition to global environmental sustainability.

This module will provide a foundational knowledge in the emerging theories and practice of sustainable finance and investment. It will arm students with sufficient understanding to navigate and critically analyse the key aspects and developments in sustainable finance and investment, as well as how to engage with financial sector stakeholders for collaboration.

Students will engage critically with systems and theories in sustainable finance and investment such as: active ownership, carbon bubble, climate finance, conservation finance, disclosure, divestment, engagement, ESG, green banks, green bonds, green indices, impact investing, public private partnerships, reporting, responsible investment, and stranded assets. The module will also provide an opportunity for students to consider how to translate knowledge into strategies for effective engagement with the financial sector.

Teaching Approach and Assessment Method

This elective is led by Dr Ben Caldecott, Director of the Oxford Sustainable Finance Programme. The elective will consist of six sessions of 80 mins each.

Each class will begin with a presentation of key theory and debates by the tutor. This will be followed by a student-led presentation of a case study assigned before class. This will be followed by discussion and debate. For one or two sessions an external guest speaker may be invited to contribute to the class.

Depending on demand and availability, there may also be an optional half-day ‘wargame’ where students will role play oil & gas companies to explore concepts such as stranded assets, divestment, engagement, and the carbon bubble.

Formative assessment

An 800-1,000 word essay on a specific case study of sustainable finance or investment in practice will be the formative assessment for this course.
Course structure

Session 1 (Week 3): The origins and purpose of finance
This session will focus on the origins, development, and purpose of finance and investment and how finance shapes the real economy and vice versa. We will examine the investment chain, putting finance and investment into a broader framework that can help us navigate the intersection between finance and sustainability.

Key readings:

Session 2 (Week 4): Financing sustainability
This session will briefly outline the investment needs, the role of finance in delivering the transition to global environmental sustainability, and the growth of sustainable finance. We will examine how and why capital is invested into green assets and low carbon infrastructure. We will also look at the project lifecycle and what different types of financial services are relevant and when.

Key readings:

Session 3 (Week 5): Stranded assets
This session will provide an understanding of stranded assets-related arguments that can motivate investor decision-making and reflect on how and why stranded assets developed as an issue after 2011, where it might go next, and what lessons this might yield.

Key readings:
Session 4 (Week 6): Impact investment
This session will focus on different types of impact investing, what kind of impact is likely or possible, and will, in particular, review the challenges and opportunities associated with impact investing.

Key readings:

Session 5 (Week 7): Financial supervision and central banking
This session will look at how and why environmental change merits responses from financial supervisors and central banks what the latest theory and practice is in this area.

Key readings:

Session 6 (Week 8): Divestment vs Engagement and the role of civil society
This session will examine how civil society actors are using sustainable finance to achieve environmental outcomes. In particular we will examine arguments for divestment vs engagement.

Key readings:

Introductory Readings

Pre-course Preparation
It is important that participants invest time in understanding some finance fundamentals prior to the course. The course is short and we will not have the time (nor is the course designed) to be an introduction to finance.

The Milken Institute has created a series of bitesize courses on finance. (see: https://www.5minutefinance.org/courses). Complete as many as possible prior to the start of the course, starting with ‘Corporate Finance’ (https://www.5minutefinance.org/courses/corporate-finance) and then take others of interest.
Investopedia.com is a great resource. They have an excellent finance dictionary iPhone app and also provide free courses. They have a wide range of short courses (see: https://www.investopedia.com/university/). At a minimum please complete ‘Financial Concepts’ (https://www.investopedia.com/university/concepts/) and ‘Discounted Cash Flow Analysis’ (https://www.investopedia.com/university/dcf/).

Teaching Staff

Dr Ben Caldecott is the founding Director of the Oxford Sustainable Finance Programme. He is an Associate Professor and Senior Research Fellow at the University of Oxford Smith School of Enterprise and the Environment. He is concurrently a Visiting Researcher at The Alan Turing Institute, a Visiting Scholar at Stanford University, and a Policy Associate at the UK’s Department for Environment, Food and Rural Affairs (DEFRA), where he is a director-level secondee in the Strategy Directorate providing advice on a range of policy issues, many of which are related to finance, investment, and market design.

He has conceived and initiated a number of initiatives related to sustainable finance. Ben founded and co-chairs the Global Research Alliance for Sustainable Finance and Investment (GRASFI), an alliance of global research universities promoting rigorous and impactful academic research on sustainable finance. He established and leads the Sustainable Finance Interest Group at The Alan Turing Institute and initiated the Spatial Finance Initiative, which aims to mainstream geospatial capabilities enabled by space technology and data science into financial decision-making globally. He co-founded the Commonwealth Climate and Law Initiative (CCLI), which is examining the legal basis for directors and trustees to consider, manage, and report on climate change-related risk, and the circumstances in which they may be liable for failing to do so. He has also established and led as chair Bright Blue’s research programme on energy and the environment. Ben also chairs the City of London Green Finance Institute (GFI) Working Group on Data, Disclosure, and Risk. In his capacity as a Member of the UK Green Finance Taskforce, he chaired its Workstream on Task Force on Climate-related Disclosures (TCFD) Implementation. Ben also co-hosts a regular roundtable breakfast meeting in the City of London on sustainable finance with the Centre for the Study of Finance Innovation (CSFI). The 'Sustainable Finance for Breakfast' series brings together a wide range of practitioners to discuss and debate the latest developments in sustainable finance.

Prior to joining the University of Oxford, he was a Vice President at investment bank Climate Change Capital, one of the early leading asset management and advisory firms focused on the low carbon transition, where he ran the firm’s research centre and advised clients and funds on the development of policy-driven markets. Ben has previously worked as Research Director for Environment and Energy at the think tank Policy Exchange, as Head of Government Advisory at Bloomberg New Energy Finance, as a Deputy Director in the Strategy Directorate of the UK’s Department of Energy and Climate Change, as an Advisor to The Prince of Wales’s International Sustainability Unit, and as Sherpa to the UK Green Investment Bank Commission. Ben holds a doctorate in economic geography from the University of Oxford. He initially read economics and specialised in development and China at the University of Cambridge and the School of Oriental and African Studies, University of London. He has been an Academic Visitor at the Bank of England, a Visiting Scholar at Peking University, and held Visiting Fellowships at the University of Oxford, the University of Sydney, and the University of Melbourne. He is an Associate Editor of the Journal of Sustainable Finance & Investment. Ben is also a Non-Resident Fellow at the Payne Institute for Earth Resources at the Colorado School of Mines, a Fellow of the Royal Asiatic Society and Royal Geographical Society, and a Member of the Senior Common Room at Oriel College, Oxford.
Global Environmental Change and Food Systems

Elective Leaders: Dr Monika Zurek and Dr Saher Hasnain

Elective Rationale
Food security is a major national and international issue for both science and policy. It has been driven in recent years by the realization of the need to substantially increase global food supply to feed anticipated world demand. Figures quoted of 70% by 2050 do not however consider increases in food system efficiency, such reducing waste at all stages of the ‘food chain’, and changing diets. Considerable increases in food production will however be needed, and this will be complicated by both climate change and depleting natural resources. Food security is however also determined by a host of non-production factors across economic, political, social, geographic, and ecological realms. Analysing food security from a “food systems” perspective helps to better understand why food insecurity emerges and what other outcomes food systems contribute to. This can help in identifying adaptation and mitigation options for enhancing food security which are more environmentally benign and socially beneficial.

In this Elective we will discuss the drivers that influence food security and how these interact. Focussing on food systems we will cover (i) the interactions with global environmental change and the options for mitigating deleterious aspects of food system activities; (ii) how climate change and other environmental changes are threatening food security and the limits of adaptation (iii) the notion of more sustainable, healthy diets; and (iv) how policy development and resource planning can be helped by discussing them within the context of a range of plausible futures (scenarios).

Teaching Approach
This Elective will be taught over four weeks in four 2-hour sessions in February/March. It will be supported by a core reading list. Each session will begin with a 40-60-minute lecture, and the rest of each session will be run as a discussion or workshop of the associated core readings which will be posted in advance. Students who wish to be assessed must submit an essay of no more than 4000 words on a topic that is agreed with Monika Zurek and Saher Hasnain. This essay is due at the start of Trinity term.

Formative assessment
A formative assessment will consist of a ‘practice’ essay of 2000 words on a set topic.

Elective Outline

<table>
<thead>
<tr>
<th>Session</th>
<th>Description</th>
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| 1       | Food security, food systems and environmental change  
This session will introduce the notion of food systems and highlight the range of ways our food system activities contribute to crossing the ‘planetary boundaries’ including biodiversity, biogeochemical cycles and fresh water resources. The session will then introduce some of the impacts of crossing these boundaries for food security, including introducing the ways climate change impacts crop production. In addition to impacts of climate change on production, extreme weather events disrupt food storage and distribution systems, food safety and affect consumption patterns and food waste. |
| 2       | Adaption in Food Systems  
This session will introduce an overview of possible adaptation options within the system and the role of various actors in the system will have to play in their implementation, drawing on examples across the food system. The session will include an interactive session in which students have to develop
adaptation options for different food system actors and think about their motivations and goals and the effects across the food system.

### 3 Sustainable diets for 9-10 billion people
Achieving food security will require action on demand and governance, as well as on supply. The session will cover options for reducing GHG emissions, considering both technological and behavioural options; the relationship between GHG mitigation objectives and other social and ethical goals (particularly nutrition and animal welfare); the policy context and options. Special attention will be placed on how we might move towards healthy sustainable diets the issue of meat consumption.

### 4 Scenarios for food system policy development and planning
This session will introduce the concept of scenarios/plausible futures and discuss their value in food system policy and resource use planning. A number of food system scenarios will be presented. Students will then engage in a workshop exercise to develop their own sets of scenarios based on major questions (unknowns) that have emerged from previous sessions.

**Introductory Readings**

- Safeguarding against economic slowdowns and downturns. Rome, FAO.
- Garnett, T. (2011) Where are the best opportunities for reducing greenhouse gas emissions in the food system (including the food chain)? *Food Policy*, 36, Supplement 1, S23-S32.


Other resources:
• FCRN Foodsource: https://www.foodsource.org.uk/ (see for chapters and building blocks)
• IFSTAL Portal: https://weblearn.ox.ac.uk/portal/site:/socsci:geog:research:ifstal (OR: click the Oxford logo at the bottom of this page: https://www.ifstal.ac.uk/for-students/ )

Teaching Staff
Dr Saher Hasnain is currently the Research and Community of Practice Coordinator for the Foresight4Food Initiative based at the Environmental Change Institute. With the Initiative, she focuses on developing a mechanism to better understand and synthesize key trends and possible futures in global food systems and to support informed and strategic decision making between food systems stakeholders. Formally trained as an environmental scientist, she has conducted research on food systems and environmental health in urban areas. She has also been involved with the IFSTAL programme and previously worked on environmental health issues at the University of Pennsylvania, and the development of national energy management cultures at Bahria University, Pakistan.

Dr Monika Zurek is a senior researcher at the ECI. For more than 15 years she has worked on food systems, environment and development interactions in research and international organizations as well as in the consulting and philanthropic sector. Prior to joining ECI, Monika worked with Climate Focus, a consulting firm focusing on climate change mitigation and land use issues. Before that, she was part of the Agricultural Development Team of the Bill & Melinda Gates Foundation and served as an Economist at the Food and Agriculture Organization of the UN (FAO). She started her career at the International Maize and Wheat Improvement Center (CIMMYT) based in Costa Rica and Mexico.
Implementation Strategy for Climate Initiatives

Elective Leader: Dr Abrar Chaudhury

Elective Rationale

Current efforts by governments to implement climate initiatives (programmes and projects) in developing countries are characterised by a broad concern with defining, measuring and governing efforts, with surprisingly little efforts on how these efforts are organised and implemented. In this elective we begin with a broad understanding of the global discourse and plans for climate change and how these translate into country level initiatives, such as National Adaptation Plan (NAP) and Local Adaptation Plan for Action (LAPAs). The elective proceeds to takes a multi-actor and multi-level lens to study climate change initiatives under the organisation and network literatures. The elective will discuss the various climate funding options and allied challenges, exploring what gets funded and why? The elective will conclude with an interactive robust planning exercise to consolidate the learnings from earlier sessions. We will use cases from developing countries to examine how different actors (Govts, private sector, NGOs, funders Academia etc.) operate across multiple levels from national policy to ground to shape climate change efforts.

Teaching Approach

This elective will consist of five two-hour sessions. Each class will begin with a presentation of key theory and debates by the tutor, followed by a student-led discussion of a relevant case study developed by the students. Role playing and network tool learning opportunities will be available. Students are expected to use the readings and their experience to develop a case study for presentation and discussion in the class. These case studies will be presented by student groups in sessions 2-4.

Students will submit a 1,500-word formative essay. They will select a specific climate policy, project or intervention and analyse its organisational and implementation design. Students will receive informal feedback.

This module will be assessed through a term paper of 4000 words, due Monday of Week 0, Trinity Term. The paper should be typed, double spaced, and correctly referenced. The topic of the paper needs to be approved by the course tutor no later than Week 7.

Elective outline

<table>
<thead>
<tr>
<th>Session</th>
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<tr>
<td>1</td>
<td>Global and National Climate Programmes</td>
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</table>

This session will explore the key debates on climate change at global climate negotiations and other venues, the main institutions and actors involved, and country programmes. The session will bring examples of different national initiatives such as in Nepal, Kenya, Pakistan and other countries.

Readings:
UNFCCC (2015) - Information paper on how the process to formulate and implement national adaptation plans can be supported in the least developed countries
|---|

2 **Grand Challenges - Multi-actor and Multi-scale Approach**

This session will introduce the concept of grand challenges / wicked problem to understand the complexity of climate change and the multi-actor and multi-scale/level approaches in tackling it, including power and influence to shape action.

**Student Presentation: Case Study on a selected sector vulnerable to climate change e.g. Agriculture, Forestry, Fishing etc.**

**Readings:**


3 **Organisational and Network Dimensions of Climate Action**

This session will introduce the organisation and network approach to view climate change response as a set of interrelated relations and actions. We will explore how different actors develop interorganisational relations and dependencies for resources and knowledge to tackle climate adaptation.

**Student Presentation: Case Study on a selected sector vulnerable to climate change e.g. Agriculture, Forestry, Fishing etc.**

**Readings:**


**Social Network Analysis (SNA) Tools: (Optional)**

Students will have the opportunity to practice basic network skills using SNA tools inbetween sessions. We can discuss this option in session 2. Below are a some basic SNA tools for practice.

- Graph Commons (Online) [https://graphcommons.com](https://graphcommons.com)
- NodeXL (Free) - [https://www.smrfoundation.org/nodexl/](https://www.smrfoundation.org/nodexl/)
- Gephi (Free and open source) - [https://gephi.org](https://gephi.org)

**4 Funding Climate Initiatives – The debates on climate finance?**

In this session we will explore the various funding options for climate change. In particular we will focus on the Green Climate Fund (GCF) that has been setup within the UNFCCC framework. We will look at the mechanism of direct access, the role of intermediaries and national agencies, the projects being financed, the challenges for raising funds amongst others.

**Student Presentation:** Case study on Green Climate Fund – select a project or country to discuss the funding mechanism for adaptation [https://www.greenclimate.fund/home](https://www.greenclimate.fund/home)

**Readings**


Explore the following site – Climate Finance Update [https://climatefundsupdate.org](https://climatefundsupdate.org)

**5 Robust Planning Exercise**

In the final session we will conduct an interactive exercise to develop a robust planning strategy for adaptation initiative involving multiple actors

**Readings**


Fussel H.M, 2007 Adaptation planning for climate change: concepts, assessment approaches, and key lessons *Sustainability Science*. 
Teaching Staff

Dr Abrar Chaudhury holds a research faculty post at the Said Business School, University of Oxford, is affiliated with Oxford’s Environmental Change Institute (ECI) and is a Fellow of Green Templeton College. He is currently on a prestigious three-year British Academy Fellowship at Oxford, investigating the ways in which dedicated climate funding, such as the Green Climate Fund, and emerging technologies, such as artificial intelligence and distributed ledgers, shape implementation and diffusion of climate action in Pakistan and emerging economies.

Abrar is a global professional with over 20 years’ experience in technology, consulting and research contexts across multiple continents and sectors. His research interests span challenges at the intersection of environmental management, sustainable development and organisation theory and strategy.

Abrar earned a Doctorate in Environmental Change and Management, and MBA and an MSc in Environmental Management (Distinction), all from the University of Oxford. He is a Fellow Chartered Accountant (FCA). He is the recipient of the ‘Best Dissertation’ award (2017) from the Academy of Management, Organisations and the Natural Environment (ONE) Division. His doctoral research explored the organizational and network challenges of implementation to develop and deliver climate change adaptation policy in emerging economies, based on extensive fieldwork in Ghana, Nepal, and Pakistan. Prior to Oxford, Abrar was a partner in a leading accounting firm in Pakistan.
International Biodiversity Conservation Law

Elective Leader: Dr Catherine MacKenzie

Elective Rationale
This elective introduces students to international biodiversity conservation law and includes issues of biotechnology, GMOs, trade and biosafety. It commences with an overview of the international legal system in the context of biodiversity, conservation and management and biotechnology. It then discusses the history, development, sources and principles of international biodiversity conservation law, with a particular focus on the implementation and enforcement of international biodiversity agreements. Next, it explores international law and legal case studies on:

- International Conservation Agreements: Whaling, Great Apes and Elephants;
- Biodiversity conservation management and the World Trade Organisation
- GMOs, Biotechnology, Intellectual Property Law and Pharmaceutical disputes;
- Agriculture and Food Security.

Elective Aims:
- to provide an understanding of the sources, principles and institutions of international biodiversity conservation law;
- to explore the effectiveness of international law in the management of complex GMO, biotechnology and pharmaceutical disputes;
- to develop in students the capacity to undertake independent legal research using primary and secondary legal sources on advanced issues in biodiversity conservation law, including legal databases.

This elective is likely to be of particular interest to any student interested in learning how to read and understand international biodiversity conservation agreements and any student seeking a career in international biodiversity conservation management, including in the UN, international organizations (e.g. FAO, UNEP), and international NGOs.

Teaching approach
There will be four sessions. This elective is open to all students. Prior study of law is not required but students must be willing to read widely.

Formative assessment
A formative essay question will be set during the elective.

Readings
Textbooks:
  - [http://www.nyulawglobal.org/globalex/International_Environmental_Legal_Research1.html](http://www.nyulawglobal.org/globalex/International_Environmental_Legal_Research1.html)
- ASIL Electronic Resource Guide to International Environmental Law:
- EcoLex: Gateway to Environmental Law [www.ecolex.org](http://www.ecolex.org)
- United Nations Environment Program [www.unep.org](http://www.unep.org)
- International Criminal Court [https://www.icc-cpi.int/](https://www.icc-cpi.int/)

### Elective outline

<table>
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<tr>
<th>Seminar</th>
<th>Description</th>
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<tbody>
<tr>
<td>1</td>
<td>Development and Sources of Int. Biodiversity Conservation Law &amp; International Legal Agreements on Whaling, Great Apes &amp; Elephants</td>
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<tr>
<td></td>
<td>This session provides an overview of the international legal system in the context of international biodiversity conservation and introduces students to treaty-making, treaty implementation and treaty enforcement, using international agreements on migratory species, whaling, great apes and elephants as examples. It also covers the role of international courts and tribunals in the settlement of international biodiversity conservation disputes.</td>
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<tr>
<td></td>
<td>Reading:</td>
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<td></td>
<td>- BBR Chapters 11, 12, 13</td>
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<td></td>
<td>- 1992 Convention on Biological Diversity</td>
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<td></td>
<td>- International Whaling Commission <a href="https://iwc.int/home">https://iwc.int/home</a></td>
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<tr>
<td>2</td>
<td>Biodiversity Conservation Management and the World Trade Organization</td>
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<td>This session explores the legal and management challenges of international trade in endangered species. It considers the role of the WTO in managing and regulating trade and the effectiveness of the WTO Dispute Settlement Body, using legal case studies from the WTO on turtles, dolphins, tuna, apples, and beef hormones.</td>
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<tr>
<td></td>
<td>Reading:</td>
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<tr>
<td></td>
<td>- BBR Chapter 14</td>
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<td>- WTO <a href="http://www.wto.org">www.wto.org</a></td>
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<td></td>
<td>- 1973 Convention on International Trade in Endangered Species</td>
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</table>
### 3 GMOs, Biotechnology and Pharmaceutical Disputes

This session covers legal approaches to GMOs and biotechnology, including an overview of international intellectual property law. It considers legal mechanisms for liability and conservation and discusses a number of current biotech-pharmaceutical disputes.

**Reading:**

### 4 International Law on Agriculture and Food Security

This session discusses the role of international legal agreements in the management of agriculture and food security. It considers challenges relating to land use, food production, food safety and food security, and agricultural management, particularly in the light of biotech developments and international trade obligations. Students learn to navigate FAO and legal databases to undertake their own research.

**Reading:**
- FAO: [www.fao.org](http://www.fao.org)

### Teaching Staff

**Dr Catherine MacKenzie** is Dean of Degrees of Green Templeton College, Oxford, Director of Studies in Law at Clare Hall and Homerton College, Cambridge, a member of the Cambridge Faculty of Law and Visiting Professor of International Environmental Law at the University of San Diego and at Vermont Law School. A member of the English and Australian Bars, she was formerly employed by the World Bank, the Asian Development Bank and the United Nations in Washington DC, Tokyo, Manila, Hong Kong, and the Middle East. She also served in UN peace-keeping in West Africa, advised on the establishment of the first women’s law school in Saudi Arabia and now advises on legal education throughout the Middle East.

A Commonwealth Scholar, Dr MacKenzie graduated from Oxford, London, the Inns of Court School of Law, Sydney University, the Royal Military College of Australia and the Australian National University. She has taught at the Oxford School of Geography and the Environment continuously since 2005, coordinated the Cambridge LLM on International Environmental Law and served as Chair of Examiners of the Cambridge Masters in Sustainability Leadership. Her research focuses on international environmental treaties, conservation and international trade law, international forest law and war and post-conflict state reconstruction. She is co-editor of the book, *Law, Tropical Forests and Carbon: the case of REDD+* (CUP) and her monograph, *International Law and the Protection of Forests* will be published by OUP.
Marine Ecosystems, their Conservation and Management

Elective Leader: Dr Gwilym Rowlands

Elective Rationale
About 65% of the world’s surface, and over 95% by volume is marine. Some of the most iconic, yet poorly understood, ecosystems can be found in the marine realm which spans the tropical to the polar, shallow photic zone to the dark ocean floor, and coastal to open ocean. Examples include coral reefs, mangroves, seagrass beds and estuaries, deep abyssal plains, cold seeps, hydrothermal vents and seamounts. Marine ecosystems provide a great many goods and services upon which human populations depend. Up to 40% of humanity lives within 30 miles of the coast, often working in marine dependent or semi-dependent industries such as shipping, fishing, aquaculture, tourism, oil and gas. Dependence on a healthy ocean is particularly acute in developing countries. Healthy oceans provide jobs and food, underscoring the need for sustainable use and protection. While there are many successful stories of marine management, taken as a whole the global oceans are on a path of decline. This decline is the result of collective mismanagement and the impact of climate change. Such decline poses serious threats to humanity, from food security through health issues, to loss of fisheries, environmental regulation and economic growth. Governance of marine environments is outdated, largely sectoral, fragmented, and poorly covered by conventions. Poor governance hinders integrated management of human activities and thereby conservation of both biodiversity and the ecosystem services it provides. Solutions are urgently required.

Teaching Rationale
Through this course we will collectively explore the challenges of marine conservation, and management. A number of ecosystems, key topics and case studies will be used to relate theory and practice. While each class covers a distinct topic, there is a limit to the depth and detail that can be can addressed. The goal of this elective is therefore to focus on important concepts, and prior knowledge of marine ecosystems is not a requirement for the course. Case studies will be used to introduce practical applications and the development of policy, and will enable direct engagement with the most pressing concerns of the marine realm. The course runs across six sessions. The format of each session will vary, but will generally include a brief lecture, a short presentation by one or more students, and focused class discussion. Students are expected to read the weekly core text in preparation for each session.

Formative assessment
Students will produce two formative assessments:
1. A short 8 to 15-minute presentation on a predetermined topic (assigned session 1), linked to a given session theme.
2. End Week 3: Students will submit for formative feedback an essay (max 2000 words) on either the topic of their presentation, or another of their choosing.
### Session Outline

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<th>Session</th>
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<th>Topic</th>
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<td>Introduction to marine ecosystems</td>
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<tr>
<td>2</td>
<td>90</td>
<td>Managing marine fisheries</td>
</tr>
<tr>
<td>3</td>
<td>90</td>
<td>Ocean governance though the lens of IUU Fisheries</td>
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<tr>
<td>4</td>
<td>60</td>
<td>Managing impacts to deep sea environments</td>
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<tr>
<td>5</td>
<td>90</td>
<td>Managing marine pollutants</td>
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<tr>
<td>6</td>
<td>90</td>
<td>Spatial management: Marine Protected Areas</td>
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</table>

### Session 1: Introduction to marine ecosystems

Here we will introduce the course and provide foundational understanding for considering marine ecosystems and the key environmental issues affecting them. The class will deepen your biological understanding of key biological concepts within marine ecosystems, the adaptations necessary to life in the sea, important habitats, and the biological and physical processes that shape them. We will begin to consider how governance of the oceans and coastal seas has been established and how this affects the scope of marine management.

**Core Reading**

### Session 2: Managing marine fisheries

More than 50% of monitored fish stocks are viewed as fully exploited, and a further 17% are overexploited. Yet, marine fisheries assure the livelihoods of around 10% of the world’s population. The class will deepen your understanding of the state and trajectory of the world’s fisheries. We will examine the concept of freedom of the seas and the tragedy of the commons, where a lack of property rights and the exploitation of a common pool resource is the often cited and dominant model of fisheries decline. We will consider methods employed in fisheries management such as quotas and will assess whether and how property rights can be imbued on marine systems to provide possible management solutions.

**Core Reading**

### Session 3: Governance: the case of Illegal, Unreported and Unregulated (IUU) fishing

It has been estimated that Illegal, Unreported and Unregulated (IUU) fishing results in worldwide losses of between $10 bn and $23.5 bn annually (~11 and 26 million tonnes). IUU thrives under conditions of poor governance, and can lead to the depletion of fish stocks, the destruction of marine habitats, the distortion of
competition within markets, and undermining of coastal communities. In this session we will explore the merits and pitfalls for various approaches to tackling IUU fishing. Through IUU we will develop an appreciation of the many layers to ocean governance, and examine how IUU impinges on questions of labour and civil rights. We will examine the responsibilities of flag, port, coastal and market states, and consider a practical application through the case of the EU yellow card system, and the dynamic relationship between soft and hard forms of enforcement.

Core Reading
Case study

IUU background

Session 4: Managing impacts to deep sea environments
The deep sea is a vast ecosystem, much of its biodiversity and functioning has yet to be explored, and understood. Nonetheless, such is the demand for resources that even here the impacts of human resource exploration can be seen. We will explore the key characteristics of deep sea ecosystems, and gain an understanding of human impacts in the deep sea. We will consider what can be done to manage the scope of these environmental impacts. Focusing on the case of deep sea mining, we will consider whether and how the precautionary principle should be used to manage activities in the deep.

Core Reading

Session 5: Managing marine pollutants
The ocean has often been viewed as a dumping ground, yet it is estimated that eighty percent of marine pollution comes from land. Pollutants include a range of chemicals, particles, industrial, agricultural, and residential waste, noise, and the spread of invasive organisms. In this session we will develop an understanding of potential sources and sinks of organic and inorganic pollutants. We will explore the policy landscape for controlling pollutants, and links to human behaviour. Focussing on the case of marine plastic, we will consider the scope of this problem and consider pathways to successful solutions.
Core Reading


Session 6: Spatial management: Marine Protected Areas

Marine Protected Areas (MPAs) are among the most iconic investments in conservation, and are recognised internationally within the 10% ocean areas Aiche targets and UN sustainable development goals. Through the designation of a number of very large MPAs there has been increased momentum towards this target. Yet, such targets may place an incentive towards quantity over quality. In this session we will consider the merits and particular challenges of spatial management in marine ecosystems at a variety of spatial scales. Drawing on knowledge acquired across the course, we will explore the value of MPAs in meeting the needs of ocean conservation and consider the barriers to further adoption.

Core Reading

- Sala, E., and Giakoumi, S. (2017) No-take marine reserves are the most effective protected areas in the ocean. *ICES Journal of Marine Science*.

Teaching staff

Dr Gwilym Rowlands is a James Martin Research Fellow working on the Oxford Martin Programme for Sustainable Oceans. He joined the University of Oxford in 2016 having previously set up and managed a marine consultancy, working with public sector, private sector, and non-governmental organisations. In 2013 Gwilym completed his PhD in Marine Biology and Oceanography, using satellite data to map and monitor coral reef ecosystem health in the Saudi Arabian Red Sea. Gwilym’s work explores human impacts on marine ecosystems and seeks to develop solutions at the interface between environmental science, technology and policy. Gwilym is currently involved in research projects examining the use of satellite data to support monitoring and enforcement activities of marine fisheries, as well as working on technical, policy and governance solutions for managing impacts in areas beyond national jurisdiction.
Organisations, Management and Climate Change

Elective Leader: Dr Bettina Wittneben, MBA

Elective Rationale
This elective equips students with the tools necessary to analyse how decision-makers in business, government and civil society organisations deal with the climate crisis today. Students will gain insight into the latest concerns raised in the business studies literature, apply stakeholder analysis in a multi-stakeholder simulation, and analyse environmental sustainability reporting. Finally, they will explore future pathways for organisations to tackle the climate crisis.

Teaching Approach
This elective consists of four two-hour sessions. Classes usually begin with a short lecture and are followed by a student-led discussion. Students will be expected to contribute insights from the readings to provide depth to the discussion.

Formative assessment
Aside from the required readings, students will need to submit a 1,000-word essay on stakeholder analysis. Students will receive informal feedback.

Elective Outline

<table>
<thead>
<tr>
<th>Session</th>
<th>Description</th>
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</table>
| 1       | **Sustainability, Climate Change and Management**  
          This session will introduce students to the regulatory framework of international climate action – the Paris Agreement - and outline the organizational challenges of mitigating and adapting to the climate crisis. The instructor will lead with a lecture providing the overview. A student-led discussion will then explore the range of approaches to environmental sustainability in business. |

**Required Readings (read in this order)**

**Optional Readings/Viewing:**
### Stakeholder Analysis – Municipal Decision-Making for Climate Action

As environmental degradation concerns people across society, a multi-stakeholder approach is often seen as a way of negotiating the best outcome and addressing various issues at the same time. In this session, we discuss stakeholder analysis and then employ the case study of the municipality of Frankfurt, Germany, to contextualize the theoretical approach. In the case study, the municipality is seeking input from various stakeholders on how to lower the city’s environmental impact using a grant it attained from the national government. Students will be assigned roles such as municipal officer, industry representative and member of the public during a simulation of the public consultation process. Students will hence engage in an extensive role-play around decision-making in this multi-stakeholder environment.

There will also be a student-led discussion on employing a climate assembly to find solutions to the climate emergency and engaging stakeholders as part of a co-creation process to find ways to reach zero carbon production.

**After this session, the following essay will be due:**

Please write a 1,000-word essay addressing the following questions using at least five articles from the required reading list of this course and at least two further academic references of your choosing:

“How can stakeholder analysis be used to find ways out of the climate crisis? What are the main drawbacks of this framework and how can they be overcome?”

### Required Readings

*Short text for the multi-stakeholder simulation will be handed out during the first session when roles are assigned; some research is required beyond this text to understand your role.*

- Stevens, F. (2016) *Before the Flood, National Geographic.* Film narrated by Leonardo DiCaprio. (Note: Access not available through the Bodleian)
  

  (Note: access not available through the Bodleian)
  
  [https://thischangeseverything.org](https://thischangeseverything.org)

  
  [http://www.nature.com/news/three-years-to-safeguard-our-climate-1.22201](http://www.nature.com/news/three-years-to-safeguard-our-climate-1.22201)


### Optional Readings/Viewing:

  

- C40 Cities Climate Leadership Group: [www.c40.org](http://www.c40.org)
### 3 Corporate Approaches to Addressing the Climate Crisis

This week, we will critically examine the latest management literature on corporate approaches to addressing the climate crisis.

*Note: 1,000-word essay on stakeholder theory is due today*

**Required Reading**


**Optional Reading/Viewing**

- *The Economist* (26 Nov 2016) Special Report on Oil: Breaking the Habit

### 4 Environmental Sustainability Reporting and Future Pathways

Corporations have to provide highly regulated annual financial reports to their shareholders. However, investors and other stakeholders cannot rely on corporations’ reporting of their environmental performance in the same way. Instead, sustainability reporting is voluntary and only loosely governed. In this final session, we will discuss sustainability performance indicators and integrated reporting. A student-led discussion will provide examples of specific corporate climate (non-)action.

**Required Readings**

<table>
<thead>
<tr>
<th>Optional Reading/Viewing</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Interview: Sustainability Reporting – Reporting for Stakeholders while Building Competitive Advantage, University of St Thomas, Minnesota. <a href="https://www.youtube.com/watch?v=k5DvW2j3WBs">https://www.youtube.com/watch?v=k5DvW2j3WBs</a></td>
</tr>
</tbody>
</table>

**Teaching Staff**

**Dr Bettina Wittneben** is Lecturer in Management at Hertford College and teaches Strategic Management as well as Organisational Behaviour and Analysis at Said Business School. She publishes extensively on transformational change dealing with the climate crisis. Dr Wittneben holds a PhD from the University of Cambridge’s Judge Business School as well as a double Master’s degree in Business Administration from the University of Alberta and the Grenoble École de Management.
Rewilding and Its Place in Future Conservation Strategies

Elective Leader: Dr Keith Kirby

Elective Rationale

‘Rewilding’ has emerged as a widely discussed concept in conservation circles from its first appearance only about 20 years ago. It has been promoted as an ambitious alternative to current approaches to nature conservation. However, the growing interest in popular writing, comment and debate risks outstripping scientific research and lessons from conservation practice.

A variety of projects (particularly in Europe, North America and on tropical islands) have been labelled as ‘rewilding’. These illustrate the scientific and management challenges associated with trying to reduce/reverse the impact of present and past human interventions through the restoration of species and ecological processes. Frequently there is an implicit (if not explicit) assumption that there will be gains in biodiversity. However how does ‘rewilding’ differ from other approaches such as habitat restoration, species re-introduction programmes, or landscape-scale conservation; what, if anything, is new about it: and does it replace or complement ‘traditional conservation’?

‘Rewilding’ has also attracted criticism, so taking it forward risks generating opposition that could spill over into opposition to conservation programmes more generally. Are there ways of developing rewilding agendas – if that is deemed desirable – so as to minimise these risks?

Teaching Approach

The elective is structured as six one-and-a-half hour sessions. The first, second, fourth and sixth will comprise of a lecture followed by discussion. Introductory texts for these will have been listed for some of these.

Formative assessment

The third and fifth sessions will consist largely of presentations from the students, followed by feedback from lecturer and the other students. For session 3 each student will work independently each looking at different ‘rewilding project’ (in a broad sense). Some starter references will be given but the student will then be expected to research further. For session 5 the students will be expected to work in groups to present arguments for and against the case for re-introducing wolves to Scotland as part of a rewilding scheme.

Elective Outline

<table>
<thead>
<tr>
<th>Session</th>
<th>Description</th>
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</table>
| 1       | Introduction  
The introductory lecture will explore the origin of the term rewilding and various ways in which it has been interpreted and developed. It will cover the way that different ‘baselines’ for rewilding have emerged and some of the criticisms of the approach. In the subsequent discussion we will also explore why and how it has caught the imagination of the public and conservation community and some of the ways in which rewilding differs from other approaches to conservation.  

**Key Readings**  

**Supplementary readings**

### 2. What is going on in practice

The lecture will consider some of the projects that have been labelled rewilding (and some that might be so labelled but are not) to explore issues around the term and its meaning. Is rewilding only relevant to North America and Western Europe; where do taxon substitution fit in; to what extent does removal of invasive non-natives count as rewilding; can oceans be rewilded?

**Readings**

**Supplementary Readings**

### 3. Rewilding Project (Length 2 hours)

Students will be expected to research an example 'rewilding' project of their choice (which may be those listed below or suggestions from the students themselves) to test the extent to which the concepts discussed apply in practice. Each student will be expected to produce a 500-750 word summary of the project and to make a five minute presentation on this (feedback will be given). Possible examples are given below.

**Key Readings**

1. **Yellowstone Wolf re-introduction**

2. **Giant tortoise re-introductions**
<table>
<thead>
<tr>
<th>3. Pleistocene Park</th>
<th>4. Oostvaardersplassen</th>
<th>5. Knepp Castle Estate</th>
<th>6. Rat eradication on islands to promote bird nesting (e.g. recently on South Georgia)</th>
<th>7. Rewilding Europe Initiative</th>
<th>8. Urban wilderness</th>
</tr>
</thead>
</table>
4. **The human dimension**  
This session will explore different views on rewilding, some implications of legislation and human attitudes to for example animal welfare that may affect the acceptability of the approach.

**Key Readings**

5. **Who’s afraid of the big bad wolf**  
This session will use the specific but *hypothetical* case of wolf re-introduction in Scotland to explore the interactions between different groups of interests and people in rewilding proposals.
Students will be asked, as small groups, to explore the issues beforehand such as:
- What are the ecological/conservation arguments for/against;
- What are the practical issues (including legislation) to be addressed;
- What are likely reactions from different constituencies (farmers, ramblers, urban public, politicians)?
- What can be learnt from experience of wolf re-introduction/colonization elsewhere in Europe and from UK reintroduction of beaver, wild boar, red kite, sea eagle?

Each student will be expected to produce a 750 word summary of the case as from a different constituency ‘expert witness’ and to make a 5 minute presentation on this during the session (feedback will be given).

**Key Readings**

6. **Passing Fad or The Way Forward (Length 1hr)**  
This session will aim to bring together the different strands discussed in previous sessions and explore ideas that students wish to consider for their extended essays.

**Introductory Readings**

**Teaching Staff**

Dr Keith Kirby has been a visiting researcher in the Department of Plant Science since 2011. Prior to that, he was forestry and woodland officer with Natural England (and its predecessors as the government conservation agencies) since 1979, responsible for national and local advice on woodland conservation. He has a particular interest in the degree to which we are/should be conserving cultural rather than natural landscapes in Europe and in the very nature of what a ‘natural’ landscape in Europe might be like. This question lies at the heart of much of the rewilding debate.
Supply Chain Governance

Elective Leader: Dr Steve Jennings, 3Keel LLP

Elective Rationale
Supply chain governance has become a critical area of intervention for companies, consumers and NGOs that wish to reduce the impact of commodity production on deforestation, biodiversity loss and social exploitation. It is a growing area of professional work and research and this elective will equip you with a combination of academic, practical and visionary insights on efforts to govern commodity supply chains.

The course starts by analysing the drivers of supply chain governance in complex commodity supply chains and goes on to develop an understanding of what governance in such contexts means. Using the example of palm oil, the course explores the structure and consequences of commodity supply chains, analyses key governance mechanisms, including certification, and concludes with a scan of new ideas in supply chain governance that could come to prominence over the next few years.

Teaching Approach
The elective will meet for five two-hour sessions. The classes will be a mixture of seminar, discussion, student-driven investigation and (availability permitting) inputs from experts and practitioners.

Formative assessment
Students will be asked to write a short formative essay on a subject to be agreed in Session 2.

Elective Outline and Core Readings

<table>
<thead>
<tr>
<th>Session</th>
<th>Description</th>
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</table>
| 1       | Why supply chain governance?  
The goal of this class is to understand what supply chain governance is and why supply chain governance is utilised to encourage sustainability. Drawing on global value chain theory, we will examine the heterogeneity of global commodity supply chains. We will then examine the impact of the global commodity trade on biodiversity and social exploitation. The class will deepen your understanding of the way that global commodity supply chains work and environmental and social impact of global commodity trade. |
|         | Pre-class preparation:  
Each student should prepare a 500 word briefing note on the environmental and social impacts of one of the following commodities: palm oil, soy, cotton, cocoa, beef & leather, timber, pulp & paper, rice and rubber. Please confer with each other so that as many of these commodities as possible are covered. |

Key Reading
2 Trading commodities
This class will introduce and discuss what commodity supply chains look like, and corporate incentives and barriers for better supply chain governance. Focusing on palm oil, we will explore how the supply chains work and the opportunities, driver and barriers to its governance. The class will give you an understanding of the complexity of real commodity supply chains as well as why some companies invest in supply chain governance (and how) and why some do not.

Pre-class preparation
None

Key Reading

3 Sustainability certification
Voluntary certification is one of the major tools used in supply chain governance. The goal of this class is to understand sustainability certification: how it works and what outcomes it might achieve. Continuing with the example of palm oil, and drawing from a wider literature on voluntary certification, we will examine what voluntary sustainability certification is: how does it work? What problems it seeks to address? How effective it has been in addressing them? This class will give you a deep understanding of the inner workings, opportunities and limitations of voluntary certification.

Pre-class preparation
The class will divide into four groups, each representing a major stakeholder of the palm oil sector: (1) palm oil plantation companies, (2) supermarkets, (3) environmental NGOs, (4) social/indigenous rights NGO. Each group should define the critical sustainability outcomes that they would want from a voluntary certification scheme in the palm oil sector in the form of a short blog (1000 words maximum).

Key Reading
<table>
<thead>
<tr>
<th>Optional Reading</th>
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<tr>
<th>4</th>
<th>Complementary approaches to supply chain governance</th>
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<tbody>
<tr>
<td>Certification is far from the only approach to sustainable supply chain governance. Building on the previous class, this session will introduce and discuss a range of additional and complementary approaches to supply chain governance. Using evidence from the literature, we will explore risk-based approaches, the role of governments, private sector collaborations and supporting platforms. The class will deepen your understanding of a range of supply chain governance approaches that are used on a day-to-day basis in commodity supply chains.</td>
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</table>

**Pre-class preparation**
In groups of 2-3, prepare a short policy briefing note on one of the approaches described above (1 page max.).

**Key Reading**

<table>
<thead>
<tr>
<th>5</th>
<th>Supply chain governance: future scan</th>
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<tbody>
<tr>
<td>The goal of this session is to understand developments in supply chain governance that are likely to come to prominence over the next decade. A panel of corporate and NGO practitioners will present their views, followed by an open discussion. Approaches covered will include landscape and jurisdictional approaches, re-integration of fragmented supply chains, risk and value sharing, and outcome metrics. [Note: depending on the availability of guest participants, the format of this session may change]</td>
<td></td>
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</tbody>
</table>

**Pre-class preparation**
None

**Key Reading**
Teaching Staff

Dr Steve Jennings is a respected and influential analytical and strategic thinker, a leader, a trainer and communicator across a range of disciplines. He has catalysed significant change in environmental and social impact across non-governmental, commercial, and academic sectors – from the development of leading certification standards through to driving innovation within a globally recognised development NGO. Working at the interface between science and practice, Steve bases his approach on using his strong understanding of theory and empirical evidence as the underpinning to convert ideas into practical tools. As a researcher, Steve has published widely on sustainable forest management, and conservation. Steve has particular expertise in food systems, climate change adaptation, sustainable natural resource management and conservation, and how changing business practices can bring economic, social and environmental benefits.
The Economics of Ecosystem Services and Biodiversity

Elective Leader: Professor Erik Gomez-Baggethun

Elective Rationale

This elective covers concepts and methods in ecological economics and interdisciplinary perspectives on the links between ecosystems and human well-being, drawing on the concepts of natural capital, ecosystem services and nature’s contributions to people. Emphasis is made on methods and techniques for the integrated assessment and valuation of ecosystem services to support land use and resource management decisions. Various theoretical issues and operational aspects are covered, including the links between biodiversity and ecosystem services, debates over sustainable development, green growth and degrowth, monetary and non-monetary valuation of the environment, payments for ecosystem services, the role of public policy regulation and market-based instruments in global environmental governance, and controversies around the economic framing and the commodification of ecosystems and biodiversity.

Teaching Approach

This course will be taught over four 2-hour sessions that will include lectures and debates. Case studies will be used to relate theory to practice. Acquisition of practical skills in valuation and design and implementation of economic instruments for environmental protection will be emphasized. Students are expected to do the readings in advance and to be prepared to discuss them in class.

Formative assessment

A formative assignment will be set at the beginning of the module.

Elective Outline

<table>
<thead>
<tr>
<th>Session</th>
<th>Description</th>
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<tbody>
<tr>
<td>1</td>
<td><strong>Introduction to the economics of biodiversity</strong>&lt;br&gt;This session introduces economics of biodiversity as an interdisciplinary approach to analyse the role of ecosystems in sustaining human well-being and economic prosperity. It reviews long term trends in the economic analysis of the environment and current debates on the extent to which natural capital can be replaced by technology and whether growth can be decoupled from environmental impact. Emphasis is made on current debates around green growth vs degrowth.</td>
</tr>
</tbody>
</table>

**Key readings**
2 Integrated assessment of ecosystem services and nature’s contributions to people

Environmental science and policy increasingly demands frameworks that integrate ecological, social and economic information to support environmental management. This session presents a comprehensive framework for describing, classifying, assessing and mapping ecosystem functions, goods and services that is consistent with established scientific and policy conventions, from the Millennium Ecosystem Assessment, to The Economics of Ecosystem services and Biodiversity (TEEB) and the Intergovernmental science-policy Platform on Biodiversity and Ecosystem Services (IPBES). The session includes a review of current discussions about the framing of nature and its contributions to people.

Key readings

3 Methods and tools in ecosystem services valuation

Limitations of traditional economic approaches to account for the costs of biodiversity loss is considered a main cause of environmental decline. This session reviews economic and non-economic valuation methods to measure the societal importance of ecosystem services and addresses key theoretical issues and operational challenges in environmental valuation. Emphasis is made in value pluralism and integrated approaches to the valuation of nature.

Key readings
- Pascual, U. et al. [41 authors] (2017) Revealing the diversity of values of nature and its benefits to people for a good quality of life: The IPBES approach. *Current Opinion in Environmental Sustainability*, 26: 7–16

4 The economic valuation debate: Environmental pragmatism or commodification of nature?

Environmental and sustainability scientists are increasingly divided among those who accept valuing ecosystems in money as a pragmatic choice, and those who rejected it on moral or political grounds. This session reviews key arguments for and against the use of monetary valuation and market instruments in environmental management and conservation, and provides students with a menu of perspectives to find help them find their position in the debate on nature valuation.

Key readings
Useful Links
The Ecosystem Services Partnership: [www.fsd.nl/esp](http://www.fsd.nl/esp)
The Millennium Ecosystem Assessment: [www.maweb.org/](http://www.maweb.org/)
The Economics of Ecosystems and Biodiversity: [www.teeweb.org/](http://www.teeweb.org/)
The Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES): [www.ipbes.net/](http://www.ipbes.net/)

Teaching Staff
Prof Erik Gomez-Baggethun is a Professor in Environmental Governance at the Norwegian University of Life Sciences (NMBU) and a Senior Visiting Research Associate at the School of Geography and the Environment, at the University of Oxford. His research covers topics in ecological economics and sustainability science, fields in which he has produced above one hundred scientific articles, book chapters and policy reports. He is President of the European Society for Ecological Economics (ESEE), and serves as expert on values for the global assessment of Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES). Erik was also a lead author of the report ‘The economics of Ecosystems and Biodiversity’ (TEEB) and is editorial board member of international scientific journals like Ecological Economics and Ecosystem Services.
Transboundary River Basins under Pressure: Risks, Resilience and Sustainability

Elective Leaders: Dr Kevin Wheeler and Dr Nathanial Matthews

Elective Rationale
The 276 transboundary lake and river basins around the globe cover almost one half of the earth's land surface and capture 60% of global water flow. These basins are home to billions of people and provide ecosystem services in the form of fresh water, nutrients and food to billions more. Basins boundaries have often been a key factor in determining geopolitical borders, but political lines are also frequently established based on cultural, ethnic and linguistic divisions, or the product of fragmented governance following empires or colonial control. Today transboundary river basins represent thriving areas of commerce, transport, trade, agriculture and fisheries. In these contexts, cooperation across states is paramount to sustainable river basin management, especially for those living downstream. Meaningful cooperation on a basin level involving just allocations for consumptive and non-consumptive uses, consideration for growing energy demands, the joint planning of infrastructure to meet those needs, and the preservation of aquatic and riparian ecosystems that emphasizes river health and livelihoods is often overshadowed by unilateral development strategies that are focused on the interests of the individual states.

With the risks and uncertainties of climate change, population growth and rapid economic development, transboundary river basins today face a multitude of risks, but thoughtful management also offers opportunities to create multiple levels of resilience. Grounded with case studies from some of the global hotspots for river basin risk and resilience, our course will examine the opportunities and challenges that are inherent in transboundary river basin management. The course is informed by interdisciplinary perspectives from two practitioners with each over 15 years of experience working in international development and environmental analysis. Case studies from three continents will examine the issues in the Nile, the Mekong, and the Colorado basins, with student presentations designed to explore additional basins of interest. We will explore the underlying drivers of decision making regarding large infrastructure projects and the interdependencies and trade-offs of water, energy, food and the environment. We will challenge ourselves to uncover solutions and examine what opportunities exist for building resilience in these complex regions of the world.

Teaching Approach
This elective is taught by two academic-practitioners with extensive experience working for international organizations, national and state governments, local non-governmental organizations and the private sector through direct employment or consultancies. This practical experience is complimented by research experience and publications examining river basin development around the globe. The module will thus be of interest to those seeking employment in international development or various aspects of water management and those with research interests in the multitude of integrated water, food, energy and environmental issues that surface in transboundary river basins. The course will run for six weeks. Classes will be participatory with a focus on discussions to understand multiple perspectives surrounding water management debates. Each class will run for ninety minutes and include an interactive lecture and group discussions.

Formative assessment
Students will prepare a 10 to 20-minute presentation on the drivers of change, risks and opportunities for resilience within a transboundary river basin not covered in the course (i.e. not the Mekong, Colorado or Nile). Presentations will be done in week five and six. These presentations will be an opportunity for each
student to present the general thesis behind their elective essay, as outlined below, and to receive feedback from the class and elective leaders.

Notes on summative assessment

Students will be formally assessed with a 4,000-word interdisciplinary elective essay that examines one or more particular challenging aspects of their transboundary River Basin of choice, examines the history, multiple angles and arguments of that problem, and proposes potential solutions to address the issue. We expect that all students will read the key readings each week prior to the sessions, strongly encourage the supplemental readings as well. Those presenting will read more widely on their basin of choice.

Elective Outline

<table>
<thead>
<tr>
<th>Session</th>
<th>Description</th>
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</table>
### Supplementary Readings – Read at least one of these:


### 3 The Mekong Basin – the battery of S.E. Asia?

Using hydropower as a lens, we will examine how the Mekong Basin has rapidly developed over the last 20 years and the positive and negative implications of this development for the basin’s economies, food, water, livelihoods and environment.

**Key Reading:**


**Supplemental Reading:**


### 4 The Colorado – accelerating risks in an institutional traffic jam

As both a federal and international river basin, we will unpack the tightly regulated Colorado River - shaped by a century of multi-level institutional agreements - and assess its ability to adapt to uncertain hydrologic futures, increasing demands, and changing priorities.

**Key Readings:**


**Supplementary Readings:**

### Student presentations and group discussions

This session will be reserved for students to present a multi-disciplinary perspective on a selected transboundary river basin, with an emphasis on articulating competing and congruent stakeholder perspectives. Group discussions will both challenge and build on the presenters discovered knowledge. This will also be an opportunity to present and receive feedback on their essay topic.

### Student presentations and Seminar on pathways to working in international development and water management

This session will continue student-led presentations, followed by an opportunity to discuss the advantages and disadvantages of various professional development pathways in international development and water management.

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**Introductory Readings:**

- **Hydropower Sustainability Assessment Protocols (2010)** International Hydropower Association
- **Loures, F., Rieu-Clarke, A. and Vercambre, M.L. (2009)** *Everything you need to know about the UN Watercourses Convention.* *WWF Publication.*

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**Teaching Staff**

**Dr Nathaniel Matthews** is Program Director of the Global Resilience Partnership where he leads the technical element of GRP’s offering. He provides oversight and leadership into over $25 M USD in challenge grants and competitions and oversees GRP’s technical work streams including: Markets and Innovative Financing, Technology and Infrastructure and Policy. The Global Resilience Partnership aims to help millions of vulnerable people, particularly in the Global South, better adapt to shocks and chronic stresses and invest in a more resilient future. Previously, Nate was Global Research Coordinator at the CGIAR Research Program on Water, Land and Ecosystems and has held various positions in international organizations and private sector. He has published two books and authored over 35 peer reviewed publications. He contributes to numerous international forums including as a lead author in The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), an advisory board member of the Economist Sustainability Summit and as a working group member of the World Economic Forum’s Global Risk Report. Nate holds a PhD in Geography from King’s College London and is a Senior Visiting Fellow in the Department of Geography. He is also a Visiting Fellow at the University of East Anglia Water Security Centre and a Fellow of the Royal Geographic Society.

**Dr Kevin Wheeler** is professional engineer, researcher in the Environmental Change Institute, and Oxford Martin Fellow at the University of Oxford. His work focuses on shared transboundary rivers and increasing water security through cooperation, specifically through collaborative risk-based water resource modelling tools as ‘boundary objects’ that cross science-policy-stakeholder interfaces. His work explores politically and technically feasible coordinated development and management strategies of resources and infrastructure. As an engineer for over 18 years, Peace Corps volunteer in the Dominican Republic and Haiti for 2 years, and consultant for numerous governmental and non-governmental stakeholders throughout the American west, Kevin has worked on a wide variety of water-related issues ranging from small-scale community-based water development to inter-state and international disputes. His work on transboundary rivers included active participation in the successful negotiations of 2012 between the United States and Mexico over the shared management of the Colorado River. Since 2012, his focus has been on addressing the challenges facing the...
Nile River by exploring potential cooperative development and management arrangements between Ethiopia, Sudan and Egypt.

His previous research posts include at the International Institute for Applied Systems Analysis (IIASA) in Austria, Institute for Arctic and Alpine Research (INSTAAR) and the Center for Advanced Decision Support for Water and Environmental Systems (CADSWES) at the University of Colorado, and was a Research Fellow in Sustainability Science at the Harvard Kennedy School’s Mossavar-Rahmani Center for Business and Government.

He holds a DPhil in Geography and MSc degree in Water Science, Management and Policy from Oxford, in addition to MSc and BSc degrees in Civil/Environmental/Water Resource Engineering from the University of Colorado.
Water and Society in the Middle East

Elective Leader: Dr Troy Sternberg

Elective Rationale
As the most water-stressed area of the world the Middle East faces severe climate and environmental crises. In the immediate future water availability, access and quality will challenge livelihoods and society across the region. Changing climate parameters, evolving concepts of governance, growing populations, socio-economic forces and conflict threaten fragile states, human well-being and the physical world. Examining the interaction of water, climate and society in the contemporary Middle East will assess the region’s exposure and risk. The class will focus on nation-states and trans-border issues, food security, water megaprojects and climate and conflict. Hazard events, geo-politics, development and future scenarios will be discussed. The exploratory course will provide a background for better understanding of the roles of water in the Middle East today. Engagement and mitigation strategies, rural and urban landscapes, competition for resources (i.e. water, arable land) and disputes (groups.states) will be evaluated.

Teaching Approach
The discussion-based elective is structured as 5 tutorials. A reading list is attached; students are encouraged to pursue relevant readings beyond the list provided.

Formative assessment
Two 1200-word essays based on the reading and discussion will be due. Essays should succinctly address key issues. During the course each student is expected to prepare a short presentation.

Elective Outline

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<th>Session</th>
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<td>1</td>
<td>The physical and social context of water and climate in the Middle East will be introduced. This includes water resources, climate and the environment as well as water use, politics and population in the region. How water, climate and society are linked and interact will be evaluated.</td>
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Key Readings:
2 Nation-states, security and transborder issues

National boundaries are set by politics rather than being based on watersheds or the physical environment. The role of the state, policy and competition over water both within and between countries present challenging dynamics in the region. Securitisation of water adds additional complexity. Discussion addresses the myriad related issues and implications in the Middle East.

Key Readings:

3 Water infrastructure, planning and use

Governments are acutely aware of water shortages. This had led to great efforts to development new water resources including the $1 billion Shoaiba 3 desalination plant, the Disi Aquifer and the Red-to-Dead Sea water transfer scheme. Water sources, rights, withdrawal and use have great importance in the region. Discussion will evaluate water infrastructure, demand (including refugees) and consider additional scenarios.

Key Readings:

4 Food security

Food security in a key factor in government action, livelihoods, social stability and change. The Arab Uprisings highlight the role of food availability, cost and distribution in the Middle East. Agricultural productivity, access to water, climate events and politics can be drivers of food insecurity. As a water-scarce region with a growing population adequate food supply remains a significant challenge now and in the future.
Key Readings:


Climate and conflict

The extreme 2007-2011 Syrian drought played a significant role in the country’s civil war. Predicted warming over the Gulf, precipitation patterns over eastern Turkey, increased weather disasters and shifts in climate seasonality and intensity will affect nations and may lead to competition for water resources and land. How climate and environmental factors disrupt societies and contribute to conflict will be discussed.


Introductory Readings:

• **Evans, J. (2009) 21st century climate change in the Middle East. Climaltic Change, 92: 417–432.**

**Books:**

**Teaching Staff**

**Dr Troy Sternberg** researches climate hazards and human systems in Asian deserts. Current research in Central, East and West Asian drylands focuses on evolving climate and hazard impact on societies and environments. Work includes hazard identification, landscape impact, social exposure/system resilience and the globalisation of hazards. At Oxford since 2005, Troy’s work on Chinese drought and the Arab Spring received the British Science Association Award. He works closely with the Chinese and Mongolian Academy of Sciences and universities in Kyrgyzstan, Kazakhstan and Europe.
MSC/MPHIL ELECTIVE MODULES | SOGE

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