

## MSc Environment and Development: Course Information

The MSc Environment and Development degree programme is offered by the Centre for the Study of Environmental Change and Sustainability (CECS), School of GeoSciences. It forms part of a co-ordinated set of Masters programmes organised jointly by the University of Edinburgh and the Scottish Agricultural College (SAC), under a long-standing collaborative agreement.

The taught component of the programme consists of six courses, three taken during Semester 1 and three during Semester 2. In Semester one students take the compulsory 2 core courses and 1 optional course, while in Semester 2 students take 1 core course and 2 optional courses from the wide range of available. Courses are organised by either the University of Edinburgh (mainly by the School of GeoSciences) or by SAC, and are shared with the other MSc programmes organised by the School of GeoSciences or SAC. All degrees are awarded by the University of Edinburgh.

CECS, the School of GeoSciences and SAC are all located at the University's Science and Engineering campus (at The King's Buildings, Edinburgh), within two minutes walk of each other.

The timetable for MSc courses in the 2006/07 academic year is given below; it is expected that the 2007/08 timetable will be similar.

### *MSc Timetable 2006/2007*

#### SEMESTER 1

<b>Day</b>	<b>Course Title</b>
Monday	Foundations in Ecological Economics Ecosystem Management
Tuesday	Environment and Development (Core Course) African Studies Fundamentals of Management
Wednesday	Atmospheric Quality & Global Change Culture, Ethics and Environment Forest Ecology Anthropology and International Health Seminars in Global Change International Political Economy
Thursday	International Development (Core Course) Recent Global Environmental Change
Friday	Project Appraisal Soil Protection & Management Research Methodology

#### SEMESTER 2

<b>Day</b>	<b>Course Title</b>
Monday	Applications in Ecological Economics Human Resource Management International Environmental Law
Tuesday	Gender and Development International Security Contemporary African Issues Waste Reduction and Recycling Participation in Policy and Planning
Wednesday	Land Use/ Environmental Interactions Rural Development Seminars in Global Change (continued from Semester 1)
Thursday	Society and Development (Core Course)
Friday	Forests and Environment Environmental Impact Assessment

## **Course Outlines**

### **Semester 1**

#### **CORE COURSES**

##### **Environment and Development**

*Terence Dawson, CECS*

The course will consider the scientific knowledge required to understand the links between environment and development in the European and international contexts. The international context will be framed within the Millennium Development Goal (MDG) for Environment and Development. Covering a wide range of topics, from global climate change and energy-use to biodiversity conservation, an emphasis will be made on understanding and supporting policy decision-making processes effecting development or the environment using an evidence-based approach.

##### **International Development**

*Paul van Gardingen, CECS*

This course will utilise staff from GeoSciences and the School of Social Science with practical experience in International Development. The Millennium Development Goals will form a framework for the programme which will consider how knowledge and education can contribute to international development.

##### **African Studies: Theoretical and Conceptual Underpinnings**

*James Smith, Social and Political Studies*

This introductory core course aims to anticipate, and strengthen where appropriate, key issues of inter- and multi-disciplinarity by organising teaching around themes that cross-cut and inform disciplines, and further, aims to equip students with an understanding of key concepts fundamental to African Studies. The course is organised thematically, drawing on key texts to interrogate concepts necessary for an advanced research-based course in African Studies. Ten central themes will be explored during the course. Readings will, where appropriate, focus on one or two key texts and supplementary materials. In this way, the course will also provide a guided reading of key African Studies texts.

##### **Anthropology and International Health**

*Stefan Ecks, MA, PhD Social and Political Studies*

Anthropology increasingly deals with issues of international health. On the one hand, anthropologists who work in applied contexts aim at translating public health knowledge and policy into effective action. Simultaneously, many anthropologists reflect critically on how governmental health initiatives are increasingly central to everyday life and how health organisations are unfolding a transnational 'government of the body'. In this course, we explore the tension between these different standpoints along case studies on how anthropology engages with international health agendas.

##### **Atmospheric Quality and Global Change**

*Bob Rees, SAC*

This course begins by outlining the current concerns regarding atmospheric quality and global climate change. Sources of potentially harmful gaseous emissions and acidifying pollutants from industry, transport and 'natural' emissions from the soil are discussed along with their effects on ecosystems. Mitigation options for reducing emissions and their effects by changing land use, transport and urban infrastructure and by using renewable energy are considered.

##### **Culture, Ethics and Environment**

*Hamish Ross, PhD*

Many courses explore the effects and management of our relationship with the environment. This course tries to probe the underlying cultural causes and asks whether deeper, more lasting, relations can emerge. The course uses experts and case studies from education, sociology, anthropology, ethics and economics to develop cross-disciplinary insights into cultures' ways of interacting with their environments. They allow us to step away from and study the development and maintenance of a particular (now dominant) 'Western' way of managing 'natural resources', to debate its legitimacy, and to explore (for many students, for the first time) the possibility of significant change. By the end of the course students will have developed a range of resources and critical skills which will enable them to bring wider understanding and fresher approaches to whatever professional situation they find themselves in.

The course uses group discussion around specialist input in seeking to explore two questions. In Part 1 of the course, what are the values, beliefs and assumptions which inform current economic and ecological decision-making? In Part 2, can a deeper understanding of culture, human-environmental relations and environmental ethics provide a more sustainable and satisfying framework for decision making? The course takes advantage of the input of a range of specialists from across the University and beyond, but coherence is maintained by the Course Organiser and the stability of the specialist team involved.

### **Ecosystem Management**

**Donald McPhillimy BSc**

This course aims to provide an understanding of ecosystem dynamics and the state of the art of ecosystem management for situations where the objectives are not simply the maximising of economic production. Topics covered will include: management for naturalness, rarity, diversity and fragility; the impact of grazing and forestry practices on vegetation; fire as a management tool, particularly in range management; the conservation of biodiversity; ecological restoration and management in woodland, heathland, wetland and coastal ecosystems. This course will appeal most to students who will be working in Scotland, Europe and other temperate areas. It will suit students new to the subject as well as those with some experience and especially those who wish to make a career in managing a wide range of different habitats. Local field excursions are a feature of the course.

### **Forest Ecology**

**Maurizio Mencuccini, GeoSciences**

Forest Ecology is the study of the interactions between plants, animals and their environment in forest ecosystems. This course will present the essential elements of the ecology of individual tree species, of biotic communities and of forest ecosystems. The emphasis of the course will be on the relationships between functional and structural properties of forest ecosystems and on the dynamic nature of forest communities. Topics dealt with will include: identification and ecology of the most common tree species of the British Isles; dynamics of British forests during the Holocene; the nature of disturbances and stress factors in forests; principles of forest ecosystem management; the interactions between soils, forests and atmosphere; the role of the major ecological processes (competition, herbivory, symbiosis, etc.) in shaping ecosystem structure and functions; tropical forest ecology.

### **Foundations in Ecological Economics**

**Salman Hussain, SAC**

This course examines the principles of economics and how they might be applied to environmental and resource-use issues. The course should appeal to students who would like to obtain a grounding in economics from first principles so as to assist in decision-making and problem-solving. Topics include: introduction to economics and ecological economics; the behaviour of individuals in society and social welfare issues; the behaviour of the firm; economic policy tools used to control and regulate pollution. This course assumes no prior knowledge of economics, but a grounding in basic mathematics is expected.

### **Fundamentals of Management**

**Ron Wilson, GeoSciences**

This course, together with second semester course Human Resource Management, outlines the philosophy, objectives and methodologies of resource management. It is designed to provide a grounding in the range of skills needed for the effective management of renewable natural resources, such as the organisation of rural business, objectives setting, planning, decision making processes and aspects of financial management. It also introduces the policies and strategies which drive various resource uses so as to give an understanding of the interrelations between them.

### **International Political Economy**

**Mark Aspinwall BA, MA, MSc, PhD Social and Political Studies**

This option introduces the main schools of thinking about International Political Economy by focusing upon the patterns of evolution in the global political economy since the Second World War. Primary attention is given to the nature of the international regimes established at the end of World War II to regulate international exchanges of money, trade and commodities and to the extent of change now evident in those regimes. The role of non-state actors, and the growth of regionalism and globalisation in the contemporary world economy is also examined.

## **Project Appraisal**

***Dominic Moran, SAC***

This course focuses on the economic, social and environmental appraisal of project options. Considerable emphasis is placed on the application of cost-benefit analysis and the incorporation of multiple objectives in project appraisal in developed and developing countries. Early sessions will examine the role of project analysis in determining resource allocation, and consider how costs and benefits can be identified and quantified. Later sessions will investigate the importance of time discounting and the incorporation of equity, poverty and livelihood objectives into project appraisal. The emphasis is on the qualitative and quantitative methods of investigation that can be used to show trade-offs between economic efficiency, environmental quality and social impacts. Extensive use of relevant case studies will be made throughout the course.

## **Recent Global Environmental Change**

***John Grace BSc PhD GeoSciences***

The course presents an overview of the general subject of contemporary climate change including (i) perturbations in the carbon and nitrogen cycle, (ii) changes on greenhouse gases in the atmosphere, (iii) global warming, (iv) increase in human populations, (v) changes in land use, (vi) loss of habitat and species. The emphasis of the presentations will be observational: we ask questions like 'how do we study these processes?' 'what are the uncertainties that need to be addressed?', and 'how are such changes inter-related?'. Emphasis will be given to understanding critical feedbacks between the land surface, the ocean and the atmosphere.

## **Research Methodology**

***Colin Legg, GeoSciences***

This course is about the quality of information. Interpretation of research requires a thorough understanding of the accuracy and precision of data and the sources of error and variation in surveys and experimental observations. Topics covered include data collection and handling, the design and evaluation of surveys and experiments in ecology and forestry-related research, hypothesis testing, regression and analysis of variance. Practical work will make use of computational exercises with actual data from a variety of forestry and ecological research. Suitable for students who have done some basic statistics but need to understand more about experimental design and data interpretation.

## **Seminars in Global Change**

***John Grace BSc PhD GeoSciences***

This course examines the nature of environmental change, the climate system, theories of climate change and the greenhouse effect. It focuses on the role and influence of forests on the climate system. Discussion topics will be from these: the carbon cycle, Kyoto Protocol, greenhouse gases, anthropogenic deposition of nitrogen, rates of destruction of rain forest, the role of rain forest in the climate system, forests and the hydrological cycle, impact of CO<sub>2</sub> on the growth of trees, the climatic limit of trees, and the use of global models. The teaching method will be Problem Based Learning (see <http://www.udel.edu/pbl/>).

## **Soil Protection and Management**

***Mike O'Sullivan, SAC***

This course begins by considering methods for evaluation of soil and land quality. The following sessions deal in more detail with maintenance and improvement of various aspects of soil quality such as soil fertility, soil structure and physical condition, and soil biological activity. Management techniques to prevent land degradation by toxic element contamination, salinisation, soil erosion and techniques to promote restoration of contaminated and disturbed land will also be considered. The course will be of interest to students who are concerned with protecting land resources from inappropriate use and the restoration of these resources through sustainable management practices.

## **Semester 2**

### **CORE COURSE**

#### **Society and Development**

*Neil Thin, Social & Political Sciences*

This course aims to enrich students' understanding of two linked themes: the centrality of social processes and structures to all development planning, and conversely the centrality of development to the study of society. Modern development planning and implementation has often been conducted with inadequate attention to social context, so the course will explore both the hazards of such approaches and the potential for better mainstreaming of social analysis in all development work. The study of development is central to all social sciences and has been since they first emerged from their philosophical and political roots. Development policies and strategies are important dimensions of all societies, and their intended and unintended outcomes are therefore part of the context in which all social scientists work. Many graduates from this University at some time in their lives work for planned social change, either as consultants or implementers. This course therefore has the twin objectives of studying development processes and preparing students for making direct or indirect contributions to development strategies with a particular emphasis on social justice and the reduction of poverty.

#### **Applications in Ecological Economics**

*Salman Hussain MA, MSc SAC*

Environmental problems are transdisciplinary in nature, and in order to fully address such problems policy makers need to draw on knowledge from numerous fields. The aim of this module is to illustrate how economics, ecology and other disciplines may be integrated and applied to current environmental problems in order to develop and enhance environmental policy. The module will be based on case studies and applications drawn from the experience of staff within the University. The module is suitable for students who have an interest in integrating different disciplines to address current environmental problems. Some knowledge of economics is desirable.

#### **Contemporary African Issues and Debates**

*James Smith*

This course aims to build closely on African Studies: Theoretical and Conceptual by allowing the students to frame and interrogate a range of contemporary debates using the theories, skills and learning achieved in semester one. The course is loosely arranged around *Taking Sides: Clashing Views on Controversial African Issues* by William Moseley, 2003. Each week students will prepare and lead a seminar on a key contemporary issue. These seminars will be chaired and supervised by a member of staff who has a relevant and active interest in that topic. This combination of student- and staff-led debate allows students to shape their own thinking and analytical skills whilst still incorporating the expertise of staff. In this way the course bridges the conceptual focus of the first course and builds towards the student-led practice of the dissertation. These ten seminars will be structured around provocative questions regarding contemporary Africa, and students will be expected to prepare and debate from one of two opposing perspectives.

#### **Environmental Impact Assessment**

*Alistair McVittie/Clare Hall, SAC*

The object of this course is to provide a working knowledge of current environmental, social and regional impact assessment methods. It examines the potential impact of development on environmental quality, social well-being and the regional economy, considering in detail how these impacts can be quantified and analysed. In the past, this course has attracted students from a wide range of backgrounds, reflecting the broad applicability and interdisciplinary nature of EIA.

#### **Forests and Environment**

*John Grace, GeoSciences*

This course examines the nature of environmental change, the climate system, theories of climate change and the greenhouse effect. It focuses on the role and influence of forests on the climate system. Topics will include: the carbon cycle, Kyoto Protocol, greenhouse gases, anthropogenic deposition of nitrogen, rates of destruction of rain forest, the role of rain forest in the climate system, forests and the hydrological cycle, impact of CO<sub>2</sub> on the growth of trees, the climatic limit of trees, and the use of global models.

## **Gender and Development**

*Dr Hugo Gorringer BSc, MSc, PhD Social and Political Studies*

Gender studies and development studies are both interdisciplinary in orientation, and touch on issues as diverse as work and family life, health and population, environment and international economic change. Central to the approach in this course is the understanding that issues that are often treated as isolated from one another will be better comprehended when seen in relation to one another. The field of gender and development is a particularly fruitful one in which to address the ways in which conventional disciplinary boundaries frame and limit our understandings of the social world.

## **Human Resource Management**

*Ron Wilson, GeoSciences*

The management of the people within an organisation is a key element in management. For organisations concerned in the management of renewable natural resources it is also important that the principles and philosophies of HRM are used to involve people outside the organisation in projects which affect them. This course consists of a series of lectures, seminars, practicals and gaming exercises intended to provide expertise in a range of managerial skills needed to solve problems and achieve objectives. The focus is on staff management methodologies, leadership and management styles, effective communication and case presentation, the art of negotiation and other related topics.

## **International Environmental Law**

*Alan Boyle, Edinburgh Law School*

This course aims to give an understanding of contemporary developments in international law with regard to the protection of the environment and the sustainable utilisation of natural resources. Particular attention will be paid throughout to the processes of international law-making and institutional management. Topics covered include sustainable development, the climate change and transboundary air pollution conventions, conservation of forests and biodiversity, regulation of the marine environment and nuclear risks. No prior knowledge of public international law is required.

## **International Security**

*Roland Dannreuther BA, MSc, DPhil Social and Political Studies*

The New Security Agenda course analyses the non-traditional and emerging security issues which have become increasingly important since the end of the Cold War. While direct military threats to international security have declined in importance, there is greater concern for the security implications of issues such as migration, environmental degradation, ethnic and religious conflict, and the role of non-state actors like terrorists and the international mafia. These challenges also frequently originate from the developing world, such as in the Middle East, Africa, and Central and South Asia. Regional and international security organizations, such as the United Nations and NATO, have had to adapt to these changing security conditions. The objective of the course is to provide an assessment of these new security challenges and the most appropriate tools and instruments for dealing with them.

The course seeks to develop:

- o An advanced knowledge of the main conceptual and analytical frameworks for understanding contemporary international security
- o An ability to address the security implications of such transnational phenomena as terrorism, migration, environmental degradation and international crime
- o A knowledge and understanding of how the security problems and crises in the developing world impact upon broader international security

## **Land Use-Environment Interactions**

*Andy Evans, SAC*

This course deals principally with the relationships between land management and surface and ground water quality. A case study approach will be used for much of the course and options for treatment of specific water pollution problems, such as bathing water quality, lake eutrophication, groundwater contamination by agrochemicals, surface water contamination by acidification, ferruginous discharges and sewage, will be evaluated. The course will be useful to students concerned with the protection and management of water resources from the effects of agriculture, forestry, mining, urban and domestic wastes.

### **Participation in Policy and Planning**

*Roger Sidaway, Independent Consultant*

Public involvement in decision making is a key issue in rural resource and environmental management, either in the prevention of conflict by participatory planning or conflict resolution via mediation. This course presents a generic approach to the topic which should be applicable within any democracy. The course analyses the role of beliefs, interests, lobbying and political initiatives in stimulating conflict and the ways in which information and communication can be used to get more effective participation in planning. It is designed for students who want to understand how the basic theories of participation and mediation can be applied in practice. This course adopts a participatory approach to learning via a group exercise conducted throughout the term which examines a local planning problem or community involvement in environmental management. At the end of term, the group presents its findings to the stakeholders they have interviewed. Last year the presentation took place in the Scottish Parliament. The exercise gives students practical research experience of working collaboratively with local communities on rural development and conservation issues. Students also analyse conflicts based on presentations by invited speakers (recent topics have been fish farming and GM crops) and their own case study material.

### **Rural Development**

*Michael MacLeod, SAC*

This course will provide an introduction to the theory and practice of rural development. It will use examples of topical issues from developed and developing nations to illustrate the range of challenges facing rural areas in different parts of the world. The origins of key issues and the factors influencing the ways in which solutions are identified and implemented will be analysed through a series of case studies.

### **Waste Reduction and Recycling**

*Allan Langley SAC*

The course will explore the policy framework, operational practices, energy efficiency and economics of technologies for industrial and urban waste minimisation, incineration, recycling and re-use. This unit develops engineering concepts and principles, and integrates these with industrial practice. Lectures, site visits and project work will be used to build the student's knowledge and understanding of waste reduction, recycling, industrial incineration and recovery.

## **MSc Course Organisers**

### ***Mark Aspinwall, Social and Political Studies***

Mark Aspinwall is senior lecturer in international relations. He is a native of Massachusetts and graduate of Middlebury College (BA), University of Rhode Island (MA), and London School of Economics (MSc, PhD). His main research interests are in international and comparative political economy, and especially the domestic sources of government policy choice in western Europe. His most recent book is *Rethinking Britain and Europe* (Manchester: Manchester University Press, 2004). He has also published in numerous scholarly journals, including *Review of International Studies* and *Political Studies*. He has held visiting positions at the Minda de Gunzburg Center for European Studies at Harvard University, People's University in Beijing, and the European University Institute (Florence), and has lectured at the Nato Defense College, Beijing University, and the University of Havana, among others.

### ***Alan Boyle, Edinburgh Law School***

Alan Boyle's main interest is Public International Law. He has written widely on international environmental law, the law of the sea and the settlement of disputes. He is currently involved in research on law of the sea, international environmental law, and international law-making, and he has been a consultant for various governments and international organisations.

### ***Roland Dannreuther, Social and Political Studies***

Roland Dannreuther is Senior Lecturer in Politics. He was Research Fellow at the International Institute for Strategic Studies from 1991-4 before joining the Politics Department in 1995. He spent two years at the Geneva Centre for Security Policy from 2000-2001. Research interests include international security and the post-Cold war security agenda; Middle Eastern and Central Asian politics; Soviet and Russian foreign policy; and international relations theory. Publications include *The Gulf Conflict: A Political and Strategic Analysis* (1991); *Creating New States in Central Asia* (1993); *The Soviet Union and the PLO* (1998); *Cosmopolitan Citizenship* (edited with K. Hutchings) (1999); *The Strategic Implications of China's Energy Needs* (with C.P. Andrews-Speed and X. Liao) (2003); *EU Foreign and Security Policy: Towards a Neighbourhood Strategy* (ed.) (2003).

### ***Terence P. Dawson, CECS/GeoSciences***

Terry has degrees in Forest Ecology (Ph.D., University of Southampton, 1997), Geographical Information Systems and Remote Sensing (M.Phil., University of Cambridge, 1993) and Computer Sciences (BSc., University of Exeter, 1990). His early career as an engineer has included work with the World Wide Fund for Nature, helping with the conservation management and protection of the Mai Po mangrove forest reserve, China. From 1989 to 1994, he was Managing Director of Chimera Research Ltd, an environmental consultancy specialising in applications relating to contaminated land and water resource management. In 1993, he was a visiting lecturer at the Department of Environmental Sciences and Policy, University of Central Europe, Budapest. From 1998 until 2004, he was a University Research Lecturer with the Environmental Change Institute at the University of Oxford. He recently joined the Centre for the study of Environmental Change and Sustainability, University of Edinburgh as a University Lecturer. His research interests are in biodiversity conservation and ecosystem functioning, environmental modelling, anthropogenic and climate impacts on terrestrial and coastal biodiversity and natural habitats.

### ***Stefan Ecks, MA, PhD, Social and Political Studies***

Stefan Ecks studied anthropology, sociology and philosophy at Göttingen, Berkeley, Paris (EHESS) and London (SOAS, LSE). He earned a Ph.D. in anthropology from the London School of Economics in 2003. From 2001 to 2004, he taught at the South Asia Institute, University of Heidelberg, building up a programme in medical anthropology. He carried out ethnographic fieldwork in Kolkata (Calcutta, India) on popular and professional notions of body, self, and illness. His current research interests include theory and methodology of social and medical anthropology, mental health in South Asia, and the anthropology of pharmaceuticals.

### ***Andy Evans, SAC***

Andy Evans is an entomologist/nematologist in the Crop & Soil research group at SAC Edinburgh. One of his roles is to provide specialist advice on the use and environmental impact of pesticides in agricultural crops. Other roles include research into pest management and lecturing in environmental chemistry, crop protection, horticulture and agriculture. Current research interests include: the impact of climate change on

pests of agricultural crops and forests, alternatives to pesticides for pest management, integrated pest management, effects of pesticides and pollutants on species diversity. He has carried out research and consultancy contracts in Australia, the USA, Canada, the Netherlands, Germany and throughout the UK, and led an MSc study tour to Morocco. He obtained a BSc (Hons) from the University of Plymouth and a PhD from the University of Hertfordshire.

***Dr Hugo Gorringe BSc, MSc, PhD, Social and Political Studies***

Hugo Gorringe has studied at the University of Exeter and the University of Edinburgh. His principal research interests are Political Sociology, Sociology of South Asia, Social Movements, Sociology of Violence and the Sociology of Identity. His research has focused on social and political movements both in South India and Scotland. Research in India focused on the socio-political mobilisation of Dalits (ex-Untouchables) and their struggle to achieve equality and deepen Indian democracy. He has also written on issues pertaining to collective violence, identity politics and the construction and negotiation of social space. Research in Scotland has focused on the global protests surrounding the G8 meeting in 2005 and the policing of those protests. His current teaching includes social and political movements and nationalism in South Asia, and extends beyond his research to include examinations of culture and identity in Britain, and the gendered nature of 'Development' processes.

***John Grace, GeoSciences***

John Grace has been Professor of Environmental Biology since 1992. He was Head of the School of GeoSciences in its year of establishment, 2002/03 and is now the Head of the Institute of Atmospheric and Environmental Sciences. His areas of research include: response of trees to stress, plants and water, climate change, ecophysiology, tree-lines at high elevation, response to shade, carbon balance of forests. Since 2000 he has co-ordinated a European project to investigate the role of tropical forests in the global carbon cycle, as well as participating in NERC's Centre for Terrestrial Carbon Dynamics. He is President of the British Ecological Society and an associate editor of *Plant Cell & Environment*.

***Clare Hall, SAC***

Clare gained her first degree in Environment and Social Values at the University of Glamorgan in 1998, and her masters degree in European Environmental Policy and Regulation at Lancaster University in 1999. Consequently, she left academia for three years to work for environmental and community development NGOs in the east of England. In 2002 she took up the post of research assistant within the Natural Resource Economics Department (now the Land Economy Research Group) at SAC. Her research experience covers investigation of food-related risk perceptions, forest manager motivations and (currently) farmer perceptions of genetic engineering technologies. She has expertise in cost-benefit analysis, meta-analysis, questionnaire surveys and Q methodology. Clare is currently studying (part-time) for a PhD in discourses relating to genetic engineering and sustainable agriculture.

***Salman Hussain, SAC***

Salman Hussain gained a MA in Economics in 1994 and a postgraduate MSc in Ecological Economics with distinction in 1995, both from the University of Edinburgh. He has written and published extensively in the subject of the greening of industry, with a particular focus on policy issues and economic incentives. Salman has travelled extensively in the Indian subcontinent, the east coast of North America and Eastern Europe. He is fluent in Urdu, the language of his birthplace, Pakistan.

***Allan Langley, SAC***

Allan Langley is an environmental engineering lecturer with a MSc in agricultural engineering. His main teaching areas cover waste management and agricultural field engineering. Previously employed as a SAC consultant, he has contributed to a major general text book for agricultural students and is involved in organising commercial working demonstrations. In addition, Allan is the Adviser of Studies for the First Year Agriculture programme.

***Colin Legg, GeoSciences***

Colin Legg started studying the ecology of heathland ecosystems at Aberdeen University with a particular interest in the use of fire as a management tool and the subsequent post-fire succession. A major research project investigating the recovery of vegetation from severe accidental fires on the North York Moors followed during a period as Research Demonstrator at Exeter University. He joined the University of Edinburgh in 1984 and extended his interest in ecology and conservation of mountain, moorland and

heathland vegetation to the dynamics of Mediterranean vegetation. His teaching interests include plant ecology, vegetation management and quantitative aspects of survey and experimental design.

***Michael MacLeod, SAC***

Michael MacLeod holds a BSc in Geology from the University of Edinburgh, an MSc in Energy Systems from the University of Strathclyde and a PhD in Environmental Education from Liverpool John Moores University. After gaining his PhD in 1997, Michael worked on an EU-funded coastal management project in Ireland for 3 years. The aim of this project was to help rural communities become involved in the management of their coastal areas. After this, he worked for the Scottish Institute of Sustainable Technology on projects concerned with water resource management and the wider implications of sustainable development.

***Donald McPhillimy, GeoSciences***

Donald McPhillimy holds a BSc in Forestry from the University of Edinburgh. After graduating he spent a year working with the New Zealand Forest Service before returning to the UK to take up a management position with Scottish Woodlands. In 1985 he established his own company which specialises in the design and implementation of farm forestry and multi-objective woodland schemes. He takes on consultancy work in the area of native and community woodlands and has a number of teaching and training commitments.

***Alistair McVittie, SAC***

Alistair gained his first degree in Economics at the University of Stirling in 1994. Following three years outwith academia he gained a MSc in Environmental Management in 1998 also at Stirling. Following this he started studies towards a PhD at the University of Edinburgh joining SAC in 2001 as a resource economist. His current research covers environmental valuation, cost-benefit analysis, cost-effectiveness analysis, and policy evaluation. These techniques have been applied to agri-environmental policy, animal welfare, landscape and environmental features and the Water Framework Directive.

***Maurizio Mencuccini, GeoSciences***

Maurizio Mencuccini holds a BSc in Forest Sciences and a PhD in Forest Ecology from the University of Florence (Italy). He has spent two years as postdoctoral associate at the Boyce Thompson Institute for Plant Research at Cornell University (NY, USA) before taking up a lectureship at the University of Edinburgh in 1997, where he has been since. His research interests are centred on the dynamics of forest ecosystems, particularly in the context of net primary productivity, net ecosystem productivity, and their controlling factors. In the past ten years, he has concentrated on the eco-physiology of forest trees and ecosystems and the relationships between plants and water. More recently his focus has broadened to include studies of carbon sequestration by forest ecosystems. He has previously worked on mast seeding behaviour and population dynamics in forest trees, the physiological ecology of spontaneous desert shrubs in the North-American deserts, the leaf-level physiology of common beans and the response of tropical forests to changes in rainfall patterns. He has significant experience in international collaborations and has worked in several projects with scientists from Europe, USA, Africa and Brazil. He has authored or co-authored about thirty scientific papers.

***Dominic Moran, SAC***

Dominic Moran is Senior Natural Resource Economist with over 10 years applied experience of project appraisal in developed and developing countries. He specialises in the development and application of methods to value non-market good and services for inclusion in project decisions. He has a PhD in Environmental and Resource Economics (University College London) and a Masters degree in Agricultural Economics (Manchester University). He has published numerous books and articles in the field of environment and development economics.

***Michael O'Sullivan, SAC***

Mike O'Sullivan is the Programme Leader for Environmental programmes at SAC Edinburgh. He was formerly Head of the Engineering Resources Group in SAC. His research interests are in the area of soil management, the environmental impacts of soil management processes and soil mechanics. He developed a simple computer model of the compaction process and devised testing methods to measure soil mechanical properties.

### ***Bob Rees, SAC***

Bob Rees is an environmental scientist with a PhD in soil science. He has research interests in greenhouse gas emissions and nitrogen transformations in soils. He is currently involved in a large European project looking at greenhouse gas emissions from grasslands, and is a member of the Council of the British Society of Soil Science. As well as his scientific interests, Bob works as Postgraduate Programme Manager within SAC for research postgraduate students acting as a link between the University and SAC.

### ***Hamish Ross, Moray House School of Education***

The course involves a wide variety of tutors. The Course Organiser, Hamish Ross, holds an MA in Geography and a PhD in climate change in Shetland during the Quaternary Period, both from the University of St Andrews. He also holds a PGCE from the University of Edinburgh, and has worked in industry and as a secondary school geography teacher. In 2002 he gained a MSc in Environmental Sustainability from the University of Edinburgh. Currently he is Development Officer for the Scottish Earth Science Education Forum, which is an association of educators and scientists established to promote understanding of planet Earth in Scottish schools and colleges. He has a particular interest in the contribution of education to sustainable development and the ways that principles of sustainable development are represented in school curricula.

### ***Roger Sidaway, GeoSciences***

Roger Sidaway worked for the Forestry Commission and the Countryside Commission before becoming an independent Research and Policy Consultant based in Edinburgh. He specialises in the application of social research to environmental issues, notably the impacts of tourism on the environment, conflict resolution and local community involvement in planning. He is a trained environmental mediator, leads training workshops in Environmental Conflict Resolution and Public Participation in the School of GeoSciences and overseas. He is a Board member of the Scottish Mediation Network and chairs its Environment and Planning Initiative. He wrote a guide to Consensus Building in Rural Development for the Scottish Executive and recently undertook research for the Executive on environmental justice. He facilitated the development of collaborative strategies for tourism in the Cairngorms and the Pentland Hills Regional Park and for the management of the Castle Eden Dene National Nature Reserve on the Durham coast. He has been a Director of the Edinburgh Green Belt Trust and a specialist adviser to the House of Commons Select Committee on the Environment.

### ***James Smith, Social and Political Studies***

James Smith is a Lecturer in African Studies. His research interests revolve around agro-food systems and rural development and relationships of knowledge, power and development and he is currently working on an ESRC-funded project looking at biotechnology and development partnerships in Africa, India and Latin America. James is a principal investigator in the ESRC Innogen Centre at Edinburgh University, a visiting research fellow in development policy and practice at the Open University and an honorary lecturer in geography at the University of the Witwatersrand.

### ***Neil Thin, Social and Political Studies***

Neil Thin is a specialist in the anthropology of development with particular interests in planning, policy, human rights, ethics, non-governmental organisations, social ecology, South Asia and Rwanda. He has very extensive experience of working as a social development adviser and trainer for the UK's Department for International Development, and for British and overseas NGOs.

### ***Paul van Gardingen, CECS/GeoSciences***

Paul van Gardingen is a Senior Lecturer specialising in International Development. He holds a BSc (Hons) and PhD from the University of Canterbury in New Zealand, where he started his research career working on plant environmental physiology and management of native forests. Research in Edinburgh has concentrated on the development of knowledge and tools supporting the management of natural resources, with particular emphasis on tropical forests. More recent activities include promoting the contribution of science and technology to sustainable development in Africa working in partnership with the New Partnership for Africa's Development (NEPAD) and the African Union. Paul acts as an advisor to DFID, Defra, the European Commission and World Bank on issues relating to International Development and conservation of Biodiversity. Paul chairs the Technical Committee for Monitoring and Evaluation of Defra's Darwin Initiative for the conservation of species, is the University's representative on the Edinburgh Centre for Tropical Forests and a member of the British Ecological Society Council.

***Ron Wilson, GeoSciences***

Ron Wilson (BSc. MSc. PhD) is a senior lecturer in Resource Management in the School of GeoSciences. As Course Organiser for several mainstream University courses and as Course Director of numerous training courses for participants working in developing economies, he has over 25 years experience of organising and delivering specialist training courses for under- and post-graduates, commercial companies, overseas projects and government organisations. He is an experienced trainer with particular expertise in rural resource management, small business analysis, project evaluation, (particularly in the agricultural sector), financial budgeting and reporting, capital investment appraisal, cost-benefit analysis, and human resource management. He has undertaken several consultancy contracts, predominately involved in policy evaluations for national and EU government bodies. In addition, he is a partner in a commercial rural business with his wife.