May 2002

UCCEE news

News from the UNEP Collaborating Centre on Energy and Environment

UCCEE in Capacity Building and Analytical Studies for CDM

The final countdown to COP 8, to be held in Delhi in late October 2002, has begun. It is expected that the operational start of the Clean Development Mechanism (CDM) will be announced after several years of intensive planning and preparation. The CDM will promote sustainable development in developing countries and also, once implemented, it will allow Annex 1 parties to receive credits for emission-reduction projects undertaken in Non-Annex 1 countries. The Annex 1 country can use these credits to reduce their emission-reductions commitment agreed to in the Kyoto Protocol.

Since the CDM was first introduced as part of the Kyoto Protocol in December 1997, UCCEE has been heavily involved in the preparations including:

- Helping to develop the capacity of institutions in Non-Annex 1 countries to implement the mechanism;
- Formulating methodologies for measuring emission reductions and the contribution of CDM projects to sustainable development.

UCCEE's involvement started in 1998 when an African Regional Workshop in Accra, Ghana, was organised in co-operation with Ghana EPA, IEA, UNDP and UNCTAD. The workshop was sponsored by Danida and UNEP. It was designed to introduce African governments and energy sector experts to the concept of the CDM, to help lay the groundwork for governments to implement the mechanism in their countries, and to explore the links between CDM and sustainable development financing.

One of the key findings of this workshop was that the African negotiators to the UNFCCC were not well informed about the mechanism and needed a forum in which to formulate and articulate an African position on it. Seizing on this need, Danida and UNEP provided funding for four additional workshops during 1999 and 2000 in Kenya and in Lyon, which were jointly hosted by UNEP and UNDP. In each of these meetings, UCCEE acted as a workshop co-ordinator as well as providing staff experts to address key topics and facilitate the meetings.

Another outcome of the Accra workshop was a general recognition that many African countries were not ideally suited for participating in CDM. This is due to relatively limited emission-reduction opportunities, slow growth in the demand for electricity and relatively high project risks, and limited institutional capacity to link the mechanism to their sustainable development and sustainable energy development objectives. To address this problem, Danida provided >

UNEP with funding to undertake a two-year project, "Sustainable Development and Climate Change Finance".

The project, which was recently completed, involved three different study components:

- African case studies;
- Quantification of sustainable development objectives; and
- Investigation of CDM project baseline issues.

A series of case studies was conducted in Ghana, The Gambia, Uganda and Zimbabwe. Unlike many other CDM country studies that focused on identifying project opportunities in non-Annex 1 countries, these were designed to increase the institutional capacity of the public and private sectors to implement and participate in the CDM. These studies were coordinated by UCCEE, and the objectives of the country studies were:

- To raise local awareness of the CDM, increase the institutional and organisational capacity of the governments to attract future investments in CDM projects, and to implement policies and procedures to administer the mechanism;
- To develop the analytical capacity of various groups in the countries to develop, assess and implement future CDM projects.

One of the key lessons learned in this project is that small African countries need to place more emphasis on developing a model of small country CDM participation that stresses the role of their domestic private sectors. However, the capacity to plan, assess and implement GHG reduction projects in the private sector is extremely limited in many small African countries, as is the capacity of their governments and financial institutions to form partnerships with the private sector to promote this model.

The second part of the project involved research by UCCEE staff to develop better methods to quantify the contributions of CDM projects to sustainable development. This work was based on a previous study by Halsnæs and Markandya (2000) to assess the potential financial and social costs of 22 greenhouse gas (GHG) emission-reduction

projects. Their study has extended the cost-based evaluation to include a number of social indicators in order to reflect local air pollution impacts, employment generation, and health impacts. More recently, the ADB also supported an analytical study by UCCEE, *Market Potential for Kyoto Mechanisms- Estimation of Global Market Potential for Co-operative Greenhouse Gas Emission Reduction Policies.* The study concluded that JI projects, emission trading and CDM projects in total would be between 500 MtC and 1,300 MtC in 2010.

In early 2000 UCCEE initiated a programme that focuses on developing and strengthening CDM analytical and methodological capacity on baselines in developing countries. The programme is offering technical advice, internet access to documentation and data to developing country experts in order to enable an independent formulation of views on baselines from a Southern perspective. Technical assistance has been provided to the Peruvian National Environmental

New project on
Capacity Development for the Clean Development Mechanism

The Dutch government has provided 10 million dollars for UNEP to implement a capacity building program for the Clean Development Mechanism (CDM) in developing countries. This program will be implemented by UCCEE, and run over the next four years, with about 60% of the total budget being spent on in-country activities.

The overall development objective of the program is to generate a broad understanding of, and develop the institutional capability and human capacity for, developing countries to fully participate as equal partners with developed countries in the formulation and implementation of the CDM. If the mechanism is to help meet the national sustainable development priorities of the developing countries, they must have the capability and capacity to work as equal partners with developed country counterparts. Creating the national capacity to implement the CDM according to the comprehensive approach adopted by the Kyoto Protocol will help ensure the early success and efficiency of the CDM. Some of the activities covered are generic in nature (applicable to all sectors); however, the focus of this proposal is explicitly on energy.

The program was launched as of 15 Feb. 2002 and is targeting 12 small and medium sized countries from 4 regions: sub-Saharan Africa, Asia, Middle East and North Africa, and Latin America. For more info contact: mk.lee@risoe.dk

Council (CONAM), and to the African regional group through the South African Energy and Development Research Centre (EDRC). In spring of 2001, UCCEE, the OECD and IEA held an expert workshop entitled "Identifying feasible baseline methodologies for CDM and JI projects". The workshop brought together participants from Annex 1 and non-Annex 1 countries to build a consensus on initial recommendations for baseline construction. Around 100 participants were in attendance, with 25 from Non-Annex 1 countries and 11 from Economies in Transition. A chairman's report of the meeting has been prepared and will serve as input for the UNFCCC negotiations in July and November this year. Information and documentation from the workshop is available on uccee.org.

UCCEE's support for CDM capacity building and analytical studies has not been limited to Africa, alone. UCCEE has also co-sponsored a workshop on the Kyoto Mechanisms in March 2001 in Beijing, China under the title of "Socio-economic Assessment for the CDM and Other Mechanisms". In addition, plans are underway to hold additional policy dialogues with Asian countries through IGES and UNEP/UCCEE in Korea, India and Thailand and ultimately, a side event at the upcoming COP is planned presenting the results of this workshop series in several Asian countries.

UCCEE has also been supporting CDM investigations related to building wind farms in Egypt (see box to the right).

While the CDM may well commence operation shortly after COP 8, there is still much more work to be done on it, if developed and developing countries are to derive the maximum benefit from this mechanism. Signalling this fact, UCCEE has just been awarded a four-year $10 million project by the Dutch government (see box on page 2). Thus, as the final countdown to the launch of the CDM nears zero, UCCEE will remain focused on the CDM, applying the lessons learned over the last four years to both old and new issues in this challenging area. For further information please contact uccee@risoe.dk

The Zafarana Wind Farm:

Project in the CDM.

Methods and Tools for Baselines, Carbon Financing and Sustainability Analysis

In a study conducted in 2001, UCCEE staff assisted the Wind Energy Department at Risø with providing a baseline assessment for the Zafarana 60 MW wind farm in north-western Egypt. The overall aim of this project is to produce a guidance document for assessment of wind power projects in the CDM. The project explores some of the key issues in regard to the assessment of projects under the CDM, namely baseline-setting, carbon financing, and environmental sustain-ability. The project will demonstrate how to apply the existing assessment methods, compare their implications, and recommend methods and approaches for assessing the baseline, carbon financing, social costs, and environmental sustainability of wind power projects. The project is funded by the Danish Energy Agency and will be completed in 2002. For more information, please contact lasse.ringius@risoe.dk.

Designing Micro-credit Schemes for Consumer Financing of Solar Photovoltaics in Southern India

The long-term goal of the project is to bring modern electricity services to rural Indian households and enterprises in an environmentally sustainable, climate-friendly manner. This initial phase involves designing, in collaboration with one or two Indian finance institutions, a rural finance facility for solar system purchases. It will use United Nations Foundation (UNF) resources to buy down the initial risks of lending to this sector. The UCCEE worked jointly with UNEP and local consultants in India on putting together the concept paper for the facility. Inputs were obtained from the various stakeholders through meetings with them during August 2001. The work on designing and finalising the facility in consultation with two participating banks in India is now in progress. As a result of this work, a further request for approximately $2 million will be submitted to UNF for implementing the credit facility. For additional information please contact j.p.painuly@risoe.dk.

Sustainable Development and Climate Change

In a number of projects sustainable development is considered as a driver for climate change policies so developing countries can, at the same time, meet their basic development needs and participate in global environmental policies.

To reframe global environmental policies as being derived from development priorities does not make climate change easier to solve. Rather, it suggests that global collaboration on climate change should be approached on multiple levels through local and national development programmes, as well as through multilateral efforts to establish co-operation mechanisms within an equitable and efficient global climate change regime.

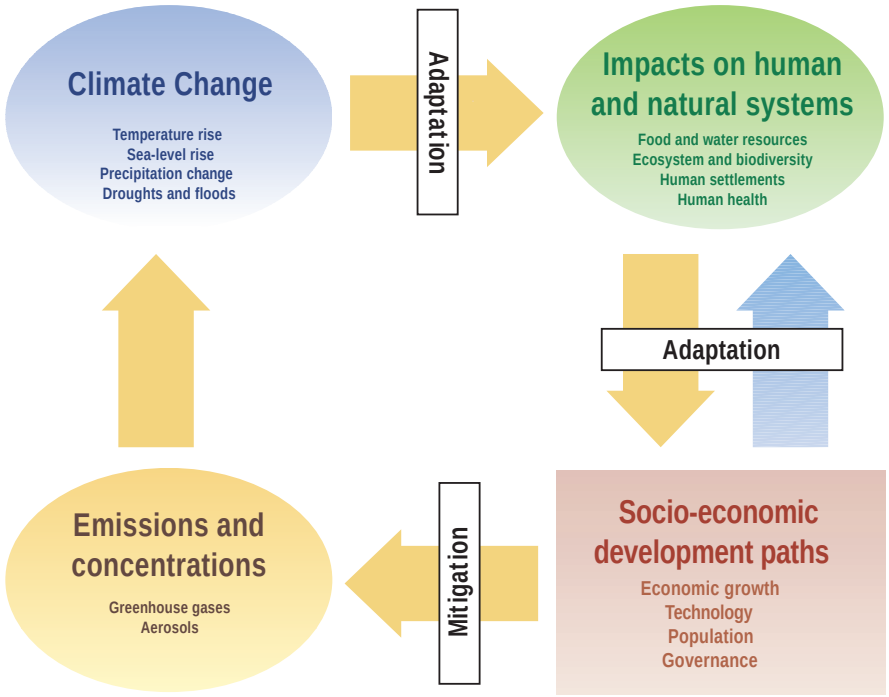
Climate change has been universally recognised as a global problem. While historically the preponderance of greenhouse gas emissions have been in the developed countries, emissions will increase rapidly with expected and needed economic growth in developing countries. Both the UN Framework Convention on Climate Change and independent scientific analysis have reiterated that strong and inclusive global cooperation will be needed to realise the deep reductions in greenhouse gas emissions necessary over the longer term to control climate change. Yet, in the years since the constitution of the Convention in 1992, North-South co-operation on climate change has not developed adequately.

Current co-operation efforts and analyses of climate change policy have been driven uniquely by concerns about climate change. From this perspective, related ancillary benefits, from energy efficiency, such as reduced health impacts of local air pollution, may be significant and promote action. They are however only of secondary importance in that they may reduce the total costs of compliance with climate change commitments. This climate change approach has had limited success in driving global action. In contrast, in many countries, energy initiatives and other climate favouring activities emerge as side-benefits of sound development programmes. Price reform, agricultural soil protection, sustainable forestry, energy sector restructuring - all undertaken without any reference to climate change mitigation or adaptation - have had substantial effects on the growth rates of greenhouse gas emissions.

It is, however, often possible to build environmental and climate policy upon development priorities that are vitally important to decision-makers. It opens the potential that contributions by developing countries to the management of the risks of climate change may be seen not as a burden of legal commitments to be avoided, but as a side-benefit of sound and internationally supported development. Instead of starting with the problem of how to generate political attention to climate change risk issues among key policy decision makers and public, the point of departure could be the development problems that are already politically central. Based on that, one can then investigate how these problems can be solved in the most climate-friendly or most sustainable development friendly way.

This leads to an alternative strategy for establishing co-operations between developing and developed nations: to ground analyses and implementation programmes in development objectives and to work out from the foundation to climate policy in the context of sustainability.

The UCCEE is one of the key actors in the establishment >



Climate Change – an integrated framework. Schematic and simplified representation of an integrated assessment framework for considering the relationship between climate change and sustainable development.

of an international research network on Development and Climate Change. The network will be based on a 3-4 year project that focuses on two specific areas of the sustainable development agenda of high priority to developing countries, while maintaining a strong linkage between the issues. Two areas will be considered in the project:

(1) Energy supply for development and access to electricity;
(2) Food security/ fresh water availability and the interrelated aspects of land use and forest management.

The project will focus on six developing countries/regions namely China, India, Bangladesh, South Africa, West Africa, and Brazil. The project partners are centres of excellence and government focal points in these six countries and regions, and the National Institute of Public Health and the Environment (RIVM) from the Netherlands, CIRED France, Institute for Sustainable Development in Canada, Professor Tom Heller from Stanford University and a number of other institutes. The project ideas were discussed at a workshop in Paris in October 2001 (see article on UNF Workshop). For additional information please contact kirsten.halsnaes@risoe.dk

UNEP Climate Change Strategy Development

UNEP is in the process of updating its climate change strategy in view of the decisions at COP 7 and the expected entry into force of the Kyoto Protocol. Within UNEP climate change is a priority area in which a significant number of activities are being implemented and which cuts across a number of different UNEP divisions.

To assist in this process, the Centre hosted a retreat on January 14th and 15th that brought together participants from all the relevant UNEP divisions representing offices in Nairobi, Paris, Geneva and Grid-Arendal. The retreat prepared input for an updated climate change strategy and at the same time provided a good opportunity to enhance existing informal coordination and collaboration.

The Centre plays an active role in several parts of UNEP's climate change activities, especially in the areas of mitigation and the Clean Development Mechanism. In addition, the Centre is gradually increasing its activities in the area of adaptation. For more information please contact john.christensen@risoe.dk

Proceedings from the UNF Workshop on Sustainable Development and Climate Change

The proceedings from the workshop on Sustainable Development and Climate Change held in Paris on October 2001 are now available. The workshop was organised by UCCEE and RIVM (Dutch National Institute of Public Health and the Environment) and sponsored by the UN Foundation. Chief climate negotiators, high-level government officials, and senior private sector representatives from China, India, Brazil, Iran, South Africa, Argentina, South Korea, and AOSIS (Alliance of Small Island States) participated in the meeting.

The workshop proposed a new conceptual framework that places sustainable development before climate change, reversing existing frameworks. Specific objectives of the workshop were:

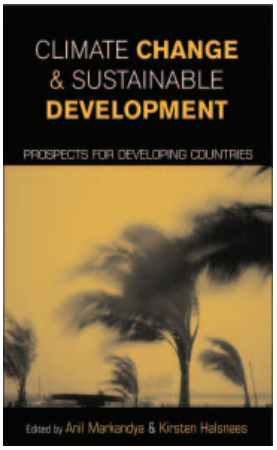
- To consider how longer-term development priorities link with climate change concern;
- To identify options for meeting developing countries needs and priorities while contributing to sustainable development both locally and globally; and
- To discuss possible longer term action at domestic and international levels by countries in order to further the sustainable development and climate change discussion.

The rationale for the workshop revolved around the fact that sound development programmes often produce side benefits in the form of reduced GHG emissions or improvement in the capacity of developing countries to adapt to climate change. Thus it may often be possible to build environmental and climate policy around development priorities that are vitally important to developing country decision-makers. It opens the potential for climate change policies to be seen not as a burden to be avoided but rather as a side-benefit of sound and internationally supported development projects and programmes.

Several results emerged from the workshop. All the developing country participants agreed that there are strong linkages between sustainable development and climate change, and fully endorsed the framework that places sustainable development before climate change.

The COP7 conference immediately after the Paris workshop adopted the Marrakech Ministerial Declaration providing inputs for the World Summit on Sustainable Development in Johannesburg next September. The Declaration emphasises also the linkages between sustainable development and climate change, and reaffirms development and poverty eradication as the overriding priorities of developing countries. For additional information please contact anne.olhoff@risoe.dk

Publications



Climate Change and Sustainable Development – Prospects for Developing Countries

by Kirsten Halsnæs, UCCEE, and Anil Markandya, University of Bath, UK.
Earthscan, June 2002

The book reviews the literature on sustainable development and offers some indicators that can be used for the analysis of sustainability at the project level. It also reviews the existing literature on integrating sustainability in climate change mitigation analysis and makes some recommendations on how effective present methods are and how they can be improved. Among the different elements of a sustainability assessment, the most neglected in other work are the social and development related aspects, including the impacts of projects on social networks and their dependence on them for success in implementation. This study suggests some ways in which these issues can be taken into account.

The formal methods used for the evaluation of options are reviewed and case studies of their application presented. The discussion of the issues and methods of presentation provided represent a contribution to the effective analysis and presentation of the relevant information to policy makers. The book will be presented by UNEP at the World Summit on Sustainable Development in Johannesburg. For further information please contact kirsten.halsnaes@risoe.dk

Working paper on

Sustainable Energy – Case Study of Photovoltaic Home Systems

by Arturo Villavicencio, Risoe 2002

The author has developed a methodological approach on sustainable energy development, where sustainable development indicators are integrated into a broad systems concept, and the main indicators are defined to reflect co-evolution, change, adaptation, self-organisation, and resilience. The approach is applied to evaluate stand-alone photovoltaic home systems as a strategy for a more sustainable energy development in rural areas of developing countries. The conclusion of the paper is that these home systems primarily support sustainable development priorities with respect to environmental protection. However, they have a number of limitations, including affordability, efficiency and technological capability. These limitations reflect their early state of development and high costs of the technology. For more information contact arturo.villavicencio@risoe.dk

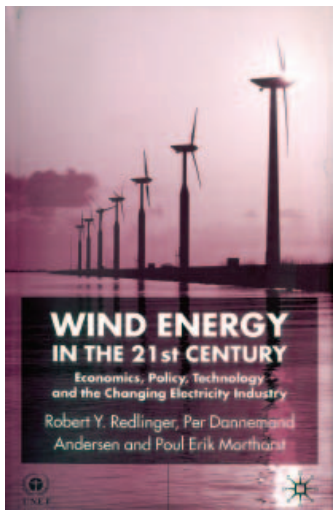
Limiting overselling in international emissions trading

Two new reports by Erik Haites, Margaree Consultants, Toronto, and Fanny Missfeldt, UCCEE

The Electric Power Research Institute and UCCEE have jointly published two volumes of work undertaken in 2000/2001 on the analysis of rules to reduce the risk of overselling in the context of international greenhouse gas trading under the Kyoto Protocol.

A specific concern about emissions trading at the international level is that there is no supra national entity that can credibly enforce compliance. A country could, for example, maximise its economic gains by selling off a large share or its entire allocated quota, while free-riding on the benefits of reduced emission in other countries. If the country was then unable to cover its actual emissions with remaining quota, a problem of overselling occurs. Proposals to deter overselling have been developed as early as the summer 1998. One of the first ideas was to deter overselling by introducing buyer liability for purchases of emissions quota. Since then the problem of overselling has been termed the 'liability problem'.

For further information contact fanny.missfeldt@risoe.dk



Wind Energy in the 21st Century

Economics, Policy Technology and the Changing Electricity Industry

by Robert Y. Redlinger, Per Dannemand Andersen & Poul Erik Morthorst,
Palgrave 2002

The book aims at providing a thorough analysis of wind energy's current status, its future prognosis, and the factors that will impact its evolution. The book treats issues as wind energy resource potential, technology and industry, economics, finance and power markets, environment and policy. It provides, in one concise volume, sufficient coverage of a broad range of wind energy issues in ways that the policy-maker, researcher, or electricity industry professional can obtain a clear understanding of the most important aspects facing wind energy as it enters the energy mainstream. Particular emphasis is placed on policy mechanisms to facilitate wind energy implementation, as well as the emerging issue of competitive power markets.

New Project Begins:

Estimating and Comparing Costs and Benefits of Adaptation Projects in Africa

The issue of adaptation project funding under the UN Framework Convention on Climate Change has taken on increasing importance over the last few years. In the agreements reached by the Conference of Parties in Marrakesh, Morocco in November 2001, several global funds for the financing of adaptation projects in developing countries were announced. At the same time, it has been announced that the funding of development projects, that also reduce climate change damages, will be based on the incremental benefits and costs associated with adaptation. However, at the current time there is no generally accepted set of methodological guidelines that decision makers in the UNFCCC, the GEF, the World Bank and other development institutions can use to make these types of funding decisions for adaptation projects. This situation is in sharp contrast to the funding of mitigation projects where guidelines are well established and in routine use. As a result, there is a pressing need to develop an analytical framework, associated methodological guidelines, and analytical tools for evaluating and comparing the performance of investments in projects that reduce climate damages.

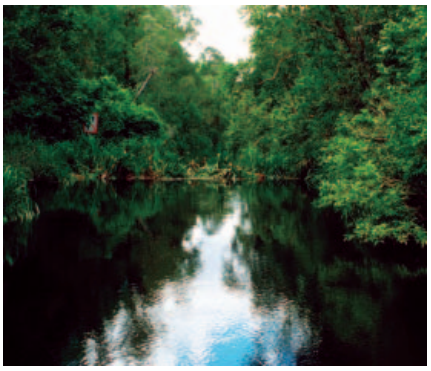
To address these shortcomings UCCEE is teaming with the Energy and Development Research Centre, University of Cape Town, South Africa and Department of Water Resources, The Gambia on a 3-year project to estimate the benefits and costs of adaptation projects in Africa.

The framework is being developed so that it will be possible to isolate the incremental adaptation benefits and costs of development projects whose primary objectives are not related to avoiding climate change damages. The methodology that is under development will be tested and demonstrated on a small number of projects in Southern and/or West Africa.

The project is being funded by the AIACC (Assessment of Impacts and Adaptation to Climate Change) Programme and the World Bank. For more information contact: mac.callaway@risoe.dk or lasse.ringius@risoe.dk.

Launching Web Site on Health and Economic Impacts of Air Pollution

A web site on the Health and Economic Impacts of Air Pollution has now been launched.The site hosts useful information to promote increased collaboration among researchers and to facilitate information exchange between experts and policy makers. The site is coordinated, hosted and maintained by UCCEE and contains information on the health and economic impacts of air pollution, including GHG emissions in developing as well as developed countries. The site is an initiative of UNEP/UCCEE, in collaboration with World Bank (WB), US Environmental Protection Agency (EPA), World Health Organisation/ Regional Office Europe (WHO/Europe), National Renewable Energy Laboratory (NREL), Health Effects Institute (HEI), Carnegie Mellon University, Peking University Health Science Center, P. Catholic University of Chile and Fudan University (formerly Shanghai Medical University). Its web address is: www.airimpacts.org For additional information contact jorge.rogat@risoe.dk



PhD on Development and Environment Economics

Anne Olhoff who has been a PhD student at the Centre has defended her thesis titled *"Leaving the World of First Best: Environmental Policy Options in Developing Countries."* The overall theme of the Ph.D. thesis is the implications of the theory of second best on the approaches for analysing the interrelated problems of development and environment in developing countries. It focuses on aspects of institutions, imperfections and social costs with an emphasis on environmental issues associated with energy use.

The thesis consists of four individual papers, addressing different aspects of the identification and implementation of environmental policy options in developing countries and their broader development implications:

- "The Problem of Second Best – Environmental Policy Externalities in Developing Countries" sets out the theoretical foundation of second best theory.
- "Sustainable Development and Climate Change – A Conceptual Framework" provides an overview of the problem of sustainability and some of the ways in which sustainability is analysed in the literature.
- "Social Capacity and Climate Change Mitigation Options in Developing Countries" focuses on the institutional aspects of development.
- "The Costs of Poverty: Private and Social Costs of Household Energy Use in Ghana" focusing on patterns of household energy use in Ghana.

For additional information, please contact anne.olhoff@risoe.dk

PhD on Vulnerability and Adaptation

Cassandra Brooke has submitted her PhD thesis entitled *"Climate change, conservation areas and adaptation in Costa Rica: an investigation of adaptive ecosystem management and national adaptation networks"*, at the Environmental Change Institute and the School of Geography, University of Oxford. The objective of this work is to explore the implications of climate change for conservation management in Costa Rica, with the specific case study of Guanacaste Conservation Area. The thesis has both a biophysical and a social science component.

For the adaptation part, the study evaluates existing adaptation measures and strategies in Guanacaste, such as fire management, biological corridors, habitat maintenance, monitoring and biological education and outreach. It then goes on to examine the concept of adaptive ecosystem management, and barriers to adaptive management in the case study area. At the national level, the roles and responsibilities in adaptation are investigated, with the aim of discovering national adaptation networks, boundary organisations, and cross scale pathways for adaptation in the conservation/biodiversity sector. The ultimate aim of the thesis is to provide insights into ways of evaluating adaptive capacity and strengthening adaptive ecosystem management at the systemic level.

UCCEE news provides regular information on the activities at UCCEE and UNEP Energy. The views expressed here do not necessarily represent those of UNEP, Risø National Laboratory or Danida. The newsletter and back issues are available on the Internet at http://www.uccee.org/newsletters.htm. If you would like to receive a printed copy of UCCEE news or a text-only, register on our website or contact Maria Andreasen at maria.andreasen@risoe.dk, fax: +45 46 32 19 99, phone +45 46 32 22 88. For all other information contact the editors.

Editors: Stine Skipper, John M. Callaway, Juan Zak, and Jorge Rogat (uccee@risoe.dk)
Layout: Finn Hagen Madsen (finn@studio8.dk)

UNEP Collaborating Centre on Energy and Environment (UCCEE)
Risø National Laboratory
P.O. Box 49
DK 4000 Roskilde
Denmark

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UCCEE at Risø National Laboratory, Denmark, supports the United Nations Environment Programme (UNEP) in pursuing its aim of incorporating environmental aspects into energy planning and policy world-wide, with special emphasis on developing countries. UCCEE works catalytically, encouraging, promoting and supporting research by local research institutions, coordinating projects and disseminating information, as well as carrying out a full in-house research programme in close collaboration with colleagues at Risø National Laboratory – the main public scientific research institute in Denmark.

Staff change

Anne Olhoff joined the UCCEE as an Economist in November 2001. She holds an MSc. in economics from Copenhagen University and has defended her PhD thesis in Development and Resource Economics at Roskilde University Centre in April. Anne has previously been employed at the Centre as a PhD student and will continue to work in the fields of sustainable development and climate change, on institutional issues, and on poverty and distributional issues related to these themes.

Anton-Louis Olivier, Energy Planner, left the Centre by end December 2001 to join NuPlanet (al@nupla net.nl) in the Netherlands, a small consulting company dealing with project development and management in the clean energy sector. Anton-Louis joined the Centre in 2000, and has been working primarily in the areas of small renewable and energy efficiency project development and finance.