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ENERGY, CLIMATE AND SUSTAINABLE DEVELOPMENT

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New Project Developing Carbon Finance for Sub Saharan Africa

The Clean Development Mechanism (CDM) is an important part of the Kyoto Protocol, with the dual aim of reducing greenhouse gas emissions and promoting sustainable development in developing countries. Although several capacity building initiatives on CDM have been launched in Africa, the majority of actual CDM projects are currently directed toward Asia and Latin America.

"So far, the market has basically bypassed Sub Saharan Africa," says URC's Sami Kamel. Investors are wary, he says, because of the investment climate, sovereignty risk issues and the fact that some of the countries in the region lack the necessary institutional setups for CDM as well as clear national guidelines on CDM project approval procedures. The trends are somewhat similar to what is happening in foreign direct investment.

To address this situation, UNEP-DTIE (Division of Technology, Industry and Economics), the World Bank's Community Development Carbon Fund (CDCF), and URC have started the Carbon Finance for Sustainable Energy in Africa (CF-SEA) Project. The US $1 million, one-year project is designed to build the local capacity of public and private sectors in five sub-Saharan African countries to identify, develop, approve and implement CDM projects. Priority will be given to CDM projects with clear community benefits.

Sami Kamel explains that the project will be implemented in cooperation with local stakeholders, including local financial institutions, consultants and civil servants. "We want to develop actual CDM projects through hands-on activities," he says.

Four international consulting companies have been selected along with their local partners to conduct project activities in the five project countries of Mali, Cameroon, Zambia, Ghana, and Mozambique. The project activities will include identifying CDM project portfolios and supporting Designated National Authorities (DNAs) to establish a national CDM project approval procedure. This will be followed by assistance in developing and producing a number of CDM Project Identification Notes (PINs), and Project Design Documents (PDDs). A number of capacity building CDM workshops have already been held in some of the project countries. The workshops are part of a targeted capacity building programme that will provide participants with practical experience in CDM project development issues. Staff members of the CDCF, UNEP-DTIE, and URC participated in these events. The preparation of a CDM project portfolio is also underway is several of the project counties.

Some of the emission reduction projects identified by CF-SEA may be further developed by CDCF in order to purchase the emission reduction credits generated by these projects. Support for the CF-SEA project has come from UNEP, UN Foundation and the World Bank.

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Workshops on
Electricity & Development
concluded successfully

All three of the regional workshops on Electricity and Development described in the last issue of E+ have now taken place. Significant progress was made on understanding the linkages between poverty, development and access to electricity. One of the main conclusions is that the provision of modern energy services is crucial to the overall social and economic development and these services provide a platform without which the Millenium Development Goals cannot be attained. Lack of access to electricity in itself stood out as the clearest indicator of energy poverty – and, indeed, of poverty in general.

The initial workshop was held in Rio de Janeiro, Brazil 13-14 April 2005 with attendance by more than 30 participants from the energy and development communities in Argentina, Brazil, Bolivia, Chile and Ecuador. This was followed by the Asian workshop which took place in Bangkok, Thailand 28-29 April and gathered more than 50 participants from Bangladesh, Bhutan, Indonesia, Thailand, Philippines, Cambodia, India, China, Nepal and Laos.

The third and final workshop was held at the UNEP Headquarters in Nairobi on 13-14 July 2005.About 150 participants from 20 countries attended the workshop including the Executive Directors of both UNEP and the International Energy Agency and the Permanent Secretary of the Ministry of Energy, Kenya.

Working group 3 of the Nairobi regional workshop looked closer at policy and regulatory options for enhancing electrification through private investment and was moderated by Dr. Brij. Kishore Baguant.

A common workshop report on the outcomes is under preparation and will be available by October 2005 (see www.uneprisoe.org and www.gnesd.org). The three regional workshops built on a joint UNEP and IEA workshop on Electricity and Development convened in Paris, January 2005. UNEP and URC have jointly with UNDP sponsored the three regional workshops.

New Carbon Market Update newsletter

The first issue of Carbon Market Update is available from www.cd4cdm.org. The premiere issue takes a closer look at the status of the current global CDM project portfolio and contains a useful overview of available carbon funds and programmes for CDM projects worldwide. Other topics covered by this issue include new possibilities for local industry involvement in developing countries without participants from Annex I countries.

The Carbon Market Update newsletter provides information of use to experts in CDM host countries with the objective of enhancing the local capacity for CDM market development. The quarterly newsletter is a joint effort between UNEP (through its CD4CDM project) and the International Emissions Trading Association, IETA.

The second issue featuring lessons learned and views of host country entities on CDM market development and the summary of the status of the carbon market will be available by late 2005.

www.cd4cdm.org
www.uneprisoe.org

Thousands of Megawatts of New Renewable Energy Potential

Thousands of megawatts of new renewable energy potential in Africa, Asia, South and Central America have been identified by a pioneering project to map the solar and wind resource of 13 developing countries.

The multi-million dollar UNEP project, called *the Solar and Wind Energy Resource Assessment* (SWERA), is proving that the potential for deploying solar panels and wind turbines in these countries is far greater than previously expected.

"In developing countries all over the world we have removed some of the uncertainty about the size and intensity of the solar and wind resource," said Klaus Töpfer, UNEP's Executive Director. "These countries need greatly expanded energy services to help in the fight against poverty and to power sustainable development. SWERA offers them the technical and policy assistance to capture the potential that renewable energy can offer," he says.

For more information, visit http://swera.unep.net

More renewables in Southeast Asia

Southeast Asian countries can look forward to making more use of wind, solar, biomass and other forms of renewable energy, as a result of five URC projects identifying new markets and promoting renewable energy.

"In addition to helping to reduce CO2 emissions in the region, the projects have the possibility of generating more employment than traditional energy projects and enhancing the access of the rural population to electricity services," says Romeo Pacudan, URC project coordinator.

The five projects, among other things, identify and assess the possibilities of integrating more renewable energy solutions in the Southeast Asian countries' energy systems. At the moment a very small percentage of these countries' electricity generation comes from new and renewable energy resources. According to the World Energy Council (WEC) wind, geothermal and solar energy along with energy crops and other non-traditional forms of renewable energy today contribute less than 2 per cent of the global energy supply.

One of the five projects is located in Cambodia. Here, more than 70 per cent of the rural population has no access to electricity. The rest of the population has only limited electricity resources at their disposal. Due to decades of war and conflict in Cambodia there is no national electricity grid.

The five Southeast Asian URC projects:

Feasibility Study of Renewable Energy Options for Rural Electrification in Cambodia 2005-2006.

Feasibility Assessment and Capacity Building for Wind Energy Development in Cambodia, the Philippines and Vietnam 2005-2006.

Energy Access Study in Philippines 2005.

Information for the Commercialization of Renewables in ASEAN (ICRA) 2004-2005.

Increasing Access to Local Sources of Financing for Renewable Energy Investments and Design of Innovative Financing Instruments 2005-2006.

Romeo Pacudan explains that the government and several international agencies are currently in the process of building a national grid. "Exactly, because Cambodia does not yet have a national grid, there is a great possibility for small scale decentralized rural projects on renewable energy like wind, solar, mini hydro and biomass," he says.

In the Philippines, an other project works closely with commercial banks to enhance their understanding of financing renewable energy projects in partnership with a local consulting company. The project will undertake an analysis of European experiences of financing renewable projects, which can support the Asian banks in their decision making on renewable energy based projects.

The projects will conclude in 2006 with the preparation of a number of feasibility studies. These will include analysis of the specific country's policies, financing possibilities, technical specifications, institutional analysis and information for linking potential financiers with local and international project developers.

The projects are co-financed by the The Association of South East Asian Nations (ASEAN) and the EU Energy Facility.

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India, China and Brazil:
More energy efficiency investments on way

Experts from the World's three largest developing countries discus how to increase energy efficiency investments.

Experts from India, China and Brazil met in April to discuss how to make the financial sectors in their countries increase investments in energy efficiency. The discussion was facilitated by URC's Energy Efficiency Project's third workshop in Beijing, China.

Senior energy planner at URC, Jyoti Painuly, explains that the potential for cooperation between India, China and Brazil on energy efficiency is tremendous and that all-out efforts are being made so that energy conservation experts can join forces to find ways to reduce energy consumption. "Project participants are very focused on learning from each other. Energy service companies (ESCOs) in India are for example learning from China and Brazil, as they are ahead on some issues," he says.

The cost of a new power plant is high and energy transmission losses can in some cases, like in India, be 25 per cent or more. "So improving the existing technology or adopting new and more energy efficient technologies, can save both energy and money for these countries," says Jyoti Painuly. Still, access to funding for energy efficiency projects and need for loan guarantees remain a challenge.

All three countries have therefore been in the process of strengthening their ESCOs and thereby enabling them to identify and evaluate energy-saving opportunities in for example industrial units, commercial complexes and hospitals. ESCOs can then often recommend a package of improvements that can pay for themselves through the achieved savings.

The project was launched in 2002 and aims at giving the three countries technical assistance for developing financial intermediation mechanisms for energy efficiency investments. The project is a partnership between UNEP, URC, the World Bank and local institutions in Brazil, China and India and is funded in part by the UN Foundation. At the beginning of 2006 another workshop will concentrate on sharing experiences on energy efficiency projects financed by banks as well as exploring possibilities for setting up loan guarantee facilities.

The proceedings of the workshops will be available from the project site at http://3countryee.org/

The Capacity Development for the Clean Development Mechanism (CD4CDM) Project
Helps Capture CarbonExpo Opportunity

The second annual CarbonExpo in Cologne, Germany, offered a prime opportunity for 8 CD4CDM project countries to apply the know-how established by their participation in the project. 1,500 Carbon market stakeholders from 87 countries representing both carbon credit buyers and sellers met during the CarbonExpo to discuss carbon market-related issues.

As a CD4CDM project activity, the Philippines, Egypt, Cambodia, Bolivia, Ecuador, Morocco, Viet Nam & Uganda were supported to participate in the event. Delegations from each country staffed designated country booths and presented national CDM project portfolios, local institutional setups, and national project approval procedures.

The delegations had extensive discussions with CDM project developers, carbon brokers, consultancy firms, and various parties interested in the procurement of project-based emission reductions. Participation in the CD4CDM project has significantly contributed to the promotion of the countries as CDM project destinations, especially following the extensive institutional and capacity development efforts exerted in these countries by the CD4CDM project. The second annual CarbonExpo was organized by the International Emissions Trading Association and the World Bank and took place 11 to 13 May 2005.

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The Latin American CD4CDM team attending the Carbon Expo included (from left to right): Marcos Castro (Ecuador), Mauricio Zaballa (Bolivia), David Neira (Ecuador) Gisella Ulloa and Ramiro Trujillo (Bolivia) and Ole Emmik from Denmark (working with CD4CDM in Ecuador).

URC launches
New EU/COOPENER Project in Africa

Over the past five years, and particularly since the 2002 World Summit for Sustainable Development, energy has been increasingly regarded as a necessary input for development. But what works? And as importantly, how do you measure the impacts?

In May, URC began a new 30-month project to help answer these questions. The EU/COOPENER[1] funded Project, *Development and Energy in Africa* (DEA), will develop a framework for assessing the impacts of small scale energy projects on the development of rural and peri-urban areas in Africa. Particularly projects and actions that generate income and reduce poverty will be in focus. The new assessment framework can then be used to develop and enhance policies that promote energy for sustainable development.

"The new assessment methodology will be based on real experiences with small-scale energy projects in a number of countries, such as those from the Africa Rural Energy Enterprise Development (AREED) Programme," says URC's Gordon Mackenzie. The framework will be tested and refined using case studies from the six participating countries of Botswana, Ghana, Mali, Senegal, Tanzania and Zambia. The Project is the combined effort of Risoe National Laboratory, URC, Energy Centre Netherlands (ECN) and Centres in the participating countries.

Gordon Mackenzie says the DEA project fits well into other efforts to promote modern energy services in Africa. These include the Global Network on Energy for Sustainable Development (GNESD), the EU Energy Initiative (EUEI) for Poverty Eradication and Sustainable Development, the Global Village Energy Partnership (GVEP) and AREED. The DEA project may also make a substantial contribution to the upcoming meetings of the Commission for Sustainable Development (CSD) where "energy for development" is a key theme of the CSD meetings in 2006 and 2007.

As one of DEA's first activities, a workshop was successfully held at Risoe National Laboratory at the end of May with all participating partners to discuss in detail the planned assessment methodology and how this responds to the needs of policy makers and stakeholders in the target countries.

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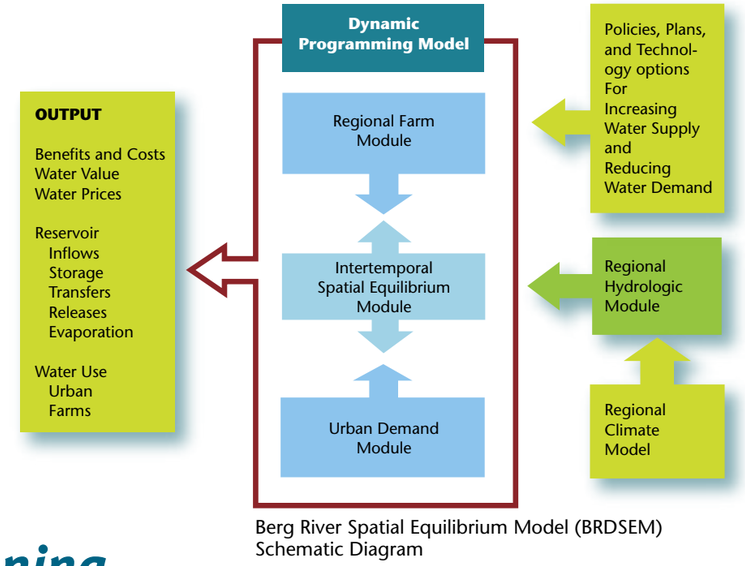
1 COOPENER is part of the European Community's "Intelligent Energy - Europe" (EIE) support programme for non-technological actions in the field of energy efficiency and renewable energy sources.

New in staff

Sten Dieden joined the URC from Göteborg University in Sweden, where he recently completed his Ph.D. in Development Economics. Most of Sten's previous research is based on household survey data and revolves around poverty, inequality and labour market issues in South Africa. Sten has worked for several years for the Southern Africa Labour and Development Research Unit (SALDRU) at the University of Cape Town and is a research associate of the same unit. His initial work at the URC will involve policy analysis in energy, climate change and poverty in a developing country context.

URC Project Pioneers New Climate for Water Planning



Berg River Spatial Equilibrium Model (BRDSEM) Schematic Diagram

A pioneering URC project is helping water planners in the Western Cape of South Africa assess the benefits and costs of different options to increase water supplies in the local Berg River Basin under different climate change scenarios. The core of the project is an innovative computer model that estimates the economic benefits and costs of avoiding both damages from climate change and the risks of making long-range water planning decisions with an uncertain climatic future.

URC's Mac Callaway says it is the first time this type of model has been used to estimate the benefits and costs of adapting to climate change, which could be critical for areas such as metropolitan Cape Town. Water consumption there has increased 300% in the past three decades and will continue grow rapidly from increased rural migration and economic development. Cape Town's major source of water comes from the Berg River Basin – a watershed with highly variable rainfall and runoff where a recent drought left the main reservoir at about 30 per cent of average in 2004.

With funding from the Global Environment Facility and management support from the University of Cape Town, the URC team and Dr. Daan Louw, University of Free State, developed and applied the *Berg River Dynamic Spatial Equilibrium Model* (BRDSEM) - a multi-regional, non-linear programming model patterned after surface water allocation models Callaway helped to develop for five major river basins in the US.

"BRDSEM is a water planning and policy evaluation tool to compare the benefits and costs and economic impacts of alternatives for coping with long-term water shortages due to unusual climate variability and climate change," says Callaway. The model, he adds, was developed as a prototype to illustrate to water planners how this type of model can be used in wider applications to assess and compare not only the benefits and costs of various options under different climate change scenarios, but also the costs and benefits of *avoiding* climate change damages through such options as building additional water storage capacity and the introduction of water markets.

The model was used to assess several options to increase supply, including the construction of the Berg River (Skuifraam) Dam, which began construction (during the course of this study) after a lengthy and heated public discussion. The analysis also considered the creation of competitive water markets, a policy measure proposed but not yet implemented by the South African government. However, says Callaway, dam designers and policy makers did not account for possible climate change impacts or the impact of water markets in their planning for the Berg River Dam.

BRDSEM was used to estimate the economic value of the net returns to water for three climate change scenarios, two different levels of urban water demand, and four different policy regimes for allocating water, with and without the possibility of storage capacity behind the Berg River Dam.

"One surprising result of the analysis is that under all scenarios, implementing a system of water markets *without* building the Berg River Dam produced slightly higher net benefits than building the Dam and retaining the existing water allocation system – mainly because the existing allocation system isn't based on economic principles," says Callaway. Although the study found that water markets would produce the highest net economic benefits to all water users in total, Callaway points out that it also found that water markets would also make water more expensive, which is not good for the urban poor.

The model is still undergoing refinements, with URC and its South African partners hoping to extend the model to the larger Boland region and to include a wider range of water supply and water efficiency options in the model. The team would also like to examine a number of equity-based policies to alleviate the adverse impacts of water markets on the urban poor in Cape Town.
For a more complete description of the project and results, go to: http://www.uneprisoe.org/AIACC/studies.htm

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Using GIS as convening factor in rural electrification programmes

A new URC project focuses on improving the economic and social impact of rural electrification programmes. The project, which is abbreviated IMPROVES-RE, is a EU COOPENER funded project.

In the recent years, the governments in Burkina Faso, Cameroon, Mali, and Niger have engaged themselves in the restructuring of their electricity sectors. But rural electrification planning rarely evolves in consultation with other infrastructure developments (health, education, drinking water, telecommunication) or the development of income generating activities (agro-industries, small and medium sized industries). The global objective of the project is to reinforce the impact of rural electrification programmes in the above four countries on sustainable development and poverty reduction using Geographical Information Systems (GIS) as the convening factor. Each of the four countries will select a pilot area, where local rural electrification plans will be elaborated.

The use of GIS will help identify villages in the project countries where the development potential is greatest and thereby give clear guidance on where to initiate electrification first.

All the project partners met for the first time 27-29 July 2005 in Bamako, Mali.

The energy partners in the project are from France, Netherlands, Niger, Burkina Faso, Mali, Cameroon and with Ivory Coast participating as a GIS expert. The work is performed in a close collaboration with the national bodies in charge of rural electrification in the four countries.

2nd Sustainable Energy Finance Roundtable Scheduled for New York

In the context of rising oil prices and new markets for carbon emissions trading, the 2nd SEFI Roundtable will take place in New York City on October 27, 2005.

UNEP's Eric Usher says the Roundtable will help financiers understand how and where new investment patterns are taking hold in an energy sector that will require US $500 billion of new capital a year for the coming decades. "How these funds are invested will determine the sustainability of our global energy mix for the next century," he says, adding that the financial sector carries an unprecedented social responsibility to deliver market solutions to the challenge of building a sustainable energy future.

2005 is shaping up as a potential crossroad in the shift to clean energy investments impacted by significant milestones like the Kyoto start-up and post-2012 negotiations, the G8 Action Plan on climate change and a new US energy bill. Participants at the Roundtable will learn how they can help drive and benefit from this shift as the clean energy market becomes a mature global industry.

For more information, visit www.sefi.unep.org

New Publications

WIND POWER AND THE CDM "Emerging practices in developing wind power projects for the Clean Development Mechanism" Jyoti P. Painuly, Niels-Erik Clausen, Jørgen Fenhann, Sami Kamel and Romeo Pacudan. October 2005, Energy for Development, Risø National Laboratory, Denmark. www.e4d.net.

CLIMATE CHANGE AND AFRICA "Climate change mitigation analysis in southern African countries: capacity enhancement in Botswana, Tanzania and Zambia" Mackenzie, G.A. Edited by Pak Sum Low, Cambridge University press, 2005.

Renewable Energy Projects Get Export Credit Boost

Renewable energy projects will now have access to special financial terms that could substantially improve their competitiveness. The new renewable energy sector agreement to the *OECD Arrangement on Officially Supported Export Credits* will promote the use of renewable energy while supporting commitments made at the 2002 Johannesburg World Summit on Sustainable Development and the Millennium Development Goals. The agreement, which came into force on July 1 for a two-year trial period, includes wind energy, geothermal energy, tidal and stream power, wave power, solar photovoltaic power, solar thermal energy, ocean thermal energy and bio-energy projects.

The agreement targets Export Credit Agencies (ECAs) - government institutions or private companies operating on behalf of a government – working with national exporters competing for overseas sales. ECAs provide credits to foreign buyers either directly or via private financial institutions benefiting from their insurance or guarantee cover. In an effort to limit trade distortions, most OECD member countries have agreed to the Arrangement, which covers areas such as minimum interest rates and premium levels for country risk, maximum repayment terms and fixed repayment schedules.

Export credit support is significant, with more than US$ 450 billion flowing to mainly non-OECD countries in 2001, of which US$ 60 billion was for medium and long-term support. However, only a very small share of ECA financing today goes to renewable energy projects and equipment sales, due mainly to barriers that include the lack of information and inadequate policy frameworks.

The new agreement will create finance terms up to 15 years for renewable energy projects, which are comparable terms to those available to nuclear power projects and more favourable than the 12-year terms available for conventional power projects. Hydro projects are not yet included, pending further assessment of environmental impacts.

UNEP Energy activities in the field of export credits includes a number of finance projects and a working group that prepared the publication "Making it Happen: Renewable Energy Finance and Role of Export Credit Agencies" (see www.unep.fr/energy/act/fin/eca/index.htm). UNEP's Eric Usher, who coordinates several finance projects including the Sustainable Energy Finance Initiative (SEFI – www.sefi.unep.org), says the extended repayment terms for renewable energy projects should improve their competitiveness with conventional energy projects while encouraging a wider market and general acceptance of renewable energy, especially in developing countries.

"This change will allow export credit financing to be more closely aligned with the duration of power purchase agreements and thus lower a project's overall cost of capital," says Usher. For a project's financial structure where all other terms and conditions held constant, he says, extended financing can translate into a 5 per cent to 10 per cent decrease in the cost of delivered energy.

"SEFI will continue to support the activities of this group, as it is one clear area where policy changes are needed to level the playing field for sustainable energy finance," says Usher.

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E+ provides information on the activities at URC and UNEP. The views expressed here do not necessarily represent those of UNEP, Risø National Laboratory or Danida. Back issues can be found at www.uneprisoe.org/newsletters.htm. To receive an electronic or printed copy of E+, please register on our website www.uneprisoe.org or contact Maria Andreasen (maria.andreasen @risoe.dk) at the URC number below. For all other information or comment, please contact the editor, Stine Skipper (stine.skipper@risoe.dk).

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