

**Annual Report
January-December 2002
UNU/Environment and Sustainable Development**

EXECUTIVE SUMMARY

This Annual Report focuses on the main achievements of the UNU Center's ESD Programme during the year 2002. A number of project activities were targeted towards the World Summit for Sustainable Development (WSSD) in Johannesburg, the International Year of Mountains (IYM 2002), and in preparation for the 3rd World Water Forum to be held in Japan during March 2003.

Many new initiatives and projects were initiated during the year 2002; this in part indicates the increase in the human resources within ESD. The new initiatives include the following:

- Flood and Water Utilization Impact Analysis in The Mekong Basin with Distributed Hydrological Modeling
- Predictions of Ungauged Basins in Sri Lanka
- Modeling Social Change and Water Cycle Interaction
- Innovative Communities Initiative (GEIC)
- Information Technology and Environmental Issues
- Distance Learning in the UNU/ESD Programme

On general level of cooperation, the UNU-UNESCO staff exchange programme was initiated in accordance with the mutual agreement between the two sister agencies.

STATUS OF IMPLEMENTATION OF PROJECT ACTIVITIES

Programme 1. Natural Resources Management

People, Land Management and Ecosystem Conservation (PLEC)

Status of Implementation

With UNEP approval, the conclusion date of the present 4-year phase of GEF-funded PLEC has been extended to 31 October 2002. Since January 2002, significant progress has been made towards winding up the present phase and developing new projects at national, regional and international levels. The wind-up work has been focused on consolidation, dissemination and evaluation of project findings.

Consolidation of Project Findings

National clusters in 12 participating countries completed final national reports. Most clusters have also completed other interim reports, such as reports on integration of scientific with community information on resources and policy recommendations. Some of them are putting together the best for publications. For example, PLEC-Ghana is editing some of their 55 reports for a book manuscript titled "Managing Biodiversity: the Traditional Way in West Africa". Three national clusters in East Africa are integrating their outputs into a book manuscript titled "Agricultural Biodiversity in East Africa". PLEC-China is compiling their reports into the second supplementary issue of "*Acta Botanica Yunnanica*" on Agrobiodiversity Assessment and Conservation (in Chinese).

Final national reports have been integrated as a final project report for UNEP/GEF. The project report is being also edited as a book manuscript titled "Agrodiversity: learning from farmers across the world" for publication through UNU Press. Cluster reports on capacity building have also been synthesized as a supplementary project report on capacity building. Another supplementary report on agrodiversity databases will be completed by mid October 2002.

Dissemination and Networking

Project findings were disseminated through project meetings, publications and presentations at international events, listed at the end of the report. PLEC clusters in China, Tanzania and Brazil organized national meetings and presented project findings and recommendations to officials and other stakeholders at different levels in early 2002. Those national meetings were reported in the local media, including national TV channels.

The Fourth General Meeting on "Working with Farmers for the Cultivation of Biodiversity while Improving Livelihoods", Columbia University, New York, 23-27 April 2002 was organized to review and exchange the project finding, experiences and lessons over the past four years among all PLEC groups. The Workshop on "Agrodiversity in Development", Paris, 26-28 Aug 2002 was organized to discuss the PLEC final evaluation outcomes, and to review a proposal on a new international initiative. With representatives from all 12 participating countries, this workshop also served as a final meeting of the Management Group of the present phase before its official conclusion on 31 October 2002. The Management Group decided to use a new project name "**People, Land Management and Ecosystem Conservation (PLEC)**" for better reflection of new priorities of future activities.

Final Evaluation

In the month of May, 2002, a final evaluation of PLEC was conducted by two external evaluators appointed by UNEP. Relevant reports of all eight national clusters were provided to evaluators, local briefings and field visits were arranged. The report of the final evaluation of June 2002 concluded while goals and progress varied among clusters, PLEC as a whole has successfully achieved all four original project objectives. Furthermore, although designed as a demonstration and not a scientific project, PLEC has begun to shed light on the understanding of how farmers and communities can help to maintain and enhance biological diversity even in intensively cultivated areas. The report also

complimented the strength and validity of PLEC's three "pillars" in the field, farmer-farmer exchanges, scientific-farmer exchanges, and the use of local examples of biodiversity friendly activities to build more productive and sustainable agricultural systems.

Development of Follow-Up Projects

There is a strong need to build on past success of PLEC experiences for new follow-up projects supporting positive roles of farmers and communities in natural resource management. In order to better target PLEC to national and regional priorities, PLEC partner groups will develop and manage their own new follow-up projects at national or regional levels. These standalone projects will be then networked by a new UNU/PLEC programme.

A proposal for a new international project was reviewed at the workshop in Paris, 26-28 August. The workshop reaffirmed that there are rich and valuable experiences and methods developed in the past global project. The future PLEC programme should scale up and out these experiences in current countries and other countries through national and regional driven initiatives with support of an international project. The proposed international project would consist of regional training programmes in Asia, Latin America and Africa, and information services. The PLEC network of universities and research institutes will be mobilized to play important roles of education and training for ecosystem conservation and sustainable rural livelihoods.

Publications:

- Brookfield, Harold, and Muriel Brookfield, eds. 2002. PLEC News and Views No. 19. Department of Anthropology, Australian National University: Canberra.
- Rerkasem, Kanok, Narit Yimyam, Chawalit Korsamphan, Charal Thong-ngam and Benjavan Rerkasem. 2002. Agrodiversity lessons in mountain land management. *Mountain Research and Development* 22 (1): 4-9.
- Stocking, Michael. 2002. Taking a closer look at agrobiodiversity. *New Agriculturist* (on-line) 10 May 2002. <http://www.new-agri.co.uk/02-3/develop/dev04.html>.
- Liang, Luohui and Wakako Ichikawa, eds. 2002. Proceedings of International Symposium: Managing Biodiversity in Agricultural Ecosystems, 8-10 November 2001 (CD Rom). The United Nations University, Tokyo. <http://www.unu.edu/env/plec/cbd/Montreal/content.html>
- Yimyam, Narit, Kanok Rerkasem and Benjavan Rerkasem. 2002. Pada (*Macaranga denticulata* (Bl.) Muell. Arg.), A fallow enriching species in shifting cultivation. *Agroforestry Systems*.
- Pinedo-Vasquez, M., J.B. Pasquale, D. Del Castillo Torres, K. Coffey. 2002. A tradition of change: the dynamic relationship between biodiversity and society in sector Muyuy, Peru. *Environmental Science and Policy* 5, 2002: 43-53.
- Brookfield, Harold, Christine Padoch, Helen Parsons and Michael Stocking, eds. 2002. *Cultivating Biodiversity: Understanding, Analysing and Using Agricultural Diversity*. ITDG: London.
- Brookfield, Harold, and Muriel Brookfield, eds. 2002. PLEC News and Views No. 20. Department of Anthropology, Australian National University: Canberra.
- Umezaki, Masahiro and Ryutaro Ohtsuka. 2002. Changing Migration Patterns of the Huli in the Papua New Guinea Highlands: a Genealogical Demographic Analysis. *Mountain Research and Development* 22 (3): 256-262.

Integrating Land Management in Dry Areas

Status of Implementation

The project implementation was undertaken in three discrete but closely related activities, as advised by its Steering Committee (SC). The SC's primary tasks are to provide advice on project implementation and to propose collaborative activities to the network members and other interested parties. The following thematic activities are undertaken within the project:

A. Sustainable Management of Marginal Drylands

This project reached the conclusion of its development phase. A project management meeting comprising participants from UNU, UNESCO, ICARDA and eight countries (China, Egypt, Iran, Jordan, Pakistan, Syria, Tunisia and Uzbekistan) was held in Cairo on 20 September 2002. The meeting was also attended by representatives from the Belgian government, which is interested in funding part of the project. The project approach, as approved by the core management group, utilizes a systematic approach for the long-term in situ conservation of natural resources by involving and supporting local populations in their efforts to use their natural resources in a sustained manner, and by putting science to work to improve the management of marginal dryland areas. It relies on existing projects and activities within institutional networks such as the World Network of Biosphere Reserves of UNESCO, research institutions associated with the United Nations University, ICARDA field stations - and thus avoids an *ad hoc* approach. It aims inter alia at creating a coordinated network of study sites linked by a common understanding of purpose which will provide benefits to each participating site in a synergistic fashion.

B. Master's Degree Program on Integrated Land Management in Dry Areas

Training professionals in a multidisciplinary environment – where they can learn to deal with the broad range of issues related to integrated management of land resources – is quite important. In this context, this project undertakes capacity development leading to a Master of Science Degree in Integrated Land Management. This will be undertaken in collaboration with the Institut des Régions Arides (IRA) in Tunisia and the Chinese Academy of Sciences (CAS). The arrangements for granting the degree will be formalized by early 2003. The intended duration of this project is three years; however, some mid-course evaluation and direction-setting will be required at the completion of the first year. It will take a multidisciplinary approach in the course work required and include field research work as an integral component. The degree candidates will be required to conduct 3 to 6 months of field work in cooperation with one of the partner organizations. The candidates will be required to demonstrate that the proposed field research involves in-situ field work and gives due consideration to community involvement.

C. Traditional Water Management Technologies in Dry Areas

This project helps in developing water management solutions that duly consider the socio-economic conditions in developing countries in arid regions and are acceptable to local communities. There are a number of examples of traditional water management systems that have fallen by the wayside due to pressure from “newer” technologies or due to incorrect prescriptions provided by experts from the North. There is a strong need to fully understand these traditional water management processes and how they interact with societies in dry areas. The project also focuses on the capacity of local researchers to undertake community-oriented field research and raise public awareness on key issues pertaining to utilization of traditional water management technologies.

The following are the on-going sub-projects:

- a. Traditional Water Distribution in Aflaj Irrigation Systems of Oman (Mr. Abdullah S. Al-Ghafri) - **completed in 2002**
- b. Restoration of Qanats in Syria (Ms. Joshka Wessels)
- c. Traditional versus new water harvesting techniques in the dry areas of Tunisia: Complement or conflict? (Mr. Ouessar Mohamed)

Sustainable Mountain and Forest Development – Global Mountain Partnership Programme

Status of Implementation

The project has been implemented according to the original plan through preparatory meetings, international conferences, and publications. The overall performance of the mountain Public Forum, Photo Exhibit and the International Conference held in Tokyo in January-February 2002 were well received. The events received a considerable audience of experts including 20 distinguished speakers, and public -- over 400 registered for the events -- and quite a wide international media coverage in several languages as well as in Japan. UNU Press Release prior to the meetings, resulted in coverage (newspaper, radio and TV) in more than a thousand outlets worldwide. It also included the National Geographic Society web page. The UNU exhibit of mountain photographs "Mountain Prospects - Images for the International Year of Mountains" has subsequently been requested for exhibit in Osaka, Banff (Canada), Chambery and Chamonix (France), and Moscow. A declaration and conclusions with clear research findings and specific policy recommendations for the future project as well as for the input to the process of the World Summit on Sustainable Development were proposed and accepted. UNU was one month on the cover/title of the International Year of Mountains 2002 web page.

Publications and Dissemination

- Janský L., Ives J.D. & K. Furuyashiki. 2002. Mountain Momentum: Agenda for Today and Policy beyond IYM2002. UNU/ESD. 28 p.
- Janský L. 2002. Mountains: Environment and Human Activities. UNU Public Forum. CD-ROM.
- Janský L., Ives, J.D., Furuyashiki & T. Watanabe. 2002. Global Mountain Research for Sustainable Development. *Global Environmental Change*, 12(3): 231-239.
- Ives, J.D., Messerli, B. & L. Janský. 2002. Mountain Research in South-Central Asia: An Overview of 25 Years of UNU's Mountain Project. *Global Environmental Research*, 6(1): 59-71.
- Janský, L. 2002. United Nations University marks the IYM. *Mountain Research and Development*, 22(3):296-299.

Research and Capacity Development for National Forestry Programmes in Countries with Economies in Transition

Status of Implementation

The project will be contributing to categories of comparative policy research of UNU Environment and Sustainable Development Programme under the Natural Resources Management theme. The project will be supported by experienced researchers from UNU, UNFF, FAO, WB, EU, EFI and Silvane-network and from Central and Eastern Europe and countries of former CIS. The findings and results of the activities will be presented as proceedings of the symposium, as well as CD-ROMs as found appropriate. The dissemination of the findings and results will take place through the symposium and the reports to be published as well as through the Internet of participatory institutes and specialists. As the project intends to involve representatives of forest establishments in ca. 28 countries of the region, the networking element of this project is very important, as well. The formulation and implementation of National Forest Programmes (NFPs) have received considerable attention and are among the key elements base on the United Nations Conference on Environment and Development (UNCED), Intergovernmental Panel on Forest (IPF) and Intergovernmental Forum on Forest (IFF) deliberations on forest. NFPs and international cooperation in capacity-building and access to, and transfer of, environmentally sound technologies to support sustainable forest management is a key programmatic component of the United Nations Forum on Forest (UNFF) plan of action. In NFP type of exercises so far planned and implemented in Central-Eastern Europe, only Slovenia seems to have had strategic approach when assessing the importance of forest research in the forest sector development. Other countries have lacked this approach, or there has been a lack of design of forest sector development programs overall in these countries. The capacity-building components are still uncovered in the

process. The project is important for the transitional countries to assist them in preparation, development and implementation of their NFPs.

Publications and Dissemination

- Janský, L., K. Furuyashiki & J. Arase. 2002. National Forestry Programme and its Challenges in Countries with Economies in Transition – Prospects of UNU activities after 2002 (*In Japanese*). Shinrin-Kagaku (*forthcoming*).
- Janský, L. et al. 2003. Forest in Transition. Proceedings from the International Symposium, Kaunas, Lithuania. (*forthcoming*).

Programme 2. Water Crises

Environmental Monitoring and Governance in the Coastal Hydrosphere

Status of Implementation

The various activities undertaken within the project during 2002 are summarized as follows:

A. Scientific Research and Capacity Building

- **Monitoring:** A new 3-year monitoring programme for persistent organic pollutants was initiated in June 2002, with a substantial financial and technical support from Shimadzu Corporation. Nine countries (China, Indonesia, Japan, Korea, Malaysia, the Philippines, Singapore, Thailand, and Vietnam) will be involved.
- **Training:** Training for environmental monitoring is conducted in the form of short training workshops in close collaboration with Shimadzu Corp. for the environmental monitoring project. UNU also jointly holds with UNESCO a short training course on management of mangroves at the Annamalai University, India.
- **Cross-laboratory calibration:** Participating laboratories have identified the need for the systematic calibration of methodologies, including statistical design, sample preparation and distribution. The project also promotes collaboration on the identification of standards and acceptable levels of pollutants in the environment.
- **Development of research:** A research report on the capacity needs in the Chao Phraya River Basin, Thailand, was conducted in collaboration with local experts in Thailand. A new proposal for a wide-reaching research coordination effort on Coastal Habitats at Risk is currently under development.

B. Networking and Information Dissemination

- **International Conference:** An international conference titled “Conserving Our Coastal Environment” was held in Tokyo during July 2002. Numerous presentations focused on the key issues of coastal pollution, management and research on coastal and marine ecosystems.
- **Annual International Symposium:** UNU held a symposium in Hanoi Vietnam during April 2002 that focused on the impact of agrochemicals in the environment.
- **Website:** The project website at <http://landbase.hq.unu.edu/> was updated and re-designed; it now contains details of all past and present project activities.
- **Internet-based newsletter:** An Internet-based quarterly newsletter called “East Asia Monitor” was initiated to report the achievements of the projects and other relevant events for the network and the general public. It is available through the project website.

Publications

- Adeel, Tabucanon, In-na, Thanomphan, Wattayakorn, Tsukamoto and Vongvisessomjai, 2002. Capacity Development Needs in the Chao Phraya River Basin and the Gulf of Thailand, UNU, Tokyo, Japan.

- Adeel and King, 2002, *Conserving Our Coastal Environment: a summary of UNU's research on sustainable management of the coastal hydrosphere in the Asia Pacific region*, UNU, July 2002
- *Conserving Our Coastal Environment: Endocrine Disruptor Pollution in Asia and the Pacific*, Conference Proceedings, 8 July 2002, Tokyo, Japan
- *Tracing pollutants from agrochemical use: focus on EDC pollution*, 2002, Proceedings of International Symposium, 15-16 April, 2002 Hanoi, Vietnam
- King and Adeel, *Conserving our coastal environment: Policy lessons and strategies for improved coastal management*, Journal of Global Environmental Change, Pergamon Vol. 12, Issue. 2, 2002
- King and Adeel, 2002, *Comparative Evaluation of the Coastal Impacts of Major Urban Areas – Case Study of Hanoi and Jakarta*, Paper presented to Coastal Zone Asia Pacific Conference, Bangkok, May 2002, *forthcoming, Coastal Management*

Technological and Policy Dimensions of the Arsenic Contamination in the Asian Region

Status of Implementation

Bangladesh and West Bengal (India) are suffering from an environmental disaster in which millions of people are drinking groundwater with arsenic concentrations far above acceptable levels. Thousands of people have already been diagnosed with poisoning symptoms, even though much of the at-risk population has not yet been assessed for arsenic-related health problems. In this context, UNU has been collaborating with the Bangladesh University of Engineering and Technology (BUET) in development of economical technologies/methods for treating arsenic contamination in pumped water considering local conditions in Bangladesh. More recent research focuses on the fate of arsenic in the environment. A particular focus area is for the uptake of arsenic in the food chain.

The following activities were undertaken during 2002:

- Collection of arsenic contaminated samples of soil and food from the field
- Laboratory analysis of the sample
- Laboratory experiments on elaborating fate of arsenic in the environment
- Synthesis and publication of research findings
- Conducting an Asia-wide workshop: UNU-NIES International Workshop: Arsenic Contamination in Groundwater - Technical and Policy Dimensions. 18 February 2002, Tokyo, Japan

Publications and Dissemination

- Adeel, Z., and M. Ashraf Ali, 2002. *A Comparative Evaluation and Field Implementation of Treatment Technologies for Arsenic Removal from Groundwater*; presented at the International Symposium on Water Reuse Technology, 29 March 2002, held at the Kwangju Institute of Science and Technology, Kwangju, South Korea.

International River and Lake Basins Management

Status of Implementation

The project builds upon earlier UNU work, including the Hydropolitics and Eco-political Decision-making, the Middle East Water Forum, the Asian Water Forum, and four international symposia concerned with the environmental management of the Southern African Waters, of the Aral Sea region and the Mekong Basin. In this work, a specific conceptual framework and methodology for analyzing of the impacts of "domestic" security issues, power of information disclosure and public participation, implications of real and virtual trade of water resources, and the international water components for the World Lake Vision, has been developed. Management of international waters has taken the center stage in regional politics of the countries, as well as, in international and UN agencies' portfolios. As the activities are frequently linked with political issues involving several riparian countries, the

planned project would further relate to some priority areas of research of the environmental governance and the emerging UNU Network on Water, Environment and Health and UNU Institute for Natural Resources in Africa.

The implementation of the above issues should focus on seriously threatened water bodies and on the most imminent transboundary threats to their ecosystems. The priority of such approaches is placed on changing sectoral policies and activities to solve the top priority transboundary environmental concerns. The idea of a successful story is in promoting and improving sustainable water management and in protecting the environment, aquatic life, and the balance of the international river ecosystems.

Publications and Dissemination

- Janský, L., M. Nakayama & J.I. Uitto (Eds.). 2002. Lakes and Reservoirs as International Water Systems – Towards World Lake Vision. UNU/ESD, 110 p.
- Murakami, M. & L. Janský. 2002. The Danube River, Conflict or Compromise – Damming or Removing the Dams. J. of Jap. Soc. of Shimanto Policy and Integrated River Basin Management, 1(1):55-66.
- Jakubis, M. L. Janský and M. Zavacká, 2002. History of river floods in the Slovak Republic. In: History Seminar, Volume 1D, 18th Congress on Irrigation and Drainage, Montreal, 21-28 July 2002. ICID, p. 77-87.
- Nakayama, M., Janský, L. & K. Furuyashiki. 2002 International Water Systems Project of the United Nations University, Disaster Prevention Research Institute, Kyoto University, 11 p.

Flood and Water Utilization Impact Analysis in the Mekong Basin with Distributed Hydrological Modeling

Status of Implementation

Mekong is often seen as underdeveloped in terms of its potential. Past constraints on resource development are now disappearing and recent political rapprochement and rapid economic growth have provided a healthy environment for resource development. Large-scale international assistance has been proposed for the development of Mekong basin, especially in the area of water resources utilization. Needless to say, a considerable amount of data gathering and modeling studies are required for the rational development of the basin. Unfortunately, this has not received the attention it deserves by the research and industry in the region. This proposal seeks to implement a comprehensive data gathering and modeling program for Mekong basin, on which detailed designs for water management and utilization can be carried out.

The project has started in 2001. The UNU/TU team is responsible for the project planning and management. One km DEM has been completed with the use of elevation adjustment algorithm using river network digitized information. 1 km grid soil map and landuse map has been compiled and analyzed. Hydrometeorological database with available data from the Mekong Secretariat has been compiled. Mathematical modeling of a 400,000 km² of the catchment has been carried out.

Predictions of Ungauged Basins in Sri Lanka

Status of Implementation

Sri Lanka is heavily dependent on water flowing from the major rivers originating in the central mountains. Hydropower has been the main source of cheap power for Sri Lanka and will continue to be the most economical and important power source in the future. As almost all the major streams have been dammed for power generation with little or no potential for major power generation, and recently the emphasis has been shifting to mini-hydro plants to alleviate country's chronic power shortage. However, most of the streams in the country are ungauged and there is little or no information on the reliability and the quantity of stream flow in many of the mountain streams that abound the central hills. Developing the ability to predict the flow in these basins would be of utmost importance to the

evaluation of mini-hydro potential as well as design and deployment of mini hydro plants. In addition to the need for predicting for water resources, there is an urgent need in the country to assess the impact of climatic change.

This is a research project on **PUBs (Prediction of Un-gauged Basins)**, with Department of Civil Engineering, University of Peradeniya, Sri Lanka acting implementing ground monitoring as the local counterpart. This particular project in Sri Lanka is a sub project of the MEXT funded PUBs support program in Japan. The PUB basins would disseminate the catchment data and modeling methodologies to be used by the world wide hydrological modeling community to improve understanding of hydrological modeling and catchment responses.

The Kotmale oya (Kotmale River) basin in the central hills of Sri Lanka with a basin area of about 450 km² and an annual average rainfall of about 2500mm has been selected for the pilot study. The runoff from the Kotmale basin which is the uppermost basin in the Mahaweli River is an important component for the whole Mahaweli River based hydropower and irrigation projects, and therefore unlike in other basins, hydrological data essential for the verifications of model performances can be obtained here.

The modeling program would look at how accurately flow predictions can be carried out in basins where field observations are not available or inadequate. The modeling would be carried out with incremental use of catchment information to identify the appropriate modeling approaches for stream flow prediction in ungauged catchments as well as minimum level of catchment information required for acceptable degree of flow estimation. The UNU/TU team is responsible for the modeling activities, design of the forecasting – validation experiment and technical transfer.

Programme 3. Global Environmental Governance

Climate Affairs Capacity-Building Program

Status of Implementation

The purpose of Climate Affairs Capacity Building Program is to foster the development of multi-disciplinary programs at colleges, universities, and other educational training institutes in developing countries around the globe. The first and foremost goal of this activity is to develop an awareness among educators in a variety of disciplines that climate affects all aspects of life in rich and poor countries alike, and that decision makers in those countries can improve the way they are affected by enhancing their understanding of climate affairs. In essence, this will build the capacity of developing countries to deal with climate-related issues.

First workshop was completed: “First Training Workshop South and Southeast Asian Region, University of Malaya, Kuala Lumpur, Malaysia (25-28 February 2002).” Its report is also now completed as planned. Fundraising for remainder of the project is underway. Collaboration with the Asia-Pacific Network for Global Change Research (APN) is also under development.

Collaboration with the following institutions has also been initiated:

- Nanjing Institute of Meteorology, Nanjing, People's Republic of China: Asian Regional Climate Affairs Training Workshop (Jan 2003); and
- University of Malaya, Kuala Lumpur, Malaysia: Undergraduate Course on Climate Affairs (March 2003).

Forum for Globally-Integrated Environmental Assessment Modeling

Status of Implementation

The Forum for Globally-Integrated Assessment Modeling (the GLEAM Forum) is an initiative jointly undertaken by the United Nations University (UNU), Japan, and the National Institute for Public Health and the Environment (RIVM), the Netherlands. As the name suggests, its main purpose is to develop a periodic exchange platform for discussions and brainstorming on the issue of globally-integrated environmental assessment, notably model-supported assessment.

The project implementation is in accordance with the work plan. The project report and a publicity brochure were developed in collaboration with RIVM. These materials were distributed at the World Summit for Sustainable Development (WSSD) and circulated to potential members. A new technical workshop focusing on poverty and development issues will be held in Nepal in collaboration with RIVM and UNDP.

Interlinkages - Synergies and Coordination between Multilateral Environmental Agreements

Status of Implementation

The UNU in June 1999 launched the Inter-linkages Initiative, which aims to develop comprehensive frameworks for the synergistic implementation of sustainable environmental policies at the local, national, regional, and international levels. While efforts to promote a more synergistic approach to sustainable development at the global level must continue, there are many opportunities and challenges for coordination at the regional and national levels that also need to be addressed:

- Ecosystems have boundaries stretching across national and regional borders;
- Regional and sub-regional institutions are essential players for the implementation of global agreements;
- Many agreements are regional in scope;
- Administrative problems experienced at the global level also surface at the regional and national levels, e.g. coordination and communication deficits, conflicting institutional roles, defective legal frameworks, etc.

The project has been on time in the implementation of its activities. The project's workshops and conferences, its approach and publications influenced the lead-up to the WSSD and the agenda for the WSSD itself, the latter especially through the International Eminent Persons Meeting on Inter-Linkages in September 2001. As the research showed the need to further investigate opportunities and challenges for coordination at the regional and national levels, it was decided to continue beyond the WSSD.

Publications and Dissemination

- 1) Inter-linkages, National and Regional Approaches in Asia and the Pacific (January 2002). Written by Brook Boyer, Jerry Velasquez, and Uli Piest, 42 pp;
- 2) Inter-linkages, Pacific Islands Case Study (July 2002). Written by Jerry Velasquez, Uli Piest and Jacques Mougeot, 40 pp;
- 3) Inter-linkages in Financing Sustainable Development (August 2002). Written by Jerry Velasquez and Jong Malabed, 46 pp;
- 4) Inter-linkages, ASEAN Case Study. To be published by December 2002;
- 5) Inter-linkages between the Biosafety protocol, Codex Alimentarius and the WTO. Final draft submitted by the Foundation for International Environmental Law and Development (FIELD), report expected to be published by December 2002.

Modeling Social Change and Water Cycle Interaction

Status of Implementation

The program is one of the five projects started in 2002 with funding from Japan Science and Technology Corporation under Core Research for Evaluational Science and Technology (CREST) program dealing with integrated modeling of water cycle and its impacts on society.

The main components of the project are modeling hydrological cycle, management and international perspectives. The UNU/TU team is responsible for the modeling of hydrological cycle, water exchange constraints in international river basins and coupling with the other socio economic models being developed by the partner groups. In this component the hydrological cycle modeling in the Mekong

Basin will be studied in the international water sharing perspective. The mathematical models have to be upgraded so that their output can be used easily by the social impact assessment modules as well as to provide mechanism to incorporate water quantity constraints imposed by the social needs and policy implementation on the water cycle.

The overall project is targeting integration of different predictive models which have been developed independently, such as mathematical models for simulating the hydrological cycle, social impact assessment models and risk analysis models. Through this project it is expected to (a) clarify the relation between the water cycle and the social impacts in the Asian region (b) evaluate impacts of extremes and assess risk in some selected Asian basin (c) examine the water exchange between nations in the future.

Programme 4. Sustainable Urban and Industrial Development

Zero Emissions Forum

Status of Implementation

The United Nations University Zero Emissions Forum (UNU/ZEF) brings together representatives from business, local government, academia and NGOs in pursuit of three main objectives:

A. Research:

Realization of Zero Emissions requires new methods for analyzing and planning integrated industrial systems as well as technologies either yield reusable outputs or act as interfaces between processes. ZEF academia and industry networks are active in developing and implementing new methods and technologies. In-house at UNU, two new approaches are being pursued since 1999:

- Zero Emissions Economy deals with the question of what economic transformations are required to realize a Zero Emissions society. The ultimate goal of this work is to suggest system changes that will steer society towards a sustainable “landing point”. The initial phases of this research focuses on clarifying the contribution of energy and materials efficiency to macro-economic growth.
- Synergies between approaches to sustainability examines the array of strategies/tools that have been emerged in addition to Zero Emissions, such as Cleaner Production, Factor 4/10, Life Cycle Assessment, Natural Step, and Pollution Prevention. The goal is to understand how these tools relate to each other and can collectively combine to plan for and implement sustainability.

B. Inter-sector collaboration:

ZEF is intended to promote collaborative projects between industry, government, and academia to implement zero emissions. The Kawasaki Eco-industrial Park and the Eco-town of Kita-Kyushu represent good examples of such collaborative initiatives. ZEF encourages additional projects by creating a forum for different sectors of society to work together. Through a new initiative to implement Zero Emissions in Tianjin, China, the scope of these activities has expanded to include industrializing nations.

C. Information Exchange and Outreach

ZEF provides a platform for exchange of information between acting and potential practitioners regarding best practice as well as to promote the idea to new audiences. These objectives are carried out by holding events such as conferences, symposia, lecture series and study groups as well as through print and electronic dissemination.

Alliance for Global Eco-Structuring (AGES)

This is a NGO-facilitated Inter-Forum for (i) an intensive industry-government dialog aiming at creating economic framework conditions that would allow approaching sustainability in a timely

manner & (ii) the strengthening of the cooperation and the merging of forces of various existing approaches. The participants – all heads of eco-structuring initiatives - in a UNU/ZEF organised workshop in Carnoules (France) June 2000 agreed on establishing an alliance that will (i) strengthen the cooperation between the various existing approaches through e.g. a better coordination of activities and the identification of overlaps and synergies and (ii) create a neutral arena for a dialogue between NGOs, industry and governments with the goal of establishing an economic framework that allows approaching social, ecological and economic sustainability. This novel network is named “Alliance for Global Eco-Structuring (AGES).”

Integrative Approaches Towards Sustainability

The main objectives of the conference are: 1) to motivate Baltic researchers, politicians, and economists on targeting the aspects of strategy and action towards sustainable development; 2) to build a framework for updated and new links and partnerships of researchers/stakeholders of the Baltic countries, the Baltic Rim, and established researchers of Western Europe as a “critical mass” for joint research & implementation of actions for sustainable development of the region in future; 3) to encourage young scientists to take opportunities offered by the European Research Area, the EU Framework programme, and the challenge of integrated approach to a complexity of problems; 4) promotion of networks of excellence in the field; 5) starting a series of conferences on sustainable development.

Publications and Dissemination

- Karl-Henrik Robèrt; Jacqueline Aloisi de Larderel, George Basile; J. Leo Jansen; Ruediger Kuehr; Peter Price Thomas; Motoyuki Suzuki; Paul Hawken; Bio Schmidt-Bleek, Mathis Wackernagel, “Strategic sustainable development - selection, design and synergies of applied tools –”, *Journal of Cleaner Production*, Vol. 10 (3) (2002) pp. 197-214
- Robert Ayres, Benjamin Warr, “Accounting for growth: the role of physical work”, to appear in *Structural Change and Economic Dynamics* (2002)
- Robert Ayres, Leslie Ayres, Benjamin Warr, “Exergy, power and work in the US economy: 1900-1998”, to appear in *Energy: the International Journal* (2002)

Project on Natural Disaster Risk Management - The Geography of Vulnerability

Status of Implementation

The project conducted its projects according to the original plans. The dissemination videos are now finalized and are now being prepared for conversion into a dissemination format, either through the Internet (as streaming media) or as a DVD. The first stages of the conversion of “Quake Busters” have also been finished. It is expected that a working prototype will be available and will be posted in the UNU website by early 2003. Also the framework for social vulnerability quantification is also underway. It is expected that a working draft will be available by the end of 2002.

GLOBAL ENVIRONMENTAL INFORMATION PROGRAMME

Status of Implementation

Dissemination and networking activities are ongoing as planned. GEIC newsletter and public information service is also ongoing as planned. The Centre’s Internet site is also available in both English and Japanese, and meeting and library services are available. For the projects that it is undertaking, for the Innovative Communities project, in addition to the activities mentioned above, the project is currently undertaking fundraising activities in order to implement a series of on-site case studies to be conducted in various countries in the Asia Pacific region, as well as expert workshops and an international symposium. On leadership training, UNU/GEIC will be collaborating with UNEP/IETC in organizing the training on the “Environmental Education to Develop Management

Systems for the Local Environment”, 21 April - 2 May 2003, Osaka. Additional activities are also expected to be planned and conducted in 2003.

A. Innovative Communities Initiative

The Innovative Communities Initiative is a joint project of UNU/GEIC and the United Nations Environment Programme, International Environmental Technology Centre (UNEP-IETC), launched in 2001. It looks at the concept of innovativeness as applied to a community and explores its implications in managing the local environment. The ultimate objectives of the project on Innovative Communities are to develop the framework of innovative communities which can be applied widely by communities in the Asia-Pacific region in their environmental management (internally) and by local stakeholders who work with communities (externally).

The followings activities were undertaken in 2002:

- Preparation of the “Innovative Communities” project concept paper - Based on the preliminary research, the project concept paper was prepared by highlighting success elements identified in some of the successful community-led environmental initiatives reviewed in the research.
- Organization of the First Expert Workshop on UNU-UNEP Innovative Communities Initiative, 30 July 2002, UNU Centre in Tokyo - The Workshop was organized by inviting about fifteen experts on local environmental management from universities, NGOs, and international organizations located in Japan, in order to discuss the project concept and related issues on community-centered environmental management initiatives.
- Compilation of a book on “Innovative Communities”- The compilation of the book on “Innovative Communities” through UNU Press is currently underway. About fifteen experts on community-led environmental management issues have been invited to write chapters where they introduce the concept of Innovative Communities in detail, by analysing a series of case studies in the Asia-Pacific region, and explaining how the concept fits into the overall developmental debate. The final manuscripts are expected to be submitted by the end of March 2003.

B. Environmental Library

Collected and provided following materials, books and videos for public perusal. Last year, collected especially materials of local governments and environment reports of corporations.

- Materials on activities of corporations, NGOs and local governments - Collected materials on environment protection activities of about 1,400 organizations.
- Books and reports on environmental issues - About 4,000 books and reports are housed.
- New Arrival Corner - This corner is the space to display of new arrival of books, reports, videos, NGO newsletters for 1 or 2 weeks. Press releases of the Environment Agency are also displayed at the corner.
- Video library - About 450 environmental videos are housed. Visitors can watch the videos at GEIC. Most of the can be lent free.

Information Technology and Environmental Issues

Status of Implementation:

The topic of focus for this phase of the project is the effects of the Information Technology revolution on climate change. The main objectives of the project are:

1. Establishing UNU as a credible research presence in the field through conducting in-house research and publishing this research in international academic journals and books,
2. Raising awareness of this new area through dissemination activities, including holding of public events and establishing on-line training courses.

With respect to the first objective, four in-house articles were submitted and accepted for publication in international journals in 2002. The main dissemination activity was holding of the “International Symposium on Information Technology and the Environment” 19-20 September at UN Centre. This was the first major event to be held in Japan focusing on this topic. In addition, UNU results were presented at several international conferences around the world.

Overall implementation has progressed close to the workplan. The main focus topics of in-house research in 2002 were: environmental impacts associated with the production chain for semiconductors, environmental evaluation of end-of-life options for personal computers, and analysis of energy use in sales and distribution due to e-commerce. The main outputs of the project in 2002 are a substantial body of research to appear in international journals and holding of an international symposium. The project website was planned for launch in mid 2002, but technical difficulties have delayed this until the end of 2002.

Publications and Dissemination

- E. Williams, R. Ayres, M. Heller, “The 1.7 kg Microchip: energy and chemical use in the production of semiconductors”, accepted for publication in *Environmental Science & Technology*, to appear winter (2002).
- E. Williams and T. Tagami, “Energy use in sales and distribution via B2C E-commerce and conventional retail: a case study of the Japanese book sector”, to appear in *Journal of Industrial Ecology* 6(2), (2002).
- E. Williams, “Forecasting material and economic flows of the global production chain for silicon”, 24 pages, accepted for publication in *Technological Forecasting and Social Change*, to appear winter (2002).
- H. Scott Matthews, E. Williams, C. Hendrickson, and T. Tagami, “Energy Implications of Online Book Retailing in the United States and Japan “, *Environmental Impact Assessment Review* 22(5), 493-507 (2002).
- E. Williams, “Energy efficiency of b2c E-commerce in Japan “, in *2002 IEEE International Symposium on Electronics and the Environment*, IEEE: Piscataway, New Jersey, 2002, 38-43 (2002)
- E. Williams, R. Ayres, and M. Heller, “Energy and chemical use in the production chain for microchips”, in *2002 IEEE International Symposium on Electronics and the Environment*, IEEE: Piscataway, New Jersey, 2002, 184-189 (2002)

Distance Learning in the UNU/ESD Programme

Status of Implementation

In 2002, UNU launched the Online Learning Initiative designed to build upon the activities undertaken from 1996 onwards under the UNU/Virtual University and to further encourage the spread of these capacities and skills across the entire University system. The implementation of this new Initiative is overseen by a steering committee chaired by the Rector. Professor Motoyuki Suzuki is a member of this committee and has directed that UNU/ESD initiate a number of experimental e-learning and knowledge management initiatives in collaboration with the Campus Computing Centre (C3), the UNU Online Learning Unit and UNU/IAS. The objective of this exercise is to develop a number of prototype courses designed to increase in-house expertise in this area and to provide insights on a range of issues related to e-learning including the procedural flow for course development and implementation.

As an initial step in March 2002 Professor Motoyuki Suzuki participated in a videoconference on the theme of Zero Emissions to an audience located in Mie Prefecture with support from a Japanese organization called Digital Communities. Negotiations are underway between the Zero Emissions

Forum and Digital Communities to develop a pilot online course on this topic in 2003. Related to this, the Zero Emissions Forum Website was redesigned and launched in ---- with the incorporation on an online education component applying Real Player technology for video and Powerpoint synchronization (<http://www.unu.edu/zef/onlineeducation.html>).

Also in March 2002, UNU/ESD and C3 produced a multimedia CD-ROM on the public forum on "Mountains: Environment and Human Activities." co-organized with the Hokkaido University Graduate School of Environmental Earth Science.

In June 2002, at the request of UNU/ESD, C3 provided extensive support for the UNU International Course and recorded lectures of speakers in the environmental section of the course. A prototype demonstration of these lectures is accessible via <http://demo.hq.unu.edu/unuic/>. In the future, it is envisaged that more extensive ICT support will be provided to the UNU International Course and that a range of online course modules will be developed.

Furthermore, in 2002, UNU/ESD initiated the development of a prototype knowledge base on environmental issues in order to promote greater synergies between research, dissemination and education. The pilot phase was completed in ---- 2002 and the initial outputs are accessible at <http://db.hq.unu.edu/esd/default.htm#top>. Currently, discussions are underway on how this prototype might be linked into the UNU Online Learning Initiative within the context of developing a broader knowledge management system for the UNU as a cross between a digital library, e-book repository, compendium of UNU research and publications and a portal to other relevant resources on the Internet, such as online journals.

Finally, a new online learning collaboration is developing between UNU/ESD, GEIC and LEAD Japan to develop a course module based on the UNU LEAD Training Session to be held on 11-15 November 2002. Working in cooperation with the UNU Online Learning Unit, the Institute for Global Environmental Strategies (Japan) and Learnways (Sweden) it is proposed that online and CD-ROM based course modules would be developed that will be used in future LEAD training programmes and would be distributed at the World Water Forum to be held in Japan in March 2003 (<http://www.worldwaterforum.org/>).
