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DEWA's Involvement at the Kiev Conference on "Environment for Europe"

Once again in late May 2003, the Ministers of Environment from all over the European continent and North America will gather in Kiev, Ukraine, for the Fifth Ministerial Conference on "Environment for Europe (EfE)", to be held under the aegis of the UN Economic Commission for Europe's Committee on Environmental Policy (UNECE/CEP). The theme of the Conference is "Environmental Security".

DEWA-Europe has been fully involved in UNEP's preparations for the Fifth EfE Conference through a number of its activities. These include joint work with the European Environment Agency (EEA) on the Kiev Report ("Europe's environment: the third assessment") and a new initiative on "Environment and Security" in Central and Eastern Europe with partners from UNDP and the Organisation for Security and Cooperation in Europe (OSCE).

The first comprehensive European assessment was prepared by the EEA for the Third Ministerial Conference on the

European Environment in Sofia, Bulgaria, in 1995 and became known as the "Dobris Report". The second assessment "Dobris+3" was released at the Aarhus Ministerial Conference five years ago. Much has changed in Europe's environment, as well as in the European Union's political structure, however, in the time since the first assessment was published in 1995.

Close contact has been maintained with the EEA throughout the entire process of the Kiev Report's preparation, both directly and through the UNECE's Working Group on Environmental Monitoring (WGEM), which has been helping to extend data collection capabilities further eastward to the Eastern European, Caucasus and Central



A sample of the maps prepared by DEWA-Europe/GRID-Geneva for the "Environment and Security" project. This one shows industrial sites and polluted areas in SouthEastern Europe.

Asian (EECCA) countries. Through its European networks and GRID offices, UNEP/DEWA was able to arrange for delivery of key environmental and socio-

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Plight of Mesopotamian Marshlands Highlighted on World Water Day

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At a special event commemorating World Water Day 2003 on 22 March, UNEP Executive Director Klaus Toepfer appealed for decisive action to halt the precipitous decline of the remaining Mesopotamian marshlands in southern Iraq and Iran. The urgency of his remarks, which were made at the Third World Water Forum in Kyoto, Japan, were based on new satellite-based assessment studies carried out by DEWA/GRID-Geneva, showing that of the marshlands remaining in 2000, an additional one-third had disappeared.

Devastated by war, dams and drainage schemes, the Mesopotamian marshlands have emerged as a prominent symbol of wetlands destruction globally. "We have already lost half of the world's wetlands in the last 100 years and the dramatic destruction of the Mesopotamian marshlands underscores the huge pressures facing wetlands and freshwater ecosystems across the world", said Dr. Toepfer.

The latest information builds on earlier findings made by UNEP in 2001, which showed that 90 per cent of what once was the largest wetland in the Middle East and Western Eurasia covering an estimated 20,000 square



The remaining marshlands of southern Iraq and Iran have been receding at a rapid rate, and without urgent action may disappear within three to five years.

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DEWA/GRID-Geneva's Expanding Collaboration in Post-Conflict Assessments

Over the past several months, DEWA/GRID-Geneva has been increasingly involved in providing technical support to various studies on the environmental impacts of conflict, carried out under the aegis of UNEP's Post-Conflict Assessment Unit (PCAU). The assessments in which the office has participated include those on the Occupied Palestinian Territories, Afghanistan, and Bosnia-Herzegovina. Both reports on the Occupied Palestinian Territories and Afghanistan were discussed and unanimously endorsed by environmental ministers from across the world attending UNEP's 22nd Governing Council, which was held from 3-7 February 2003 in Nairobi, Kenya. The report on Bosnia-Herzegovina, which was released on 25 March, focused on long-term depleted uranium contamination during the conflict there in 1994 and 1995. More recently, DEWA/GRID-Geneva has been involved in preparations for a desk assessment of Iraq's environment, also led by the PCAU and which is scheduled for release at the end of April.

For all of these studies, substantive inputs provided by DEWA/GRID-Geneva have typically consisted of creating a series of tailored maps using Geographic Information Systems, and carrying out satellite image analysis. For example, for the Occupied Palestinian Territories and Afghanistan, a suite of maps covering a range of themes from topography, watersheds, well distribution, water carriers, aquifers, hydrological vulnerability of groundwater to pollution, solid waste dumping sites, industrial sites and nature reserves were prepared. For the Balkans, site-specific maps of contaminated "hot spots" were created. In terms of remote sensing analysis, satellite imagery was used to create illustrative spatio-maps, highlight areas of environmental change, and provide targeted analysis of conflict related damage such as urban destruction and land clearing, using very high resolution images recorded by IKONOS.

DEWA/GRID-Geneva has also shared valuable information and insight from its mainstream assessment activities



A sample of the satellite images and maps produced for post-conflict assessment studies.

on the state of the environment, such as with regard to the desiccation of the Hamoun wetlands in Afghanistan/Iran, declining levels of the Dead Sea, and the destruction of the Mesopotamian marshlands and Shatt al-Arab palm forest in Iraq. In certain cases, it appears that post-conflict environmental assessments are also helping re-focus attention on long-standing environmental problems. A welcome "spin-off" is

that these targeted post-conflict studies serve to spotlight certain issues for UNEP's more mainstream assessments. There is also potential to capitalise on interest generated by conflict situations to maximize environmental rehabilitation as recommendations for remedial measures are often included in the post-conflict assessments.

Visualising Global Environmental Change

A new publication compiled by DEWA/GRID-Sioux Falls, *Selected Satellite Images of Our Changing Environment*, provides a remarkable vision of the "human footprint" on the global environment as seen from space. Satellite images of fifty 'hot spots' that have undergone very rapid environmental change over the past 30 years (1972 – 2002) profile a wide array of environmental problems and threats. Diverse themes from across the world are covered, ranging from deforestation and associated biodiversity loss, disappearing wetlands and lakes, urban sprawl and glacial retreat. DEWA-Europe/GRID-Geneva co-ordinated and researched a dozen sites and is one of the main contributors to the project.

The publication draws largely on the Landsat archive of

satellite data housed at the US Geological Survey/Earth Resources Observation Systems Data Centre, a long-standing partner of UNEP. The strength of the satellite-based approach stems from the hard facts comparing past and actual conditions. The examples selected clearly reveal the scale of change, which is noticeable even to the untrained eye. Case studies are supplemented with ground photos as well as brief explanations on the causes and consequences of the impacts. Hot spots range from forest cover change in Rondonia, drying of Lake Chad, demise of wetlands in Mesopotamia, land reclamation in IJsselmeer, urban growth centers in Asia, and ice shelf collapse in polar regions.

This publication is a prelude to a more comprehensive "Atlas of Global Change", which is to be

released later in 2003. With one hundred sites, the Atlas will provide a global panorama of the complex changes affecting the planet, including some locations where environmental recovery has taken place. In addition to highlighting the utility of satellite imagery in assessing and monitoring the state of the environment, the Atlas should help raise awareness among the policy community and wider public about the scale and dynamics of global environmental change. To ensure wide dissemination, poster products based on Atlas case studies have been prepared and an on-line website catalogue of the one hundred sites is also planned.



This report illustrates the 'human footprint' on the environment using historic and recent satellite imagery. It is available in large format from UNEP/GRIDs Geneva and Sioux Falls.

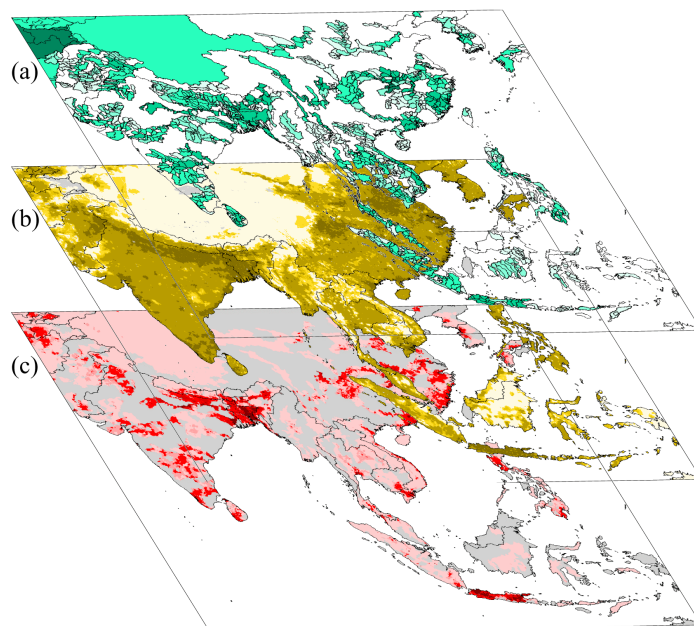
Global Assessment of Natural Hazards

In September 2000, DEWA/GRID-Geneva embarked on a project to carry out a global assessment of human risk and vulnerability to natural hazards. The project aims to identify those factors engendering and accentuating human vulnerability and to compile a Disasters Risk Index for systematic inter-country comparisons. It builds on the natural disasters database compiled by GRID-Geneva's Project for Risk Evaluation, Vulnerability, Information and Early Warning (PREVIEW), including hazard modelling methodology and computation of physical exposure.

Four major types of natural hazards were examined. These include tropical cyclones, drought, floods and earthquakes, which together account for 94% of the casualties from natural disasters. The research project, which goes by the title of Global Risk and Vulnerability Index Trends per Year (GRAVITY), maps areas and populations impacted by hazards using a Geographic Information System (GIS), and which allows for related hazard modelling and spatial analysis to be performed. Statistical

analysis was also carried out to highlight links with various socio-economic parameters including economic development, education, environmental quality, population, as well as health and sanitation.

The model developed has five categories of risk, which strongly corresponds with observed values derived from a human casualties database (EM-Dat) developed and maintained by the Centre of Research on Epidemiology of Disasters. Results indicate a strong correlation between economic development conditions and casualties suffered. GRID-Geneva carried out analytic work on cyclones, floods and earthquakes, while drought modelling was undertaken by the International Research Institute for Climate Prediction at Columbia University. Through the GRAVITY project, GRID-Geneva has been able to extend its network of partners in the domain of early warning. In addition to those previously mentioned, other key partner organisations include the World Bank and the Norwegian Geotechnical Institute, and there is a growing interest to



The series of figures above illustrate calculation of physical exposure to flooding. Spatial extent and frequency of flooding is computed (a) and subsequently overlaid with population distribution (b). Annual average frequency of flooding is multiplied by population distribution to give a level of physical exposure (c). Results may then be aggregated at the national level.

expand this collaboration. The findings of the GRAVITY project will be published in UNDP's World Vulnerability Report, including the Disaster Risk Index, which is to be released in September 2003. A follow-up phase to support

UNDP/BCPR's activities on natural hazards is also planned.

Exploring the European Environment with Dynamic Mapping

The European Portal, an integral part of UNEP.Net - the environmental information network of UNEP - has been enhanced with the creation of an important module. This new tool is the European Internet Map Server, which was published on-line in March 2003.

The European Mapserver application is a web-based Geographic Information System, which significantly supplements the Portal's spatial-analytical capabilities. It offers users the possibility to navigate through the whole of Europe, from Reykjavik to Vladivostok, and to cover a wide range of themes from population density and land cover to protected areas.

Standard web-mapping naviga-

tion tools, such as "zoom" and "pan" options, as well as the possibility to select data layers, enable the user to generate customized maps on the fly. A selection of background templates is available, including satellite imagery for visualisation, forest cover, relief and population density. Several of these data sets are retrieved from remote servers; such as forest cover from FAO in Rome, and satellite imagery from USGS in the United States. These data layers can then be interactively merged with local maps by the user. This state-of-the-art technology based on "distributed communicating servers", with a high degree of interoperability, offers new possibilities for combining and exploring multiple data layers from distant sources across



Make your customised maps with the new European Mapserver at: <http://europe.unep.net> and/or <http://www.unep.net>

the world on-line.

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Calendar of Events

(April – June 2003)

6 - 8 April

First Steering Committee Meeting for Lake Balaton project, Siofok, Hungary.

9 April

GRID-Geneva Advisory Board Meeting, Bern, Switzerland.

13–14 May

UNEP Division of Technology, Industry, and Economics (DTIE)
Annual Web meeting, Geneva, Switzerland.

19 - 20 May

UNECE/WGEM Workshop on Remote Sensing, EU/JRC, Ispra, Italy

19 - 23 May

UN/Romania Regional Workshop on the Use of Space Technology for Disaster Management for Europe, Poia na Brasov, Romania.

21 - 23 May

5th Pan-European Ministerial Conference "Environment for Europe", Kyiv, Ukraine.

5 June

World Environment Day

4 - 6 June

Third Global Monitoring for Environment and Security (GMES) Forum, Athens, Greece

25 - 27 June (provisional dates)

GEO Data Working Group (DWG) meeting, Geneva, Switzerland

30 June - 4 July

DEWA Regional Coordinators' Meeting, Nairobi, Kenya

Kiev Conference on "Environment and Security"

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economic data covering most of the EECCA countries, as well as the extract of relevant information on state and trends in the environment from the Global Environment Outlook 3 (GEO-3) report, and provide all of these to the EEA for the Kiev Report. The highly complementary nature of the EEA's and UNEP's networks and capabilities, including geographic coverage, has meant that DEWA was able to directly support the data needs and information value-adding for the EECCA countries. DEWA-Europe also coordinated an extensive review of draft chapters and materials in the Kiev Report with UNEP's sectoral offices and programmes, and conveyed these to the EEA.

The other major initiative in which DEWA-Europe has been heavily involved prior to the Fifth Efe Conference in Kiev is a new initiative led by UNEP's Regional Office for Europe entitled "Environment and Security" in Central and Eastern Europe. This new project, which has been undertaken by UNEP along with the OSCE and UNDP, aims to demonstrate linkages between environmental issues

and security concerns for the EECCA countries, initially for two sub-regions SouthEastern Europe and Central Asia.

The project has completed its pilot phase prior to the Fifth Efe Conference, and the initial results will be presented there as one of the major "side events" at the joint EEA-UNEP exhibition stand. Should the "Environment and Security" project concept prove successful, it is likely to receive significant funding from donors post-Kiev, and then be extended to other EECCA sub-regions.

DEWA-Europe/GRID-Geneva has participated in the inter-agency steering group for the "Environment and Security" project, and is providing essential data collection, information analysis and related mapping services, which illustrate where the environmental concerns, problems and issues are to be found, as well as visualize major existing policy initiatives addressing all or some of these challenges.

Mesopotamian Marshlands

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square kilometres, had disappeared. As the marshes turned into a salt-encrusted wasteland, hundreds of thousands of Marsh Arabs were forced to flee, fisheries collapsed and rare wildlife species are seriously threatened. New satellite imagery analysed by GRID-Geneva shows that a further 325 square kilometres have dried out since 2000, leaving just seven per cent of the original area. Unless urgent action is taken to reverse the trend and rehabilitate the marshlands, the last wetland unit known as the Hawr Al-Hawizeh in Iraq and Hawr Al-Azim in Iran, are likely to vanish in three to five years.

A window of opportunity has arisen with the changed situation in Iraq, and UNEP is working to facilitate an international effort to conserve and restore what remains of the marshes. In addition to immediate remedial action in Iraq such as opening sluice gates and modifying earthworks, a long-term recovery plan is needed. This will require a regionally-based river basin approach, in which all Tigris-Euphrates riparian countries share the rivers' waters in a coordinated and equitable manner. An integrated catchment plan would also give priority to allocating an adequate amount of water to the wetlands and to the Persian Gulf, while water releases from existing dams can be timed to mimic natural flow patterns and

