

Conference Report

Stockholm Water Symposium 1994: Integrated Land and Water Management—Challenges and New Opportunities

Stockholm, Sweden, 9–13 August, 1994

Background

Earlier Stockholm Water Symposia have indicated that the escalating water quality deterioration is one of the major environmental problems on the threshold of the 21st century. The widening gap between waste treatment efforts and escalating output of pollutants from growing human populations and expanding industry has created a sense of urgency. The 1994 Symposium addressed challenges and new opportunities in minimizing the flux of harmful substances from land to water. It stressed that the water flowing through a country represents not only its very life support but also a natural capital, which has to be preserved so as not to erode the future of the country. Preservation of that water is a basic precondition for long-term health, socio-economic sustainability and national creditworthiness.

What the future therefore demands is better informed and less irresponsible ways of water quality management. Earlier symposia have clarified that what to do to minimize harmful pollutant fluxes from land to water is fairly well known. A whole set of implementation barriers, however, stands in the way of getting it done: reductionistic attitudes, communication difficulties, deficient capability of handling complexity, lack of public awareness and political will, major financing problems, public sector management failures, etc.

Minimizing Harmful Fluxes from Land to Water

The 1994 Symposium concentrated on challenges and opportunities related to waste minimization from industry, deposits of hazardous waste and agriculture.

The workshop on *greening of industry* concluded that there is a need in the industrial sector for more effective use of energy, material and environmental resources. A major element will be to take a holistic and integrated approach, encompassing all the stages of a product from its production to its use and end disposal. Imaginative thinking can offer new avenues. There appears to be an almost worldwide need to assist small and medium-sized enterprises: they need information on legislation, the effect of emissions, and on the possibilities and opportunities to limit emissions. Owing to significant differences between various situations worldwide, there is no tailor-made approach. Although clean production is the preferred path, end-of-pipe solutions should not be ruled out.

In the dialogue with society, industry could make a greater effort to utilize environmental reporting as a valuable tool to demonstrate its progress.

The workshop on challenges and opportunities in *avoiding pollution from hazardous waste* concluded that the problems concerning hazardous waste do not differ much from one country to another. Remediation of old sites can be seen as a manageable task that could be finalized within decades, provided that the considerable costs involved could be financed. The major problem is considered to be management of future hazardous waste. The principle should be waste avoidance by minimization in all the different phases of a product, paying adequate attention also to the ultimate fate of contaminants—the latter to be seen in a global perspective.

The workshop on *agricultural conflict* discussed the pollution problems caused by the diffuse emissions from general agricultural practice: nutrients, toxic substances both from fields and from farms and process industries. Additional problems emerge from poor irrigation management (salinization). The necessity was stressed of minimizing pollution from an extensively growing food production, called for by the escalating food needs of an inevitable, extremely rapid growth in world population. Key factors to increasing agricultural yields include water, fertilizers and pesticides. Specifically recommended is more integrated water and land use planning on a catchment basis with involvement of local water users. Special efforts are needed to reduce the use of chemical fertilizers and pesticides, and to develop less water-demanding crops and more extensive use of biofertilizer systems.

Integrated Approach to Land and Water

Basically, water in aquifers and rivers has earlier passed land, picking up water-soluble pollutants on its way. Water quality protection therefore involves, as an integral component, land use management. An *integrated landscape-ecological approach to land and water use planning* is advocated in various chapters of Agenda 21. A set of successful examples of integrated planning was reported from different parts of the world. The lessons learnt include the need for regional integration also of institutional arrangements; and education and training to secure a common language between the multifactorial managers who will lead the process. The basic approach should be a mix of bottom-up and top-down approaches: the latter operates at village or catchment level in the practical implication, while the former has its function at national level by making water quality protection possible and providing incentives.

The world has broad experience of failing public sector water management. Total privatization, privatization of certain tasks and various forms of private sector participation may be seen as important and promising alternative modes of operation. The workshop on *financing options and privatization* clarified that privatization is always a public/private partnership. Since water and sanitation are natural monopolies, it is vital that proper attention be paid to the need for transparency and clarity of purpose. The workshop discussed different alternatives for public/private partnerships, and concluded that privatization of certain tasks may be seen as an alternative mode of operation.

The strategic role of education in improving the opportunities for more efficient management of fresh water was discussed in a workshop on *educational renewal*. The need to generate a broad public awareness and engage and

stimulate children involves the challenge actively to motivate environmental concern as a first step in changing attitudes and lifestyles. The complexity of many water-related issues demands a systems approach. An improved capacity to address and communicate on particularly complex issues is therefore an important challenge. It is also necessary to develop new more efficient ways of learning.

There is, finally, a need to stimulate better informed *attitudes to water* and overcome reductionist-induced communication barriers between different professions and actor groups. The economist's view of water as a commodity or economic good has evident validity limitations, such as water in its biological functions, including the water filling the human body, or the rain that the atmosphere provides to a region as the primary life-supporting resource. A more generally accepted and comprehensive mental image of water is needed to facilitate intersectoral communication. There is also a need for deeper understanding in society of the implications of the integrity of the water cycle, in which circulates a unique solvent that is chemically active and biologically crucial. There is, furthermore, a need to broaden the concept of environmental impact from adverse impacts of water projects to environmental preconditions for future human activities in general. It was also stressed that diet preferences may involve strong driving forces on agriculture, motivating lifestyle changes. A reduction of the meat diet in central Europe, by reducing the amount of animal protein to more healthy nutritional levels, would contribute by reducing the nutrient leakage to rivers and aquifers.

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CALENDAR

March 11–16 1995, Ruwi, Oman

International Conference on Water Resources. Management in Arid Countries. *Contact:* Said bin Rashid Al Shaqsi, Ministry of Water Resources, PO Box 2575, Ruwi 112, Oman. Fax: + 968-799563.

Spring 1995, Salt Lake City, Utah, USA

AWRA Annual Spring Symposium: Water Conservation in the 21st Century. *Contact:* J. Paul Riley, Symposium General Chairperson, Utah State University, Logan, Utah 84322-4110, USA. Tel: + 1 (801) 261-0090.

April 2–5 1995, Hyatt Orlando, Kissimmee, Florida, USA

The International Symposium on Water Quality Modelling. *Contact:* Carl E. Anderson, Department of Agr. and Biomass Engineering, Davidson Hall, Iowa State University, Ames, IA 50011-3080.

May 1–3 1995, Porto Carras, Greece

Water Pollution 95—Third International Conference on Water Pollution: Modelling, Measuring, and Prediction. *Contact:* Liz Johnstone, Wessex Institute of Technology, Ashurst Lodge, Ashurst, Southampton SO40 7AA, UK. Tel: (44)(703) 293 2223; fax: (44)(703) 29 2853.

May 15–17 1995, Osaka, Japan

Special conference on 'Advanced Water Treatment for the 21st Century'. *Contact:* IWSA, 1 Queen Anne's Gate, London, SW1HT 9BT, UK.

May 15–20, 1995 Moscow, Russia

International Symposium on Environ-

mental Socioeconomic Consequences of Water Resources Development and Management. *Contact:* Prof. G.V. Voropaev, Scientific Coordinative, Center 'Casp'y' of the Russian Academy of Science, 1-Kadashevsky per. 10-1, PO Box 27, Moscow 113035, Russia. Tel: + 7 (095) 231 6800; 231 6841; fax: + 7 (095) 231 6841.

May 15–18 1995, Prague, Czech Republic

Conference on Groundwater Quality: Prevention, Assessment, Sanitation. *Contact:* Dr Krasny, Dept of Hydrogeology and Eng. Geology, Faculty of Science, Charles University, Department of Hydrology and Engineering Geology, Faculty of Science, Charles University, Prague, Albertov 6, Prague 2, 12843, Czech Republic. Tel: + 42 2 297 541; fax: 42 2 296 084.

June 4–10 1995, Edmonton, Canada

XXVI Congress of IAH. Solutions '95—Managing the Effects of Man's Activities on Groundwater. *Contact:* Solutions '95, 10769-99 Street, Edmonton, Alberta, Canada T5H 4H6. Tel: + 1403 424 5281; fax + 1 403 424 5306.

June 19–25 1995, Beijing, China

7th International Conference of the International Rainwater Catchment Systems Association. *Contact:* Chang Ming Liu, 7th Int'l Conf. on Rainwater Catchment Systems, United Res. Ctr. for Water Problems, Chinese Academy of Sciences, Bldg. 917, Datun Road, Anwai, Beijing 100101, China. Tel: 86-1-4914289; fax: 86-1-4911844 or 86-311-615093.

July 23–29 1995, Sao Paulo, Brazil

XXVI Congress of International Society

of Theoretical and Applied Limnology, Water as a Limiting Resource: Conservation and Management. *Contact:* Prof. J.G. Tundisi, Centre for Water Resources and Ecology, University of Sao Paulo, CX Postal 359, CEP 13560, San Carlos, SP, Brazil. Tel: + 55 162 726222; fax + 55 162 715726.

September 1995, Tashkent, Uzbekistan

International Symposium on Hydrological Research and Water Resources Management Strategies in Arid and Semi-arid Zones. *Contact:* V. Duhovny, Scientific-Production Association, Central Asian Research Institute of Irrigation, (SPA SANIIRI), 11, Karasu—4, Tashkent 700187, CIS. Tel: 65-09-55; telex: 116199 RUSLO SU.

September 5–8 1995, Sibiu, Romania

1st International Symposium on Management of Watersheds. *Contact:* Tudor Botzan, str. Roma nr. 63, 71244 Bucharest, Romania.

September 11–15 1995, London, UK

Twenty-sixth IAHR Biennial Congress. *Contact:* R. White, Hydraulics Research Ltd., Wallingford, Oxfordshire OX10 8BA, UK. Tel: (44) 0491 35381; fax: (44) 0491 32233.

September 18–20 1995, Tampa, Florida, USA

Conference on Versatility of Wetlands in the Agricultural Landscape. *Contact:* ASAE, 2950 Niles Road, St Joseph, MI 49085-9659, or AWRA, 950 Herndon Pkwy, Suite 300, Herndon, VA 22070-5528, USA. Tel: 703/904-1225; fax 703/904-1228.

September 26–30 1995, Lund, Sweden

International Symposium on Integrated Water Management in Urban Areas: Searching for New Realistic Approaches with Respect to the Developing World. *Contact:* J. Niemczynowicz, University of Lund, PO Box

118, S-221 00 Lund, Sweden. Tel: + 46-46-108981; fax: + 46-46-104435.

October 17–20 1995, Iraklio, Crete, Greece

Second International Symposium on 'Wastewater Reclamation and Reuse'. *Contact:* Mrs T. Furnaraki, Municipal Enterprise for Water Supply and Sewerage of Iraklio, 1 Vironos St., 71202 Iraklio, Greece. Tel: + 30 81 229913/225833; fax: + 30 81 229991.

October 22–27 1995, Tsukuba, Japan

Sixth International Conference on the Conservation and Management of Lakes. *Contact:* Lake Kasumigaura Water Pollution Control Division, Department of Civil Life and Environment, Ibaraki Prefectural Government, 1-5-38 Sannomaru, Mito, Ibaraki 310, Japan. Tel: + 81 292 246905; fax: + 81 292 332351.

November 5–9 1995, Houston, Texas, USA

AWRA 31st Annual Conference & Symposia: 'Water Management in Urban Areas'; 'Advances in Model Use and Development in Water Resources'; and 'North American Water Resources'. *Contact:* AWRA, 950 Herndon Pkwy, Suite 300, Herndon, VA 22070-5528, USA. Tel: 703/904-1225; fax: 703/904-1228.

March 4–6 1996, Arlington, VA, USA

Fifth Water Resources Operations Management Workshop: Water Resources Planning and Management Division, ASCE. *Contact:* Dr Paul Kirshen, River Systems Association, PO Box 440, Groton, MA 01450. Tel: 508/448-0934; or, Prof. Aris Georgakakos, School of Civil and Environmental Engineering, Georgia Institute of Technology, Atlanta, GA 30332-0355. Tel: 404/894-2240.

Calendar

June 22–28 1996, Anaheim, California, USA

North American Water Congress.
Contact: Michael A. Ports, Parson Brinckerhoff, 301 N. Charles St., Suite 200, Baltimore, MD 21230, USA.

July 1996, Syracuse, New York, USA

AWRA Annual Summer Symposium
'Watershed Restoration Management: Physical, Chemical and Biological Considerations. *Contact:* AWRA, 950 Herndon Pkwy, Suite 300, Herndon, VA 22070-5528. Tel: 703/904-1225; fax: 703/904-1228.