INTERNATIONAL WORKSHOP ON 'RAINWATER HARVESTING AND GROUND WATER RECHARGE IN DEVELOPING COUNTRIES - HRD AND TECHNOLOGY TRANSFER', 17-20 AUGUST 2009, PUNE, INDIA

PARTICIPATING COUNTRIES: **15 Developing Countries (Including 14 Member Countries and 1 S&T-Industry Network Members of the NAM S&T Centre**

NUMBER OF PARTICIPANTS: **The Workshop was attended by 29 senior experts and professionals from 15 Developing Countries including the host country India.**

Water is not only one of the most essential daily needs for the humans and other living organisms, but is also important for the sustenance of biodiversity, ecology and overall health of the planet Earth. Unfortunately there is a strong impact of Global Climate Change on the availability and variability of water, which is further compounded in the urban areas that have mostly become a concrete jungle and rainwater is not able to seep through and adequately recharge the underground water channels. Because of the continuing increase in population, human consumption is also causing a severe decline in the amount of available groundwater. Thus the only means available in the urban area to keep the water table high enough is by way of rainwater harvesting. In rural areas, groundwater is especially used, nearly 60%, in food production by the farmers by using the tube wells. In this case also the rainwater can not only be used to recharge the groundwater, but also be channelised to flow to the ponds and lakes, which can be used for irrigation as and when required. This will also aid in keeping the village roads from getting slushy during the rains and maintaining the transport mobility.

In order to deliberate on the importance of Rainwater Harvesting (RWH) and Ground Water Recharge (GWR) and the mechanisms for capacity building and transfer of technology in RWH and GWR practices to ensure potable water supply and improve groundwater level in the developing countries, the Centre for Science & Technology of the Non-Aligned and Other Developing Countries (NAM S&T Centre) in association with Maharashtra Knowledge Corporation Ltd. (MKCL) and Indian Consortium for Educational Transformation (I-CONSENT) organized a 4 days International Workshop on 'Rainwater Harvesting and Ground Water Recharge in Developing Countries - HRD and Technology Transfer' during 17-20 August 2009 at Pune, India. This workshop was held by the Centre as a major activity under the collaborative project on 'Sustainable Rainwater Harvesting and Ground Water Recharge in Developing Countries – Human Resource Development and Technology Transfer' partially supported by the Perez-Guerrero Trust Fund for Economic and Technical Cooperation among Developing Countries (PGTF) of the Group of 77.

The Inaugural Session was started with the lighting of the traditional oil lamp and was followed by the Welcome and Opening Remarks by Prof. Ram Takwale, President,

I-CONSENT; Introduction to the Workshop by Prof. Arun P. Kulshreshtha, Director, NAM S&T Centre highlighting the background of the workshop and the role being played by the Centre in promoting South-South cooperation in various scientific areas and specifically in context with rainwater harvesting; Inaugural Address by Mr. C. M. Pandit, Chief Engineer, National Water Academy, Pune; and Vote of Thanks by Mr. Vasant Takalkar, Consultant, MKCL, Pune. Dr. C. D. Thatte, Former Secretary, Ministry of Water Resources, Government of India and Secretary General, International Commission on Irrigation and Drainage (ICID), New Delhi was the Guest of Honour for the occasion.

The workshop was attended by 29 senior experts and professionals from 15 developing countries. The overseas participants were from Botswana [Mr. Jackson Ndiwa Aliwa, Acting Director, Technology Development Department, Botswana Technology Centre (BOTEC), Gaborone]; Cambodia [Mr. A. M. Phirum, Deputy Director, Department of Agricultural Land Resource Management, General Directorate of Agriculture]; Egypt [Prof. Hany Mohamed Abdel Hamid Ramadan, Head of Research, Soil, Water and Environment Research Institute (SWERI), Ministry of Agriculture, Giza, and Prof. Badr Mohammed Ahmed Mabrouk, Professor in Hydrology and Water Management, Zagazig University, Cairo]; Indonesia [Dr. Iskandar Zulkarnain, Director, Research Center for Geotechnology, Indonesian Institute of Sciences, Bandung]; Iran [Dr. M. Molanejad, Director of International Cooperation, Iranian Research Organization for Science and Technology (IROST), Tehran]; Kenya [Dr. Urbanus Ndungwa Mutwiwa, Senior Research Officer, Directorate of Research Management & Development, Ministry of Higher Education, Science and Technology, Nairobi]; Malawi [Prof. Darwin Dodoma Singa, Senior Lecturer, Agricultural Engineering Department and Dean, Faculty of Agriculture, Bunda College, University of Malawi, Lilongwe]; Myanmar [Dr. Kyaw Moe Aung, Lecturer, Department of Technical and Vocational Education, Ministry of Science & Technology, Yangon]; Nepal [Mr. Thakur Prasad Pandit, Senior Divisional Engineer, Environmental Sanitation and Disaster Management Section, Department of Water Supply and Sewerage, Kathmandu]; Sri Lanka [Ms. Tanuja Ariyananda, Director, Lanka Rain Water Harvesting Forum, Nugegoda]; Tanzania [Dr. Joel Nobert Kirway, Department of Water Resources Engineering, University of Dar-es-Salaam]; Uganda [Mr. Henry Bazira, Executive, Director, Water Governance Institute (WGI), Kampala]; Vietnam [Mr. Nguyen Minh Khuyen, Vice Director, Centre for Water Resources Management, MONRE, Hanoi]; and Zambia [Mr. John Lukonde Chongo, Senior Science and Technology officer (Technology Promotion), Department of Science and Technology - Technology Section, Ministry of Science Technology & Vocational Training, Lusaka]. Prof. Arun P. Kulshreshtha, Director; Mr. M. Bandyopadhyay, Senior Expert & Administrative Officer; and Mr. Gaurav Gaur, Research Assistant represented the NAM S&T Centre in the workshop.

There were 14 Indian participants including, among others, Dr. C. D. Thatte, Former Secretary, Ministry of Water Resources, Government of India and Secretary General, ICID, New Delhi; Mr. C. M. Pandit, Chief Engineer, National Water Academy, Pune; Prof. Ram Takwale, President, I-CONSENT; Mr. Vivek Sawant, Managing Director, MKCL, Pune; Mr. Vasant Takalkar, Consultant, MKCL, Pune, Ms. Jyoti Panse, MD, Comprehensive Water Management Solutions Pvt. Ltd., Pune; Dr. J. P. Mahale, Ex. Director, Soil Conservation Department, Government of Maharashtra; Mr. Ulhas

Paranjape, Trustee, Jalvardhini Prathisthan, Mumbai; and Mr. Salahuddin Saiphy, Assistant Coordinator, Community Water Management and Rain Water Harvesting Unit, Centre for Science and Environment (CSE), New Delhi.

The overall programme of the workshop was organized in seven Technical Sessions held on 17th and 18th August 2009 and a Concluding Session on 20th August. On 19th August 2009 a visit was organized to a model village known as 'Hiware Bazar', located ~150 km NE of Pune, where rainwater harvesting practices have made a remarkable progress in the prosperity of the village. About 15 years back, this village used to have poor agricultural production and faced a variety of problems due to acute water shortage and lowering underground water table that led to huge emigration of the residents. But with integrated watershed management including the Continuous Contour Trenching (CCT) method of rainwater harvesting, the village prospered with adequate water resources and agriculture rich land resulting in manifold increase in per capita income, almost 100% literacy, reverse migration from cities, high level of sanitation and all round development in various spheres of life.

The Technical Sessions were co-chaired by Dr. C.D. Thatte and Ms. Tanuja Ariyananda; Prof. Ram Takwale and Prof. Badr Mohammed Ahmed Mabrouk; Mr. A. M. Phirum and Mr. Vasant Takalkar; Prof. Darwin Dodoma Singa and Prof. Dr. Hany Mohamed Abdel Hamid Ramadan, Mr. Henry Mugisha Bazira and Dr. M. Molanejad, Mr. Vivek Sawant and Dr. Iskandar Zulkarnain, and Mr. Jackson Ndiwa Aliwa and Mr. M. Bandyopadhyay, respectively, and the Concluding Session was conducted by Prof. Arun P. Kulshreshtha.

Each of the 15 foreign participants presented a country status report on RWH/GWR. Case studies were presented by six Indian participants, on 'Rain Water Harvesting and Ground Water Recharge in Maharashtra, India' by Dr. J. P. Mahale; 'Sustainable Rain Water Harvesting and Ground Water Recharge' by Mr. Vasant Takalkar; 'RWH Scenario in City' by Mr. Ulhas Paranjape; 'Integrated Water Management for Auto Industry at Moshi, Pune – India' by Ms. Jyoti Panse; 'Rain Water Harvesting and Sustainable Social Development' by Prof. Ram Takwale and Mr. Vivek Sawant, and 'Rainwater 'Harvesting and Groundwater Recharge: Indian examples' by Mr. Salahuddin Saiphy. Mr. Vivek Sawant, MD, MKCL also delivered an interactive lecture on the methodology of e-learning and its feasibility in providing quality RWH & GWR education and training to the distant learners in developing countries.

At the Concluding Session, a summary of workshop reports was presented by Ms. Tanuja Ariyananda of Sri Lanka. Mr. Salahuddin Saiphy of CSE highlighted various features of the training module and course material for the Trainers' Training Programme proposed to be organized by the Centre for Science and Environment (CSE) in February 2010 as another important activity under the G-77/PGTF project on RWH/GWR. After several rounds of brainstorming, the participants unanimously adopted the 'Pune Recommendations'. The workshop ended with the distribution of the Participation Certificates to the participants.

A Press Conference was addressed by Prof. Arun P. Kulshreshtha and Prof. Ram Takwale which was attended by ~20 press persons and reporters from the national and local newspapers who were briefed on the background and outcome of the workshop.

The participants thanked the organizers of the workshop, in particular, Prof. Ram Takwale from I-CONSENT, Mr. Vasant Takalkar from MKCL and his colleague Mr. Kedar Penkar, and Prof Arun P. Kulshreshtha, Director, NAM S&T Centre and his colleagues Mr. M. Bandyopadhyay and Mr. Gaurav Gaur, and unanimously hoped that the ensuing training course for trainers on rainwater harvesting would also have the same success as this event and more similar events will be held in future with a focus on South-South cooperation.