managing a precious resource

WATER

Professor Asit K. Biswas, an Indian-born Canadian citizen and President of the Mexico City-based Third World Centre for Water Management, was awarded the 2006 Stockholm Water Prize. Since 1991, this award has been presented annually to an individual, institution, or organization for outstanding water-related activities. In selecting him, the Nominating Committee cited his "outstanding and multi-faceted contributions to global water resource issues, including research, education and awareness, water management, and human and international relations in both developed and developing countries."

Close on the heels of the Stockholm award, Prof. Biswas received the prestigious Aragon Environment Prize of Spain, and Man of the Year Award from Prime Minister Stephen Harper of Canada.

Professor Biswas received his B.Tech and M. Tech. degrees in Civil Engineering from IIT Kharagpur, and has published 68 books and over 600 scientific and technical papers. His work has been translated into 32 languages. As an advisor to 18 governments and most major international organizations, he crisscrosses the world continuously. PiTech recently caught up with Prof. Biswas to get his views on water management policies and technologies for India.

Asit Biswas receiving the prestigious Aragon Environment Prize from President Iglesias and Environment Minister Narbona of Spain, on World Environment Day, June 5, 2006

How did you get interested in a career in water management?

I have always been interested in water. My M.Tech. was on hydropower and dams, and Ph.D was in water resources management from the University of Strathclyde, Glasgow. My whole career has been based on water-related issues. Technically and scientifically, water management is a complex and fascinating process, which is likely to become increasingly more complex in the future.

Is there a water crisis in India? Is the crisis because of lack of water or inadequate water management policies?

Globally, we are NOT facing a crisis because of actual physical scarcities of water. However, we are facing a crisis because of poor management practices of the past. While these practices are improving, they are doing so only gradually and incrementally. What we urgently need are radical changes in our water management practices and processes to successfully meet the challenges of the future. We already have enough knowledge and technology to improve our management practices dramatically. However, because of social and political reasons, in-built inertia and opposition to changes, we have managed to improve water management practices only marginally so far.

India is no exception to this overall global trend. For example, one hears about water scarcities in Indian mega-cities like Delhi, Chennai, and Mumbai. These scarcities are primarily man-made because of past and present mismanagement. Given political will and proper management practices, these so-called water problems can be resolved cost effectively within 2-3 years.

What are the major water management challenges facing India at present?

The main water problem facing India is how best to manage the country's available water resources efficiently and equitably so that its economic development continues, along with poverty alleviation and environmental conservation. This can be done, but we have not done it very successfully in the past. All over India, we are using inefficient water management processes and practices. Business-as-usual simply is no longer an option for the future of the country.

Are there technology based initiatives currently in place aimed at addressing these problems?

Technology is improving radically in many water-related areas. This will certainly help. For example, because of biotechnological advances, we are likely to have new varieties of drought- and pest-resistant crops during the post-2015 period which are likely to ensure we can produce more usable food in the same area of land and using similar, or even less, quantum of water. We also expect major biotechnological breakthroughs in the foreseeable future in terms of good water quality management. Similarly, we have seen dramatic improvements in desalination costs because of technological advances and improved management practices. Within the past five years, the cost of desalination of sea water has come down from about \$1.50 per m^3 to less than \$0.50. Since more than half of the world's population lives within 100 km of a coast, water for human, industrial and commercial consumption is not a major issue for many of these areas for the first time in human history because of technological advances.

Currently there is a great deal of interest in rainwater harvesting. What are your views on it?

Humankind has always harvested rainwater for survival. Take the case of India. Much of the annual rainfall in most parts of the country occurs in less than 100 hours, which are not necessarily consecutive. The question then is how to collect and store this immense and intense rainfall so that the stored water can be used for the rest of the year. A variety of solutions are available for harvesting rainwater. This may range from construction of dams (large, medium or small), use of tanks, and groundwater recharge. The main issue is how best to conserve rainwater so that it can satisfy human needs reliably and efficiently over the year and in between years.

The Stockholm Water Prize for 2006 was awarded to Asit Biswas

A large country like India is very heterogeneous in nature because of climatic, economic, social, political, and environmental conditions. In addition, management and technical capacities often vary from one location to another, as do institutional and legal frameworks. Accordingly, there is simply no one single solution that could be equally appropriate for the country as a whole. Solutions that may work in Assam may not work in Rajasthan, and vice versa. In the field of rainwater management, one size does not fit all. Nor is there any room for dogmatic debates and solutions. For example, in one specific location, small could be beautiful, but it could be ugly in another context. Similarly, big could be magnificent but it could be a disaster. Every thing depends on the context in which it is applied. Solutions have to be carefully found for specific locations and boundary conditions. Depending on the context, a large dam may be the best option for harvesting rainwater, or groundwater recharge, or use of tanks, or some combination of these alternatives. For the future welfare of the country, there is no room for dogmatic debates and universal solutions.

How can the water problems of rural India be resolved?

Rural water problems can be solved if we change our mindsets. Provision of clean water and collection, treatment, and disposal of wastewater costs money. People have to realize that they have to pay, either directly or through taxes, for the privilege of having clean water in their houses and also for the disposal of wastewater. In India, proper rural and urban water supply and sanitation services are often non-existent and, when they exist, they are highly subsidized. Current approaches will NOT provide universal access to water services

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in the country, nor will they improve water conservation within one generation. For sustainable and reliable rural water provisioning, we need to consider water pricing, public-private partnerships, participation of stakeholders and education of the general public on water conservation and personal hygiene. We need to take a holistic approach and search for reliable, long-term and equitable solutions for the rural areas.

Can India learn some lessons from other developed and developing countries to improve its water management practices?

The first lesson of technology and knowledge transfer between countries has to be that these are often not directly transferable. We must carefully analyze how other countries have solved, or are solving, the types of water problems India is currently facing. The next step will be to see to what extent these solutions can be applied (perhaps after significant modifications) to meet the specific conditions of the appropriate Indian locations.

In the area of urban water management, the best practice in the world is now in Singapore. Can these practices be transferred directly to India? I doubt it. For example, political interference and corruption is rampant in most Indian water supply corporations, which simply do not exist in Singapore. These two factors alone (there are other factors as well) will mean that the Singaporean solutions can only be tried after considerable "Indianisation." There is a lot of research that needs to be done before the Singaporean solutions can be attempted in India, or in other developing countries. Unfortunately, not a single institution in India is now conducting this type of applied research. Thus, India can learn many lessons from other countries, but these solutions can be applied only after considerable forethought and advance preparation.

You are currently serving as the President of the Third World Centre for Water Management in Mexico. Could you tell us about this Centre and its activities?

Dr. Cecilia Tortajada and I were the prime movers for the establishment of the Third World Centre for Water Management in Mexico. It is a knowledge-based think tank, specializing in generation, synthesis, application and dissemination of knowledge. The Centre is totally independent, and does not subscribe to any dogmatic or predetermined solution. It always starts with the analysis of a specific problem in a specific location, with its specific boundary conditions. A feasible and implementable solution can only be found within the very specific context of a specific problem. In the real world, one size does not fit all, and the prevalent current approach of the international institutions' "solution-in-search-of-a-problem" generally does not work.

Countries like India have paid a very high price because in the past it has accepted solutions recommended by international experts and institutions who had only very limited knowledge of the climatic, physical, social, cultural, economic, environmental, and institutional conditions of the country within which any solution had to be implemented. Without such knowledge, the potential for successful application of any solution is very limited.

Unlike all other international institutions, our Centre is unique since it does not try to solve water problems of countries like India, Egypt, or Turkey with experts based in Mexico. Once we decide to work on a specific issue in a specific location, we identify the best institution and the best experts the country has on that specific issue. We provide the financial support and only the expertise that is not available in that country to solve the problem. We develop the solutions together with the national experts and also in close collaboration with the policy-makers of the national institutions who have to implement the solution.

This model has proved to be highly efficient in terms of finding implementable and cost-effective solutions. Equally, the process has helped in building the management and technical capacities of developing countries.

Our Centre does not accept any funding unless the results of our work can be made readily available. The results of our work are always published as books by major international publishers, and in technical

and scientific journals. Details of the modalities of the working of our Centre, and our current publications can be found at *www.thirdworldcentre.org*. The work of our Centre has now been translated into 12 languages.

While your ideas are laudable, a lot of political support may be necessary to implement them. Do you think India can succeed and what will this entail?

There is no question that if one is working in policy areas, one must have close access to policy-makers so that solutions are developed in close consultation with them. The probability of any policy being accepted, let alone implemented, without the support of high-level policy-makers is almost close to zero. Thus, political support is a pre-requisite for acceptance and implementation of any water policy.

Fortunately, during my career over the past four decades, I have been fortunate enough to work closely with 18 governments at ministerial and secretarial levels, six Heads of the United Nations Agencies, and a president of the World Bank. The problems I have worked on in the past, and our Centre is working on at present, are identified jointly by the responsible policy-makers and us. We keep in touch regularly with the policy-makers with our work and its progress. This close collaboration means that policy-makers are always aware of our thinking from the very moment we start our work and until the end. We consult them frequently, and thus the solutions we recommend do not come as a surprise to them. In fact, they often make major inputs in the solution of the problems and formulation of policies. Accordingly, we consider interactions with the policy-makers an important and essential component of our work. For example, in July, I met with the Prime Minister and Water Minister of India and two Chief Ministers of provinces. These were all one-on-one meetings. Such regular meetings with senior policy-makers are essential components of our work.

Can you tell us briefly the results of your latest meetings with the Prime Minister and Water Minister of India?

Our discussions covered many issues and they were wide ranging. One of the areas we discussed is how best we can build up technical and managerial capacities of the existing water professionals in India. Many, if not all, water problems of India are because of poor management practices. In order to solve and manage seemingly technical problems, we need a new breed of water professionals who not only have expertise in technical areas, but also are knowledgeable on the social, economic, legal, environmental and institutional issues within which the technical solutions are to be applied. Most water projects in India are now not progressing because of inter-state water disputes, which touches not only technical considerations (which can be called 'hard' solutions) but also social, economic, legal and environmental issues ('soft' solutions). We thus need a new breed of technocrats who are knowledgeable in both hard and soft sciences.

I have proposed to the Indian Prime Minister and Water Minister, at separate meetings, that we consider an IIT, where we can develop a new water program to meet the future water needs and challenges of the country. The reactions of the Prime Minister and the Water Minister were not only enthusiastic but also to the point. They both felt that India's water problems are immense, and one single IIT cannot produce enough new breed of technocrats who can make a serious dent in the country's water problems. The program should encompass more educational institutions. Hence, my current idea is to formulate a multi-institutional program, in which leading international and Indian water experts can participate.

Following these discussions, I met with Director Dube, Dean Chakraborty and Prof. Das Gupta (Head of Civil Engineering) of IIT Kharagpur, my alma mater. We had a very constructive and productive discussion in Kolkata. We plan to start with a new water program at Kharagpur first, which could then be promptly followed at other institutions. I shall also be meeting with the Water Minister, Prof. Saifudding Soz, in late August in Stockholm to develop the program further. Prof. Soz is unquestionably the best and most competent water minister India has had for a considerable time. I am thus looking forward to working with Minister Soz and IIT Kharagpur, to develop a new type of country-specific water program for India, which currently simply does not exist anywhere in the country or the world. It will not be easy, but it is certainly doable. I am now discussing with some major donors to fund the external costs of formulating and implementing such a program. The initial donor responses are quite positive. If any IIT alumni would like to be associated with this new water program in the country, we welcome their advice and collaboration. They can contact me at *akbiswas@thirdworldcentre.org*. ■

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