Discussions, debates and disputes at India's IIT-Kanpur

By Sahana Singh

A water conference hosted by a premier engineering institute in India offered a delightful mix of science, engineering and traditional know-how.

In "The Argumentative Indian", Nobel-Prize winning economist Amartya Sen elaborates on why democracy has such an unshakable presence in India. Even the Indian epics written centuries ago are "engagingly full of dialogues, dilemmas and alternative perspectives," he says.

Water Storage Harvesting and Storage Conference (WSHC-2009) held at the renowned Indian Institute of Technology, Kanpur (IIT-Kanpur) from November 23 to 25 last month provided plenty of opportunities to witness "masses of arguments and counter arguments spread over incessant debate and disputations", just as Dr Sen describes in his book.

Vinod Tare, Conference Chairman and a professor at IIT-Kanpur said there was much confusion about rainwater harvesting really meant; whether it referred to merely rooftops or whether it extended to even the large reservoirs. "There is a need to evolve a decentralised legal regime with regard to water harvesting for both rural and urban conditions, which empowers people and makes them real managers of resources," he asserted.

Dr Tare also pointed out the dichotomy in the water sector when it came to quantity and quality. "We have been separating quantity and quality issues but we need to have a happy marriage between the two," he said.

Attended by scientists, engineers, professors, government servants and experts from many water-related fields such as rainwater harvesting, sanitation and irrigation, the conference crackled with energy and enthusiasm.

Stressing on the importance of using science as a tool for water policies, M. Gopalakrishnan, Secretary General of International Commission on Irrigation and Drainage said in his presentation that proper water accounting needed to be established. His ideas were reinforced by Ramaswamy Iyer, former secretary at the Indian Ministry of Water Resources who pointed out that local actions must always be compatible with basin hydrology.

Dr Vinod Tare, Conference Chairman addresses the audience.

S.K. Jain, a groundwater expert expounded on the idea of managing stormwater by channelling it from roads and paved areas, purifying it and using it to recharge groundwater. "The case studies illustrate that the concept will not only help in controlling the devastating effects of stormwater but would improve water levels and quality as well as extend the life of roads by reducing the damage from runoff," explained Mr Jain. According to him this concept could be applied on all roads in urban areas as well as important highways.

Rajendra Singh, a well-recognised community leader from the Indian state of Rajasthan made an impassioned speech about the need for communities to manage their water and protect their catchments from over-use and pollution. "We have focussed too much on exploitative technologies and lost our sense of community. Today the people who spend more and who waste more water are at the top of the food chain," he thundered. Mr Singh is known for reviving community-driven decentralised management of water in Rajasthan.

A slightly contrary view was provided by Asit Nema, a Delhi-based consultant who warned against

Bio-remediation technologies have the potential to revive the sanctity of River Ganga.

arbitrary, micro-scale recharge structures, which could actually pollute groundwater. "There is a need to explore scaled-up, well-engineered, centralised recharge solutions which can assure quality," he asserted.

Science was certainly the flavour of the conference, and not surprising, given the presence of so many men of science.

The importance of geology in selecting a site for rainwater harvesting was brought out by Saumitra Mukherjee who spoke from his experience of using geological information systems to recharge aquifers in and around the Jawaharlal Nehru University (JNU) campus in Delhi. The professor explained how 'spectral reflectance' and 'normalised difference vegetation index' generated from satellite data could help to improve forest cover and raise water tables.

Meanwhile, P.S.Datta, Principal Scientist at the Nuclear Research Laboratory in Delhi held forth on the uses of isotope fingerprinting of groundwater. Isotopes of hydrogen, oxygen and carbon can be used to label water and trace its characteristics, thereby providing a wealth of information about the process of recharge of groundwater or the vulnerability to pollution.

From the studies carried out by Dr Datta and his colleagues, it has been established that an average of 20% of rainfall is being annually recharged in the Indian state of Uttar Pradesh, 16% in Haryana, 18% in Punjab, 6% in Rajasthan and less than 8% in Delhi. "The groundwater abstraction is not in balance with the recharge and has crossed sustainable limits due to over-exploitation and inter-mixing of polluted water with freshwater," informed Dr Datta.

Moving away from the human-centric nature of discussions, Brij Gopal, retired professor from JNU focussed his presentation on the ecosystem services of rivers. "We consider water as a commodity to be allocated among stakeholders. Now, there are many human stakeholders but Nature – the provider and sustainer of water – is just another stakeholder," remarked Dr Brij Gopal.

An interesting format followed at the conference was to hold the plenary session at the end of each day, with participants debating on what recommendations could be derived out of the presentations made. Framing the recommendations was an arduous exercise with so many delegates having their opinions and reservations about the points made by presenters. However, the fiery debates gave an opportunity for those unfamiliar with the subject to understand the ramifications of every issue.

Question time

Two side-events held alongside the main event attracted many participants. The first dealing with pollution abatement in the River Ganga basin focussed on the potential for using bio-remediation strategies. It was organised by WWF-India, which

is collaborating with HSBC Climate Partnership to revive the River Ganga under the auspices of its 'Living Ganga Programme'.

Numerous efforts to clean River Ganga, which sustains millions of people and businesses have largely failed. The conventional methods of wastewater treatment which are expensive, involve heavy maintenance and produce large amounts of sludge have been condemned by both engineers and the public. There is increasing interest in bio-remediation methods which are perceived to be cheaper, faster and which do not produce toxic intermediates.

Any programme to revive a polluted river has to involve the key stakeholders and WWF-India is doing just that by reaching out to communities, businesses and governments. At the side-event, the results of pilot projects which successfully demonstrated the effects of bio-remediation of wastewater were shared with the delegates. The challenges of scaling up these pilot projects were examined in a panel discussion which included microbiologists, environmental scientists and engineers. Vendors of bio-remediation products were questioned about the efficacy of their technologies. Suresh Rohilla, Team leader of the Living Ganga Programme and one of the conference organisers steered the discussions.

The second side-event dealt with sanitation technologies and featured a prominent address by Bindeshwar Pathak, founder of Sulabh Sanitation and Social Reform Movement, who was recently awarded the Stockholm Water Prize. Dr Pathak highlighted that his Sulabh technology was not only conserving and reusing water but actually contributing to reducing greenhouse gases in the atmosphere by trapping methane. He also stressed on the socially liberating consequence of sanitation.

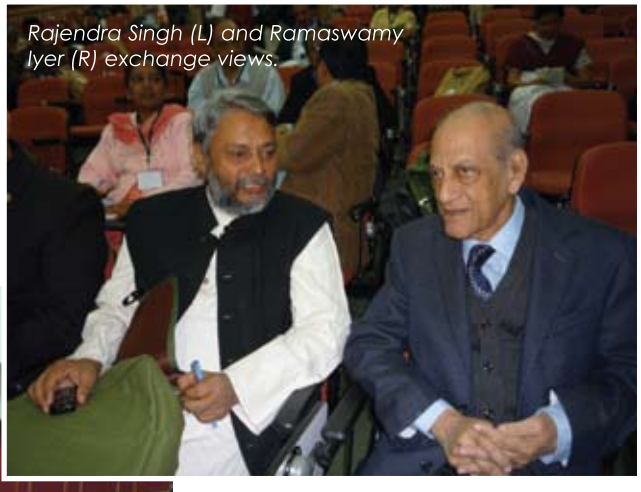
Some of the other interesting presentations made at the side-event included Dr Tare's work on zero-discharge sanitation. Calling for a paradigm shift, Dr Tare called for a stop to discharge of wastes to freshwater bodies. "The idea that human excreta are wastes with no useful purpose is a modern misconception," he declared. "It has led to the development of so-called "drop and store" or "flush and forget" sanitation solutions, where precious drinking water is used to transport excreta into the water cycle misusing our rivers, oceans and aquifers as a sink for untreated waste," he said.

A field visit was arranged to the Zero Discharge Toilet System pioneered by Dr Tare and his students within IIT-Kanpur campus. Similar installations have been put up at different locations in India and are also being tested by Indian Railways.

The organisers of WSHC-2009 must be commended for making a genuine effort to address a wide gamut of water-related issues. While some delegates pointed out that the discussions tended to be rainwater-focussed, it cannot be denied that rainwater and stormwater management need more attention and coordination than ever before.

The promotion of the conference as an international event was also called into question by some delegates since all the presentations were set in the Indian context. But the organisers would do well to retain the Indian-focus of the event since India is not just a country but a sub-continent. The problems and issues are so unique even within each separate region of India that bringing in international presentations would only dilute the discussions and render them ineffective.

The ideal result of a conference would be a translation into real work on the ground. Will the recent deliberations at IIT-Kanpur provide some impetus for implementing solutions to age-old problems? It is time for the 'Argumentative Indian' to become the 'Effective Indian'. **AW**



Rajendra Singh (L) and Ramaswamy Iyer (R) exchange views.

A wide gamut of water-related issues were discussed at WHSC-2009.