

## **Learning from the past – building water cooperation for the future**

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International Year of Water Cooperation

World Water Day 2013, Sri Lanka

Honourable Minister, Excellencies, Distinguished Guests, Ladies and Gentlemen,

As the recently appointed head of an international organization on water management with its headquarters in Sri Lanka, it gives me great pleasure to be with you today to share in this celebration of World Water Day 2013 and the UN Year of Water Cooperation.

The stated objective of this UN initiative is *“to raise awareness, both on the potential for increased cooperation, and on the challenges facing water management in light of the increase in demand for water access, allocation and services.”*

I was last in this building 15 years ago when Sri Lanka organized a regional consultation on the contentious topic of dam projects as part of global multi-stakeholder policy discussions facilitated by the World Commission on Dams. The deliberations focussed on the need for development, for sustainability considerations of various investment options, the need to involve people more in decision-making, and on mechanisms to share the benefits of development more broadly. These issues remain relevant today.

Sri Lanka’s long history of water management started more than 2000 years ago and encompasses the ‘golden era’ of small tank development in the dry zones in the 12<sup>th</sup> Century AD. It has developed further in different ways since Sri Lanka’s independence with construction of irrigation and hydropower projects of various scales, including the ambitious Mahaweli system. It has led to gains in agricultural production, but still more is needed to attain food security in the staple rice harvest and other field crops.

Sri Lanka also has a rich and diverse environment with many endemic species. Wetland areas are important landscapes in the country and are recognized internationally, with six wetland sites registered under the Ramsar Convention covering almost 200,000 ha in total and including the nature reserve of Wilpattu as the largest. Such wetlands, lagoons and other natural ecosystems are not just hotspots for biodiversity, but also provide services upon which we all depend.

So, it is clear that Sri Lanka provides a microcosm of the issues raised by the Year of Water Cooperation. It provides lessons from the past and a broad set of challenging issues to address as the Government embarks on its path of economic growth with equitable access to

development opportunities for its people. But the economic growth and consequent drivers of change are occurring at a far faster pace to that experienced in the west, and therefore requires a more rapid learning curve of incorporating lessons and taking corrective actions. At the same time, it offers a great opportunity to avoid making some of the same mistakes and short cutting to a more sustainable development paradigm. A paradigm we are supporting under a new CGIAR-wide research program on Water, Land and Ecosystems.

Excellencies, Distinguished Guests, Ladies and Gentlemen,

As we look around the country at its different landscapes and climatic zones, we can already witness diverse water management challenges. They include for example, the flood and drought events that are expected to become more intense because of climate change - and more costly due to the extent and economic value of the assets and crops at risk. Last year we saw an extended drought period with consequences for rainfed and irrigated agriculture as well as reduced hydropower production leading to more frequent power cuts. And later in the same year, there was extensive flooding with associated landslides and damage to infrastructure. Floods do not distinguish between farmland or industrial areas and droughts have impacts to the wider population through reduced water and power supplies or increased food prices. There is an economic cost to us all and most notably to poor communities.

One thing is certain - that the future is going to be less predictable. Whether you are a believer in climate change or a sceptic, the measures required to adapt to increasing climate variability are already needed to reduce the vulnerability of rural and urban communities alike to the vagaries of flood and drought. From experience in other countries of the region it is inevitable that groundwater development will increase as a means of reducing vulnerability to drought. And with it come concerns about sustainability and even health risks. I will come back to that aspect later.

We see that Sri Lanka's climate has already showed signs of change. By the end of this century, the mean temperature is expected to rise somewhere in the range of 1 to 4 degrees Celsius accompanied by an increase of up to 20% in water requirements for the Maha or wet season crop. The brunt of climate change impacts will be felt in the north-eastern and eastern dry zones of the country. Changes in rainfall patterns and hydrology could also intensify existing tensions between hydropower and irrigation needs.

The consequences of urban and economic development are perhaps easier to predict than from climate change and involve increasing pressures on the water resource, both in terms of water availability due to heightened competition between users, and risks to water quality resulting from pollution of water bodies, both surface and groundwater.

Despite these challenges, we at the International Water Management Institute, or IWMI, are increasingly confident that there are many promising solutions. However if they are to make a

difference on the ground, we need to help elevate them from the arena of technical discourse to the level of policy and institutional discourse.

The Government's achievements in the area of water and sanitation also provide a case for optimism. WHO and UNICEF figures show an increase in improved sanitation coverage from 67% in 1990 to 93% in 2012. A similar improvement in improved drinking water coverage from 67% to 91% was achieved, meaning that both drinking water and safe sanitation aspects of the Millennium Development Goals have been achieved.

And the Government also recognizes the challenges for water resources management imposed by today's society and also the importance of research in contributing to the search for solutions. The President's Vision, or Mahinda Chintana, identifies research needs with an emphasis on cooperation with support to *"development and exploitation of surface and groundwater, maintenance of the water quality and supply of water for social, economic and environmental needs on a sustainable basis."*

Beyond utilizing surface water and groundwater more sustainably, we need to make rainfed agriculture more productive and to increasingly view wastewater as a resource. It is these various options that will provide the solutions for the future: rainwater harvesting and soil moisture management; measures for reducing demand in all sectors; better watershed management practices; groundwater recharge from flood events; utilization of small and large reservoirs; and the use of waste as a new and valuable supply source, provided that health concerns are safely managed. Experience from around the world has demonstrated the need for attention to water management as much as to water infrastructure.

A more integrated approach requires new ways of working. It is immediately apparent that it places pressure on institutional structures that tend to be organised around single sector issues or disciplines. It is further complicated by the interconnectivity or nexus between the water, food and energy sectors. For example a climate change mitigation policy that promotes incentives for biofuel production can displace valuable areas for producing food. Such interconnectivities and inter-dependencies require integration in setting policy objectives, within which individual sectors work towards a common aim.

Sri Lanka has embraced goals to increase yields and productivity of land and to reduce the amount of water diverted for agriculture thus responding to constraints of competing uses and increasing scarcity. It has set targets for reducing agricultural use of water from 80% to 60% by 2016 and at the same time increasing agricultural production and expanding coverage. There are examples of attaining such gains under the right policy environment, as shown from experiences in both India and China.

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IWMI has been based in Sri Lanka for 28 years coordinating its global research program. It is here that our program started by assessing the performance of irrigation systems, including

pioneering work to promote greater farmer involvement in system management and on the decisions that affect their lives and livelihoods. This work, undertaken in association with the forerunner of the current Ministry of Irrigation and Water Resources Management, has influenced reforms in other parts of the world.

More recently in Sri Lanka we have focussed our research on groundwater use in response not only to the significant opportunities that it provides, but also the significant risks – risks of over abstraction or unsustainable ‘water mining’, and of pollution, whether by intrusion of saline water or contamination from industrial, urban or agricultural sources.

In Jaffna, where there has been an extensive focus on rehabilitation and development after years of conflict, we have documented an inventory of groundwater wells, assessed water quality of the aquifers, identified some of the areas at risk, and are now working on a predictive capacity to identify critical areas where conservation measures would be required. Shortly we will be conducting a symposium on groundwater in Sri Lanka to highlight some of these issues and exchange experiences among partners.

Turning waste into a resource is a fast expanding focus of our work. It started by tackling the problem of how to make urban wastewater safer to use in peri-urban agriculture – safer both for those applying the water and for those who consume the agricultural produce. Various technological and procedural systems were developed that have now found their way into mainstream guidance of the UN’s World Health Organisation, among others.

We are now discussing with the Ministry of Water Supply and Drainage how to best to deal with another element of waste – safer management of fecal sludge to avoid pollution and health risks and at the same time enhance the agriculture value chain. Building on our work in Ghana, we have developed processes to turn such waste into a productive fertilizer through a composting and pelletization process. For it to flourish, this business opportunity requires policy change, technological innovation and a change of mindset.

Again in the area of urban and peri-urban agriculture our work in Western Province has helped raise awareness of the income opportunities for women and a consequent change in provincial policy to encourage such activities. The project facilitated the development of value chains and markets that resulted in significant increases in incomes. This success has subsequently been taken up at national level through the Ministry of Agriculture which has established a committee to incorporate similar provisions in national policy.

Now let me turn to the subject of this Seminar. The issue of chronic kidney disease of unknown etiology (CKDu) has caused widespread tragedy for affected communities and dominated the media in recent times. IWMI’s interest stems from its vision of ‘*water for a food secure world*’ and unravelling the unknown linkages surrounding groundwater, agriculture chemicals, land use, health and livelihoods.

We were involved in a similar, but less complex investigation in Thailand through a comprehensive research program to identify the causal factor(s) contributing to increased

kidney dysfunctionality amongst an isolated rice-growing community in the Mae Sot region. From a survey of farmer fields we found that the rice grain cadmium concentration in 83% of the fields sampled exceeded the recommended maximum level of 0.2 mg Cd kg<sup>-1</sup> and that, in some cases, the concentration of Cd in the grain was 38 times higher than the recommended level. 85% of samples collected had total cadmium concentration exceeding the European Union Maximum Permissible level of 3.0 mg Cd kg<sup>-1</sup> for agricultural (sludge amended) soils. There was a direct link between cadmium in the soil and uptake by the rice plant, however, the question remained where was the cadmium coming from?

When looking at the spatial distribution of cadmium in what was a cascade surface irrigation system, we found that the concentration was highest in the primary fields which first received diverted water from a network of streams and that as you progressed down the cascade concentrations of Cd rapidly declined. This suggested that the cadmium was being transported by the irrigation water and with further investigation we found that it was sediments that had their origin upstream and which passed through a natural anomaly high in zinc and cadmium. Under the anaerobic conditions that commonly occur under paddy systems, the cadmium came into solution and was taken up by the crop.

IWMI assisted Thailand in building capacity within government departments to sample, analyse and interpret results from field surveys. Further it assisted the government in developing a strategy that would minimize cadmium entering the food chain thereby reducing the risks of developing cadmium related kidney disease through the long-term consumption of contaminated rice.

The issue of chronic kidney disease of unknown etiology that afflicts significant numbers in the North Central Province and elsewhere in Sri Lanka is more complex than the case in Thailand. However, I am sure with the skills and expertise available and a comprehensive research program, the causal factor(s) can be identified and long term solutions found. As an independent organisation with proven experience in some of the key areas, IWMI is willing to cooperate with the Sri Lankan government and other agencies in whatever way we can and look forward to hearing your perspectives on this challenge during this Seminar.

Excellencies, Distinguished Guests, Ladies and Gentlemen,

I am pleased to announce today that IWMI is launching new strategic directions for its research program here in Sri Lanka. The first three years of the strategy focuses on four main areas: (i) improving agricultural water use and productivity; (ii) helping to better manage floods, droughts and climate change impacts; (iii) the sustainable management of natural resources and ecosystems; and (iv) capacity development for knowledge management and sharing.

Details of the priority activities and partnership arrangements are being finalized, but initially we will be setting up a common water information system for Sri Lanka, accessible for professional and public use; promoting sustainable governance of groundwater resources

across the country and in particular in Jaffna; and supporting the management of human waste through improved policies on wastewater and sludge management. This is the topic of an MOU we will be signing today with the Ministry of Water Supply and Drainage. We are also ready to bring analytic resources to the future CKDu investigations.

In addition to the substantive parts of our 2013 program, we will emphasize capacity development, knowledge generation and the training of young minds for a more integrated approach. Here we work with postgraduate institutions, local academics and other science-based agencies and professional bodies, including CARP, HARTI, NSF and IESL.

To be effective, our research has to find traction, whether it is through catalysing policy or institutional reform, changing management practice or introducing new technologies. For this, our partnerships go beyond the traditional national research centres to include outreach and uptake partners who can provide that supporting role in making 'research for development' work in practice and helping develop local capacity for implementing the results. Water cuts across so much of our lives and its management requires cooperation at all levels.

This celebration of World Water Day is one of a number around the world and IWMI is very pleased to be a part of the events here this week, here in this hall and at other locations. We very much look forward to continuing to work closely with the Government of Sri Lanka, other national and international partners, universities and water users, to turn this water cooperation into real development benefits.

Thank you