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## **Scientists with Landmark Study Tracking 50 Years of Water Management Practices Call for Radical Action to Ease Water Scarcity**

*Scientists Say “There Is Enough Water to Go Around”  
And Propose Plan to Squeeze out More from Each Drop of Water*

STOCKHOLM (August 21, 2006)— In releasing key results from a landmark assessment of 50 years of water management practices at the 2006 World Water Week in Stockholm today, scientists suggest that there is sufficient land, water, and human capacity to end hunger and protect the environment over the next 50 years if “radical” action is taken today. The authors make proposals to reduce by 50 percent the projected amount of water needed to grow food in rain-fed and irrigated areas for an additional 2-3 billion people.

The scientists painted a worrisome portrait of the world water situation—stating that one third of the world population faces water scarcity today. This alarming finding from their research totally overruns predictions that this situation would not come to pass until 2025.

“More water is required for poverty alleviation, for food production, for cities and industries, yet taking more water out of other ecosystems threatens our life support systems,” said David Molden of the International Water Management Institute and coordinator of the Assessment.

The Comprehensive Assessment of Water Management in Agriculture (CA) is based on five years of research and draws from the contributions of more than 700 scientists and practitioners from over 100 institutions worldwide. Today’s report is titled “*Water for Food, Water for Life: Insights from the Comprehensive Assessment of Water Management in Agriculture.*”

“The last 50 years of water management practices are no model for the future when it comes to dealing with water scarcity,” said Frank Rijsberman, Director General of the International Water Management Institute (IWMI). “We need radical change in the institutions and organizations responsible for managing our earth’s water supplies and a vastly different way of thinking about water management—whether the individual concerned is an engineer at a donor agency or a farmer in Malawi.”

Scientists warn that if nothing changes, in 2050 the agriculture sector will need to double the amount of water to grow the food we eat. But with appropriate action, total growth in water use could slow down by 50 percent, and water withdrawals from rivers could stabilize.

The report recommends a radical new agenda for agricultural water management—one that prioritizes obtaining the maximum social, environmental and economic value out of every drop of water—be it from a river basin or a rainstorm—against the backdrop of a globalized world. The authors argue that growing more food, fish and fodder for animals with less water and getting more value for each drop of water are the only ways to both reduce poverty and stop damage to the environment.

They state that improving rain-fed agriculture in the African savannahs is a key priority for resolving the water crisis. According to Rijsberman, “Africa’s savannahs are home to a large number of the world’s malnourished rural poor. People are currently eking out a living on very marginal farms. They present a critical opportunity for increasing the productivity of water on a major scale. Agricultural research by our Brazilian colleagues has shown that this is possible.”

Closing the yield gap found in these marginal, rain-fed areas represents the largest potential for increased water productivity. For maize yields, for example, this means increasing yields per hectare from 1.4 to 4-6 tons, with equivalent increases in water productivity. By contrast, in many irrigated areas or the rain-fed areas in OECD countries, current farm productivity is so much closer to the physiological limits that significant increases are less likely, according to the researchers.

Main points from the new agenda for water management outlined in the report include:

*#1 Think differently about water.*

“The prevailing attitude of the last 50 years has been that water is a free, renewable resource and that the main challenge is to capture it and make it available to people without regard to the environmental consequences,” said Molden. “This agenda urgently needs to be replaced by awareness that there is no more ‘new’ water for the quarter of the world population that lives in closed and closing river basins—particularly in Asia and North Africa. Their only option is to re-allocate water to higher value uses.”

At the same time, according to the research, for the other billion people that face economic water scarcity, particularly in Sub-Saharan Africa where the investments in water infrastructure—both small-scale community based and larger—have lagged behind the needs. Constructing more water storage remains a key priority.

*#2 Get water to poor people.*

According to Molden, “Providing access to water for productive purposes to smallholder farmers in marginal or vulnerable areas through affordable small-scale technologies is a proven strategy to fight poverty. Small-scale water technologies from treadle pumps to micro-drip kits, combined with micro-credit and access to markets, can provide additional income up to several times the investment cost in a single year.”

*#3 Increase water productivity.*

Increased water productivity in recent decades has primarily come from agricultural research that produced higher yielding varieties. Future improvements in water productivity at the farm level are expected to come primarily from a combination of smart field practices, using techniques

from “conservation tillage” and “land levelling” to improved irrigation scheduling, with a potential breakthrough possible in the breeding of drought-resistant crop varieties. The report recognizes the critical linkages between land and water conservation and between soil fertility and water productivity. “Achieving sustainable water use cannot be separated from sustainable management of soil fertility,” said Molden.

The report reveals that changing livestock, fisheries and aquaculture practices can also greatly improve value per drop of water. But remarkably these are overlooked and undervalued in water discussions.

*#4 Consider a continuum of options for agricultural water management.*

Rather than splitting agriculture into rain-fed and irrigated systems, the new approach to water for agriculture recognizes that the greatest potential for improving yields is in the grey zone between rain-fed and irrigated systems, i.e. providing supplemental irrigation to rain-fed systems. This can be achieved through various forms of rainwater harvesting. Small amounts of water harvested in farm ponds or community-managed dams can prevent critical crop losses during dry spells.

The report urges the increased “safe” use of marginal-quality water, i.e. both brackish water and treated- or partially-treated wastewater. This can be a critical resource for improving livelihoods and is a principle source of water and fertilizer currently for crops being grown in and around many African and Asian cities. Methods do need to be put in place, however, to reduce risks of marginal quality water for producers, consumers and the environment alike.

“If safe re-use of wastewater can be achieved, we can make an asset out of wastewater for peri-urban farmers,” said Rijsberman. “In so doing, we can also help make sanitation affordable to those now most affected by the health risks of poor quality water.”

*#5 Managing agriculture for multiple ecosystem services.*

The report advocates multiple use of water, i.e. getting higher value at the river basin level by planning water use in integrated systems for domestic use, crop growth, aquaculture, livestock, and ecosystems such as wetlands. This is expected to offer scope for doubling and trebling water values at the basin level for situations where water is currently managed competitively among sectors (such as agriculture and environment) with an “either-or” approach. For example, “multi-functional” rice fields can grow rice, fish, ducks, frogs, and edible snails, thus generating livelihoods for small farmers while supporting high biodiversity and better soil erosion control.

*#6 Reform the state to improve the governance of water.*

While governments need to leave farm water management to farmers, farmer organizations and local communities, the state plays a critical role in water management. Yet often, the state is in need of water management reform. Governments will need to:

- enable water to be re-allocated from lower- to higher-value uses including transfers from agriculture to cities and industry;
- provide incentives for water conservation including rewards for saving water;
- set and enforce water quality standards; and
- establish and implement systems of water (use) rights or entitlements.

*#7 Deal with trade-offs and difficult choices.*

According to the researchers, there is a lot that can be done to relieve the problems of scarcity, but in reality, there will be a lot of hard choices about water that need to be made—often creating

winner and losers. Usually, the losers are the poor farmers, livestock herders and fishers. What is needed are informed negotiations where all these stakeholders are brought to the table.

“What we recommend here provides a new path toward the goals of food security, environmental protection and poverty reduction,” said Rijsberman. “But getting there will require many stakeholders to face difficult choices and take decisive action; there is no free lunch, but the alternative is a rapidly expanding world water crisis.”

**Editor’s Note:**

The Comprehensive Assessment of Water Management in Agriculture, the first of its kind critically examining policies and practices of water use and development in the agricultural sector over the last 50 years, was co-sponsored by the Consultative Group on International Agricultural Research, the UN Food and Agriculture Organization, the Ramsar Convention on Wetlands, and the Convention on Biological Diversity in a bid to find solutions to the challenge of balancing the water-food-environment equation ([www.iwmi.org/assessment](http://www.iwmi.org/assessment)).

The assessment was led by the Sri Lanka-based International Water Management Institute, one of 15 agricultural research centres supported by the CGIAR. The CGIAR is a strategic agricultural research alliance dedicated to generating and applying the best available knowledge to stimulate agricultural growth, raise farmers’ incomes and protect the environment. It supports 15 research centers worldwide conducting groundbreaking work to nourish the future. For more information, please visit [www.cgiar.org/](http://www.cgiar.org/).

The World Water Week in Stockholm is the leading annual global meeting place for capacity-building, partnership-building and follow-up on the implementation of international processes and programmes in water and development. For more information, please visit [www.worldwaterweek.org](http://www.worldwaterweek.org).

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