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## **A Parched Planet?: Beyond more Crop Per Drop**

**Poor access to reliable, safe and affordable water for food and livelihoods is a poverty trap for 70% of the world's poor people- the 800 million poor people that live mainly in rural Africa and Asia.**

*"It takes about seventy times more water to grow the food we eat every day than we need for drinking, cooking, bathing and other domestic needs,"* says Frank Rijsberman, Director General of the International Water Management Institute (IWMI), *"as much as 2,000 liters of water to grow 1 kilo of rice and 11,000 liters for a single quarter pounder hamburger"*. Many rivers in the arid and semi-arid regions of the world no longer reach the sea. These river basins are closed or closing, with all the water used before it reaches the mouth of the river. Developing water resources in closed basins is robbing Peter to pay Paul.

On March 20<sup>th</sup>, the thematic day on Water, Food and Environment at the 4<sup>th</sup> World Water Forum in Mexico ([www.worldwaterforum4.org.mx](http://www.worldwaterforum4.org.mx)), the participants will debate "Beyond More Crop Per drop" ([www.iwmi.cgiar.org/wwf4](http://www.iwmi.cgiar.org/wwf4)), the theme document released by IWMI with 9 partner organizations<sup>1</sup>.

*"Meeting the Millennium Development Goals on reducing poverty and hunger, together with increasing trends in food consumption, imply a doubling in the demand for food by 2050,"* says David Molden, Leader of the Comprehensive Assessment of Water in Agriculture, *"and without improvements in water productivity the demand for water in agriculture also doubles."* Doubling the demand for water in agriculture would lead to widespread water scarcity for the large majority of the rural poor.

*"Business as usual is not an option,"* says Rijsberman, *"increasing the productivity of water is a top priority for agricultural research. Improving water productivity by 40% on rainfed and irrigated lands could reduce the need for additional water for irrigation to zero."*

Water productivity for a rice farmer is the amount of rice produced for every unit of water consumed in the process; the crop per drop. Increasing water productivity implies getting more crop per drop. But if a farmer has not only a rice field but also a fish pond, then the total water productivity combines the amount of rice and fish produced per unit of water consumed. At the river basin level, **water productivity needs to be defined beyond more crop per drop**, including crop, livestock and fishery yields, ecosystem services as well as social impacts such as on health.

*“Providing water for food makes the difference between poverty and prosperity for the rural poor, 70% of the 800 million poor rural people today depend on water in one way or the other - to grow crops, for fishing, or jobs in agricultural processing”* says Molden.

*“The value of water in agriculture is measured in cents while the value of water for domestic use or industry is measured in dollars”* says Rijsberman, *“the consequence is that urban people out-compete farmers for water everywhere, and water is moving out of agriculture to satisfy the rapidly growing urban and industrial demand in developing countries.”*

The rapidly expanding requirements of water for food production, both in rainfed and irrigated agriculture, have entailed very large water withdrawals, significant modification of flow regimes, and degradation of water quality—all with major implications for ecosystem health. The challenge, therefore, for water management for food and environment lies in finding water for expanding cities, often taken from agriculture; growing food for a growing population; providing jobs for rural poor while sustaining the environment.

## **Blue and Green Water**

The myopic focus of water resources management on blue water alone needs to be replaced by an approach to manage the complete water cycle, including both green and blue water, is one of the key messages of “Beyond More Crop Per Drop”. Traditionally, what is defined as renewable water resources is only that share of rainfall that runs off into rivers or recharges the groundwater – this is only 40% of total rainfall – we call this blue water. Sixty percent of all rainfall never reaches a river or groundwater aquifer; it replenishes the soil moisture and evaporates from the soil or is transpired by plants – we call this the green water.

Green water cannot be piped or drunk, and is therefore safely ignored by urban water managers. But green water is crucial to plants, both in ecosystems and in agriculture, and needs to be managed carefully. Water managers need to manage the complete water cycle and account for the complete spectrum of management options from pure rainfed, to rainwater harvesting, supplemental irrigation, to full irrigation.

## **Increasing Water Productivity: Beyond More Crop per Drop**

For most regions of the world, increasing water productivity in agriculture, rather than allocating more water, holds the greatest potential to improve food security and reduce poverty at the lowest environment cost. Low productivity rainfed agriculture requires 4000 liters of water to produce a kilogram of cereals, often coarse grains such as sorghum or millet. Irrigation systems in Africa and Asia typically require 2000 liters of water to produce a kilogram of rice or wheat. In the best irrigation systems it takes only 500 liters. That is the promise and the challenge.

How can it be done? Some key examples (for more see [www.iwmi.cgiar.org/wwf4](http://www.iwmi.cgiar.org/wwf4)):

- enhancing the safe and productive use of wastewater in agriculture: making an asset out of wastewater;
- multiple use systems: single water systems for domestic use, agriculture, aquaculture, agroforestry and livestock; and
- supplemental and micro-irrigation: small-scale, low-cost technology that provides an entry level for poor people.

Water action cannot be successful on its own, rather it needs to be incorporated into an overall sustainable development approach that aims to achieve all Millennium Development Goals, not just the water and sanitation target. Vice versa, few Millennium Development Goals can be achieved without progress in the water sector. For achieving the hunger and poverty targets in rural areas, addressing the availability of water for food and livelihoods for poor people is crucial.

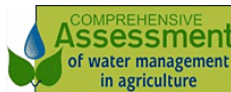
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Prof. Frank Rijsberman ([f.rijsberman@cgiar.org](mailto:f.rijsberman@cgiar.org)) is Director General of the International Water Management Institute (IWMI, [www.iwmi.org](http://www.iwmi.org)) in Sri Lanka. He is Beacon of the Water Food and Environment Theme at the 4<sup>th</sup> World Water Forum (March 16-22, Mexico). He is also presenting the water perspective at the 4<sup>th</sup> State of the Planet Conference organized by the Earth Institute at Columbia University (March 28-29, New York).

Dr David Molden ([d.molden@cgiar.org](mailto:d.molden@cgiar.org)) is a Principal Researcher at the International Water Management Institute in Sri Lanka. He is the Leader of the Comprehensive Assessment of Water Management in Agriculture, an effort involving over 700 water scientists and practitioners.

Rijsberman and Molden are available for interviews in Mexico, at the World Water Forum on March 20, 21 and 22 (book through Nadia Manning [Email: [n.manning@cgiar.org](mailto:n.manning@cgiar.org), Office telephone: + 94-11 2787404, 27884080; Extension: Room 3222], or Frank Rijsberman – mobile +94777560111); they will be present at a press conference at the 4<sup>th</sup> World Water Forum on Monday, 20 March at 13:00, room still to be determined.

Rijsberman is available for interviews in New York on March 27 and at the 4<sup>th</sup> State of the Planet Conference (March 28, 29, Earth Institute, Columbia University). To arrange an interview please contact Nadia Manning [Email: [n.manning@cgiar.org](mailto:n.manning@cgiar.org), Office telephone: + 94-11 2787404, 27884080; Extension: Room 3222] or Frank Rijsberman [mobile- +94777560111].



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<sup>i</sup> IWMI, The International Water Management Institute [www.iwmi.org](http://www.iwmi.org); SIWI, The Stockholm International Water Institute [www.siwi.org](http://www.siwi.org); SEI, Stockholm Environment Institute [www.sei.se](http://www.sei.se), RAMSAR, The International Convention on Wetlands [www.ramsar.org](http://www.ramsar.org); PAWEES [www.pawe.es.org](http://www.pawe.es.org); The Comprehensive Assessment of Water Management in Agriculture [www.iwmi.cgiar.org/assessment](http://www.iwmi.cgiar.org/assessment); INWEPF [www.maff.go.jp/inwepf/index.htm](http://www.maff.go.jp/inwepf/index.htm); ICID [www.icid.org](http://www.icid.org); CPWF, the CGIAR Challenge Program on Water and Food [www.waterandfood.org](http://www.waterandfood.org); IUCN, the World Conservation Union [www.iucn.org](http://www.iucn.org).