Editorial

Water for food – Possibilities and Innovative Solutions

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Water, as in any other sector, is essential for agriculture and in turn for food security. The link is simple: crops and livestock need water to grow. To give a few examples, producing one kg of rice requires more than three tons of water and a kg of beef some 15 tons (Hoekstra and Chapagain, 2008). Dietary habits around the world, thus, have a significant impact on water consumption for food. A personal diet that is rich in meat can require over five tons of water per day. This is in stark contrast to the fact that around the world there are nearly 870 million people whose daily intake of calories is insufficient to live active and healthy lives (i.e. chronic undernourishment) (FAO, 2012).

With increasing population and changing consumption habits, food demand is predicted to increase by as much as 70% by 2050 (Bruinsma, 2009). There is enough water and land capacity to produce enough to feed humanity in the future only if we act now to improve water use in agriculture (CAWMA, 2007). An equally important aspect of food security question also revolves around the fundamental problem in the distribution of food and the resources with which to access it (FAO, N.D.). Consequently, the main challenge facing the agricultural sector is not so much growing more food, but making significantly more food available on the plate in the decades to come.

To achieve this target, it is necessary is to reduce losses in storage and along the value chain. However, the statistics are alarming: In least developed countries (LDCs) as much as half of crops produced are lost to post-harvest while in OECD countries as much as 40% of food is wasted along the value chain and by consumers (WWAP, 2012). Reducing the food waste not only offsets the

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need for production of more crops but also help to reduce large water consumption.

While food security is a concern for all, what receives limited attention is that practically 70% of freshwater withdrawal at the global level is for irrigated agriculture. In LDCs this figure can be even more than 90% (FAO, 2011). Facing the competition from other sectors and due to more severe climatic variations and effects of climate change, water availability for agriculture is already limited and uncertain in several regions. This is set to worsen. Consequently, it is no longer enough to just think about the amount of water we need to grow food but we must also look at the way water is used from production to consumption.

Unsustainable water and land management practices to boost agricultural production have caused wide-scale changes in ecosystems and negatively affected the quality and quantity of water. The external cost of the damage to people and ecosystems and clean-up processes from the agricultural sector is significant. In the United States of America, for instance, the estimated cost is US$9–20 billion per year (Galloway et al., 2007).

Technology has an important role to play in improving productivity in agriculture while protecting nature. As 2012 edition of UN World Water Development Report (WWAP, 2012) puts it "*We will need innovative technologies that can improve crop yields and drought tolerance; produce smarter ways of using fertilizer and water; improve crop protection through new pesticides and non-chemical approaches; reduce post-harvest losses; and create more sustainable livestock and marine production*". This requires not only financial resources but good policy and governance. However, weak capacity and fragmentation of water-related institutions remain as key concerns in many regions.

Various scenarios suggest that if current population and consumption trends continue, by the 2030s, we will need the equivalent of two Earths to support us (GFN, 2014). While the validity of this claim is open to discussion, it does make the point that we cannot continue to consume natural resources at the current unsustainable rate if we care about everyone's benefit both now and in the future. Water will need to be managed so that supply and demand is balanced and shared in an integrated manner across sectors and across regions. This implies reducing the amount of water currently consumed to produce a reasonable and nutritious diet by improving on productivity and efficiency.

We are pleased to publish our Volume 2 Issue 1 of the "Future of Food: Journal on Food, Agriculture and Society", on the theme of "Water for Food". The selected research papers presented in this Volume will provide further insight on problems and innovative solutions on Water-Food nexus in regional and global perspectives. Furthermore, this edition enriches with the video documentary titled, "More than Irrigation – The Balinese Subak system as a unique form of cooperative water resource management in Indonesia", book reviews that brings critical outlook of the thematic books and the report and analysis section with senior scientists' views.

References

Bruinsma, J. 2009. The Resource Outlook to 2050: By How Much do Land, Water and Crop Yields Need to Increase by 2050? Prepared for the FAO Expert Meeting on 'How to Feed the World in 2050', 24-26 June 2009, Rome, FAO.

CAWMA (Comprehensive Assessment of Water Management in Agriculture). 2007. Water for Food, Water for Life: A Comprehensive Assessment of Water Management in Agriculture. London/Colombo, Earthscan/International Water Management Institute.

GFN (Global Footprint Network). 2014. *http://www.footprintnetwork.org/en/index.php/gfn/page/world_footprint/* (Accessed June 2014).

Hoekstra, A. Y. and Chapagain, A. K. 2008. Globalization of Water: Sharing the Planet's Freshwater Resources. Oxford, UK, Blackwell Publishing Pty Ltd.

FAO (Food and Agriculture Organization of the United Nations). 2011. AQUASTAT online database. *http://www.fao.org/ nr/aquastat* (Accessed May 2014.)

---------. N.D. Reducing Poverty and Hunger. Available at: *http://www.fao.org/docrep/003/y6265e/y6265e03.htm* (Accessed June 2014).

FAO, WFP and IFAD. 2012. The State of Food Insecurity in the World 2012. Economic growth is necessary but not sufficient to accelerate reduction of hunger and malnutrition. Rome, FAO. Available at: *http://www.fao.org/docrep/016/i3027e/i3027e.pdf* (Accessed June 2014)

Galloway, J. N., Burke, M., Bradford, G. E., Naylor, R., Falcon, W., Chapagain, A. K., Gaskell, J. C., McCullough, J., Mooney, H. A., Oleson, K. L. L., Steinfeld, H., Wassenaar, T. and Smil, V. 2007. International trade in meat: The tip of the porkchop. AMBIO: A Journal of the Human Environment, Vol. 36, No. 8., pp. 622–29.

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WWAP (World Water Assessment Programme). 2012. The United Nations World Water Development Report 4: Managing Water under Uncertainty and Risk. Paris, UNESCO.