

FAO points at the occasion of the World Water Forum 5 Istanbul March 2009

FAO seizes the opportunity of the Water Forum 5 to reaffirm that **access to water is indispensable for all aspects of human development**. Further, the instrumental value of water in attaining the Millennium Development Goals needs continuous emphasis. Human health, food security, energy production, and the integrity of our terrestrial environmental systems all hinge on responsible management of this common, but essential resource.

Agriculture is the dominant water user and therefore has a prime responsibility in meeting human demand for food but also managing the environmental risk of production: On average human beings need to drink between 2 and 4 litres of fluids a day but consume 2,000 to 5,000 litres through the water used in producing their food. Maintaining this level of production will need much smarter allocation of scarce water resources to ensure fundamental human needs in high quality water can be met and other productive uses satisfied. The future of water therefore lies in large parts in a more productive agriculture.

Energy is also a major key player of the water sector: hydropower and bio-fuels are on top of the agenda and agriculture is a significant energy consumer: groundwater, pumping, field practices, chemicals, etc. FAO has made important contributions to the international debate through its conference in 2008 in Sirte and a High Level conference in Rome June 2008. Bioenergy, and in particular bio-fuels, present both opportunities and threats, in particular in terms of water use and water quality. The pros and cons of biofuel production must be considered on a case by case basis.

Acceleration of global changes leading to shocks: the world is facing rapid and unprecedented global changes, including population growth, migration, urbanization, climate change, desertification, drought, land degradation and major shifts in dietary preferences. These global changes are intensifying local competition for water and productive land and some of the world key producing areas are now compromised by water scarcity. Agriculture's mission is therefore two fold. It has to close the gap between supply and demand in the long term BUT it also has to work to prevent shocks and raise resilience of the most vulnerable.

Much higher levels of public and private investment in agricultural water management are needed to raise agricultural productivity, reconcile competing uses of water and reduce pressure on water resources: The fight against hunger has met strong setbacks in 2007 and 2008 due to food price shocks. Today FAO estimates that 960 millions are malnourished. But competition for land and water resources has to be reconciled amongst all economic sectors. Investment in modernization of irrigation systems and related management and user institutions will be necessary if agriculture is to continue to intensify production and raise overall water productivity Investments in agricultural water management will need to focus on water productivity gains in order to reach more MDGs per drop.

A new era of cooperation between sectors: It is time to stop talking of competition between water sectors and move to a collaborative mode within national economic sectors and across our shared river basins and aquifers. Multiple Uses of Water on large irrigation systems, wetlands and rice systems is a widely spread phenomenon which provides essential water services to the most vulnerable.

BACKGROUND FACT SHEET

Water use in agriculture

- Freshwater is becoming scarcer, due to the increasing needs of an increasing population, with an estimated 1.8 billion people threatened by severe water shortages by 2025, compared to 1.2 billion today.
- Agriculture accounts for 70% of all freshwater withdrawal compared to 20% for industry and 10% for municipal and domestic use. In terms of actual consumption return flow deducted, the share of agriculture jumps to 90 %.
- Under water scarcity conditions, treated wastewater reuse is recognized as a resource that can be captured for irrigated agriculture and prevents coastal and inland watercourse degradation. The reuse of wastewater for agriculture is mainly applied by urban resource-poor farmers as a means to generate income by growing food. With recent soaring food prices, increasing costs of food supply and distribution to urban areas, food is less accessible to the poorer sectors of the population. FAO advocates and promotes urban and peri-urban agriculture as a key area of agricultural policy and sustainable development.
- Rapid population growth in urban areas means there is less water available for agriculture.
- An allocation of water also needs to be reserved for less consumptive, but important uses such as hydropower, navigation and sustaining the environment and ecosystems.
- The environmental impact of irrigated agriculture on land and water quality has forced several major cereal producing regions into agricultural decline.
- In Africa and Asia more than 80 % of water withdrawn by the three sectors (agriculture, municipalities and industry) is used by agriculture compared to less than 40% in Europe and North America. And while in Africa and Asia less than 10% of the water is withdrawn by industry, in Europe and North America this is around 50%.
- Almost 55% of its renewable water resources in the Near East and North Africa is withdrawn for agriculture compared to less than 3% in sub-Saharan Africa and more than 45% in South Asia.

Water and food relationship

- As the global population grew from 2.5 billion in 1950 to 6.5 billion today, food production was able to match population growth through improvements in cereal yields and expansion of irrigated land, particularly in Asia.
- But public investment in agriculture including investment in public irrigation systems and technological research has declined.
- Now food prices have risen again and with the population expected to reach 9 billion by 2050 the world is going to have to massively improve water productivity in agriculture if it is to feed itself.
- On average human beings need to drink between 2 and 4 litres of fluids a day but consume 2,000 to 5,000 through the water used in producing their food. Water quality in primary production and food processing is embedded in the production and trade of safe food and consumer products.
- On average it takes one litre of water to produce one calorie of food energy.

- Growing urbanization and increased wealth in many parts of the world has led to an increase in demand for a varied diet including more meat. Protein rich-diets require substantially more water than vegetarian diets.

Climate change and biofuels

- Climate change is likely to hit poor smallholder farmers in the developing world particularly hard living as they do on marginal lands and relying on rainfall to sustain their livelihoods.
- Extreme weather events, such as storms, droughts and flooding, can contaminate freshwater and damage facilities used by farmers to store and carry water.
- Around 2% of water for irrigation is used for liquid biofuel production. It takes around 2,500 litres of water to produce 1 litre of liquid biofuel used for transportation – the same amount needed to provide basic food for one person for one day.
- Even though globally the amount of water withdrawn for biofuel production is modest, locally water scarcity problems may worsen due to irrigation of bio-ethanol feedstock.
- The main impact of climate change will be through water. The significant food systems are at great risk: deltas, large valleys, etc.

Irrigation and rain fed production

- 40% of total food production in developing countries is grown on land that is irrigated. By 2030 it will be close to 50%.
- Only 7% of cropland in Africa is irrigated and only 4% in sub-Saharan Africa, compared to 38% in Asia. In total, 29 % of arable land in developing countries is irrigated.
- Between 1961 and 1999, the amount of irrigated land in the world grew 1.8% a year, resulting in a total increase of almost 130 million hectares.
- Between 1997 and 2030 water withdrawal for irrigation in developing countries is expected to have grown by 14%.
- An improvement in even basic water management techniques in rain fed agriculture in Asia and in sub-Saharan Africa could help to improve crop yields and counter hunger.
- Africa only uses 5 % of its renewable water resources, and sub-Saharan Africa even less than 3%, so the potential for expansion of irrigation is enormous.

Future challenges and opportunities

- The challenge for global agriculture is to grow more food with growing world population, declining allocations of land and water, and the negative impacts of Climate Change on food production.
- To do this will require a much more responsible and responsive approach to water use and water management in agriculture.
- The performance of existing irrigation systems will need to be raised and more arable land converted to intensive production while mitigating environmental impacts.
- Strong water productivity gains have been and can still be made from use of improved, drought-resistant or water-saving seed varieties as well as the use of a variety of soil and water conservation techniques.
- In a context of global instability, greater uncertainty in the financial system, non predictable price fluctuations, investments in agriculture appear to be the cornerstone

of any sustainable solution to overcome the challenge not only to ensure adequate food for 963 million hungry people in the world, but also to feed 9.2 billion people in 2050:

- The WWC/GWP Vision and Framework for Action in 2000, estimated that the annual investment requirements for agricultural water would need to rise from the current levels, variously estimated to be in the range US\$25-30 billion, to US\$40 billion by 2025.
 - In a recent systematic analysis of the options for meeting the MDG for Hunger, the annual investment and running cost of all water resource related management was estimated to be US\$ 47 billion in the period 2005-2015, rising to US\$67 billion in 2015-2030, and falling back to US\$58 billion in 2030-2050
 - A 53-nation conference on water in Africa held in Sirte in the Libyan Arab Jamahiriya in December 2008 concluded that Africa needs \$65 billion investment for a twenty-year period for around 1000 water improvement projects - the equivalent of 17% of OECD yearly agriculture subsidies or 5.4% of global military spending.
- A key issue is to increase not just the quantity but the effectiveness of investment though investing in capacity building, better governance, monitoring of investments and results, etc.