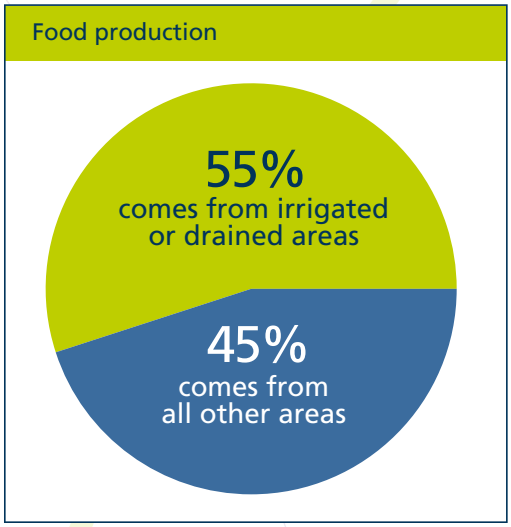
Water and Food

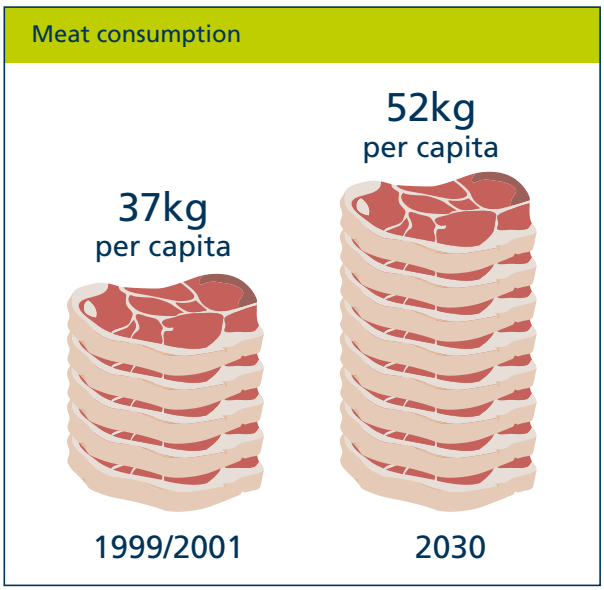
Online consultation: sub-stream - 4 -11 February 2013

Food production systems at risk

Objective: Agriculture - including crop farming, fishery, forestry and livestock - is the largest water user and needs to adapt to increasing uncertainty and water scarcity. Food is an essential human need and is dependent on water access. Without water, no food can be produced. The discussion aims to explore options and strategies to transform agricultural systems into "water smart systems" where less water is used to produce more food for the hungry, with reduced impact on the environment, and with increased integration with the other sectors.

In the last fifty years, the world's cultivated area has grown by 12 percent and agricultural production has grown 2.5 to 3-fold (FAO, SOLAW, 2011). Agricultural water use has helped meet rapidly rising demand for food, and has contributed to the growth of farm profitability and poverty reduction as well as to regional rural development and environmental protection. 55% of food production comes from irrigated or drained areas and 45% from the other areas. Inland fisheries are an important activity for many poor people in rural areas, including from irrigated schemes, as well as an important source of proteins worldwide.

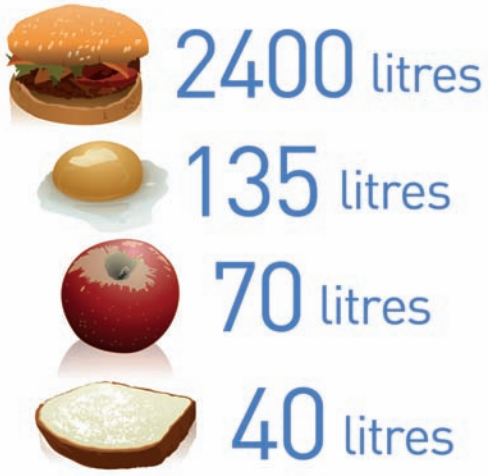




But...It takes in average 3000 liters of water to produce the food needed to feed one person for a day. The booming demand for livestock and fish products in particular is increasing the demand for water. Per capita fish consumption was estimated at 16.7 kg per capita in 2006, with a growing share coming from inland capture fishery and aquaculture. Meat consumption will increase up to 52 kg per capita in 2050 from 37 kg in 1999/2001. These uses are also affecting water quality, which in turn reduces availability. With the world population expected to increase to 9 billion people by 2050, and most of that growth expected in urban areas, the challenge of feeding the world in a resource scarce environment has never been greater.

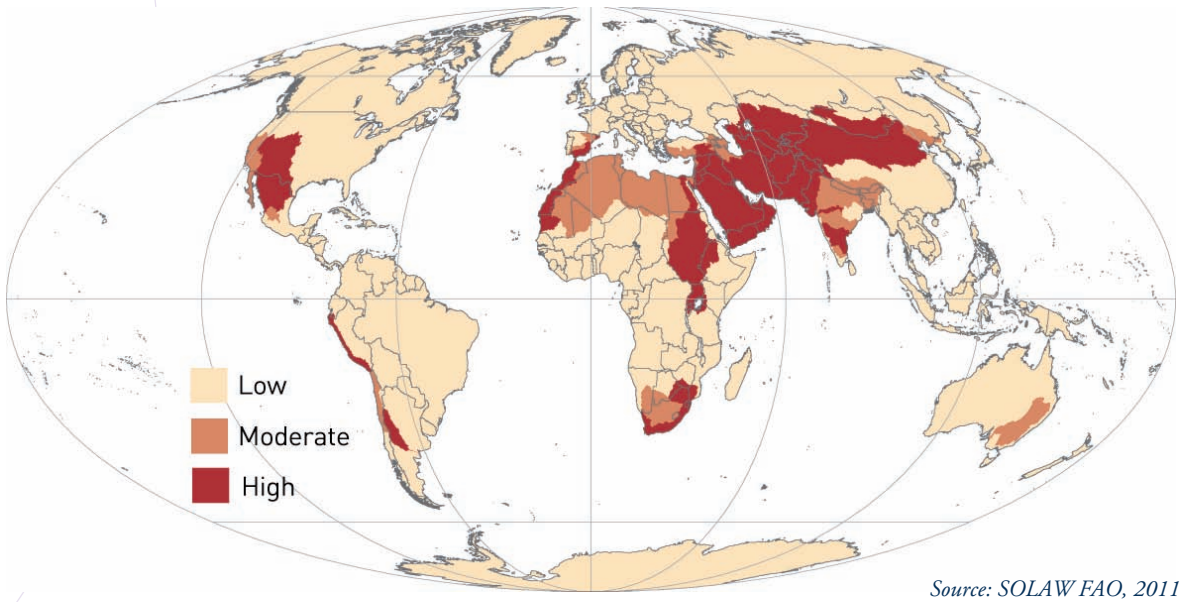
Already today in an increasing number of regions and watersheds, the demand for water outpaces available supply translating into environmental degradation and increased competitions among different users. About 12 percent of the global land area is currently in use for cultivation of agricultural crops, and 70 percent of all water withdrawn from aquifers, streams and lakes is used for irrigation. When water is used by domestic, industry and agriculture, including aquaculture, only lower quality water is returned to the system directly or by non point sources pollution (nutrients, pesticides derived from crop, fishery and livestock management). Yet in some countries in the arid and semi arid zone, food production is only possible by irrigating.

Water is needed to produce food



Water security, economic security and food security may require trade-offs. Projections vary but global agricultural water consumption (including both rained and irrigated agriculture) is estimated to increase by 19% by 2050. Much of that increase will be in regions already suffering from water scarcity. There is no doubt that competition for water or conflict of any type at any scale increases the risk of "water insecurity". With that tension, elite or more powerful social groups (or even countries) are likely to end up with higher water security whenever competition or conflict occurs.

Physical water scarcity by major river basin



Source: SOLAW FAO, 2011

Food production is not negotiable but what can be negotiated is where, when and how food is produced and consumed. There should be more produced with less. There should be multiple uses of any water withdrawn along the way.

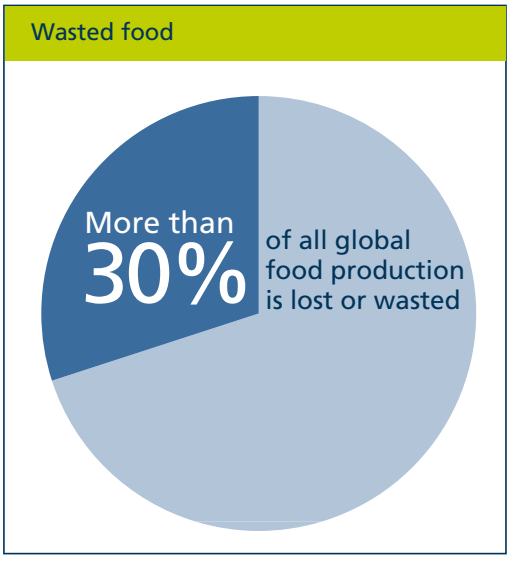
Complex challenges lay ahead for managers and decision makers. The Rio Dialogue Days recommended to develop food systems that are sustainable and promote health. In the wake of increasing demand, changing consumption patterns, recent financial turmoil, and climate change, food security and agricultural livelihoods have regained importance in development planning.

The fundamental challenge is how to meet ever-rising demand for food, feed and fibers in a context of volatile markets and climatic uncertainty while at the same time increasing farmer incomes, reducing poverty, adapting to climate change and clean energy and ensuring environmental sustainability. All this is to happen learning from the past but also renovating the "agricultural sector as a whole", developing more synergies and multiple-use water systems with an increasingly constrained water resource base.

This has to be achieved in a context of increasing competition for water for domestic, industrial, energy and agricultural use. In agriculture, competition is exacerbated within the sector itself by competitive demand for food security versus high value crop production, feed production, biofuel production, aquaculture or tree planting.

There are solutions within and outside the agricultural sector. The World Water Forum 6 in Marseille concluded that many possible solutions for a sustainable agriculture lay in a water responsible world. Experts listed the many solutions available to address growing water scarcity for food and agriculture. Were discussed technologies and management approaches that raise the efficiency of farming systems and the productivity of water use in agriculture, including aquaculture and livestock sectors. One key point was the need to combine efficiency with recycling and reuse of water, drainage, and introduce multiple-use in design.

Behavior changes, especially in terms of diets and patterns of consumption, also influence water demand in agriculture. Nutritious traditional crops have been lost in many countries, often replaced by less nutritious ones. Urban dwellers shift to more animal and fish products. These trends lead to water greedy diets and over-fishing. In addition, more than 30 % of the food produced with that scarce water is in fact lost and wasted in the supply chain and by consumers. Major gains can be obtained in the supply chain by reducing the amount of food losses and waste - in storage, transportation, food processing, wholesale, retail. Policies and strategies are needed at all level from local sustainable agriculture and fishery as well as nutrition plans to regional, national and global programs.



Successful strategies for advancing food and nutrition security and health have been identified, however there is a tendency to address these issues through silo approaches, which reduces their effectiveness and impact. To improve sustainable food production, access to adequate and safe food and to reduce chronic malnutrition, governments need to strengthen in a coordinated way their policies and strategies related to development, agriculture, health, environmental and social protection among others.

Individual consumers and farmers are at the centre of the solutions. Agricultural policies have primarily benefitted commercial farming with productive land and access to water. However, a significant part of small-scale producers are still locked in a poverty trap of high vulnerability, land degradation and climatic uncertainty. Billions of small farmers, including herders and fishermen, have their share in feeding the world and managing its landscape and resources. They need appropriate support as well through incentives and governance practices.

Development, agriculture, land, and water institutions in particular need to respond more effectively to the needs of farmers. Secure, equitable, and reliable access to land and water are essential conditions to ensure sustainable production intensification. Urban planning must also connect to rural development as farmers are the most secure source for a diverse food basket. Increasing transparency in water allocation and management will be needed together with well targeted investments in modernization of irrigation management, infrastructure and service provision, institutional restructuring, synergies with the agricultural policies and upgrading of the technical capacities of farmers and water managers. In some areas, it is about managing transitions.

Innovate and rethink water and food and nutrition security answers. Today's agriculture sector faces in fact a complex series of challenges: i) produce more food of better quality while using less water per unit of output; ii) provide rural people with resources and opportunities to live a healthy and productive life; iii) apply clean technologies, multiple uses systems as well as irrigation and drainage management that ensure environmental sustainability; and iv) contribute in a productive way to the local and national economy, from producer to consumer. This last point relates to the dimension of the post-harvest losses and food waste issues, and the need to consider the efficiency of the food supply chain from field to fork, in order to reduce unnecessary waste, as well as to promote sustainable diets and to prevent hunger and malnutrition.

The awareness of the interactions between food, its supply chain, energy supply, poverty, environment and climate change is increasing as well as the recognition that water plays a central role in all those issues. Water for food needs to consider the overall context in which water management and its management for agriculture takes place.

The agriculture sector must become climate-smart to successfully tackle current food security and climate change challenges. For this it should be water-smart.