

# Nine billion consumers and the water crises

In recent decades, increases in food supply have outpaced population increase. While undernourishment has declined, overweight, obesity and micro-nutrient deficiencies now affect 2-3 times more people. With game-changing circumstances, like global warming, water crises, and concerns for human health and well-being, more of the same is not an appropriate approach. A sound vision is needed for food and nutrition security in a turbulent future. Consumers need to be involved in strategies to care for and share finite water resources.

**Too little and too much food** | Paraphrasing a well-known quote, the contemporary world food situation can be described as “Malnutrition is what happens while society is busy making other plans”. While the determination to eliminate hunger has been a fundamental principle for basic security and stability in society, an opposite type of malnutrition has exploded. Well over two billion people, in rich as well as in poor countries, are now overweight or obese. The most rapid increase is among children, a dire indication for the future. Even within families and for individuals, a double burden of malnutrition is documented.

Global prevalence of undernourishment is now about 10 per cent. In many countries, including low-income ones, it is below this level. According to statistics compiled by FAO, food supply in society has increased by 30 per cent per capita between 1961 to 2011, parallel with an increase in total population from about three to seven billion. The amount of food produced, in the field and in aquatic systems, is about twice of what is needed for “a healthy and active life”.

With 800 million people estimated to be undernourished, food insecurity continues to be a dreadful reality. However, undernourishment cannot be explained by a lack of food nor by water predicaments. Has anyone heard about famines in California even though it is facing the worst drought in generations?

Advances in production have resulted in an abundance of food with more variety all year around, even in pockets of poor countries. Improved supply has been facilitated by better transport, storage, marketing, trade arrangements, and processing. Needless to say, problems related to production, distribution and access remain barriers for progress in large parts of the world. Millions of farmers are unable to access the market in places where more and more people live.

**Too little and too much water** | Today and for the future, the situation is both better and worse. Better in the sense that productivity has increased, i.e., more crop is produced per drop. Significant increases in total production would, however, not have been possible without exploitation of additional water and other resources such as better seeds and fertilizers. A range of opportunities for a more worthwhile use of water and improvements in livelihoods are available. Many of these are small scale and contextually adapted; valuable crops can be grown in water-short areas, there are promising trials to expand farming into salinity affected areas, etc. Similarly, rainwater harvesting provides opportunities as illustrated by the 2015 Stockholm Prize Laureate, Rajendra Singh and his work in dry parts of India ([www.siwi.org/prizes/stockholmwaterprize](http://www.siwi.org/prizes/stockholmwaterprize)).

Prospects are worse in the sense that global warming amplifies variability of rainfall with prolonged periods of drought, sudden floods, risks for fires and changes in the distribution of pests and diseases. Risks have to be dealt with in parallel with an augmented inter-sectoral competition. Expanding urban sectors and populations need and want more water and also more energy, some of which comes from hydropower.

The plights of droughts or floods are not over. Often the challenges are compounded by other calamities. For instance, California suffers from a drought that has been building up for about four years. In the Sao Paulo and Rio de Janeiro metropolitan regions, industrial and economic giants in Latin America, a drought has developed during a similar four year period.

But there, as well as elsewhere in the world, the challenge is reinforced by pollution. With less water, the concentration of deleterious substances increases and hence the need to transfer and/or treat water. Safe water may be found outside the affected regions with implications for the donor basins. Generally, water demand for production of food is in a tough position in this struggle. Scarcity situations illuminate conflicting and incompatible interests as well as the links between water, energy, food, the environment and overall development.

**In search of a sound vision** | The troubling as well as the promising trends are elaborated in numerous statements and studies. By and large, a systems perspective is lacking and so are alternative visions and scenarios. We often hear about silos in planning, i.e., a lack of coordination or integration across sectors and departments. Food systems are a case in point. Public debate focuses on production. Less attention is paid to how food is used and what kind of benefits and costs are associated with stages in the food supply chain. Frequently used terms and associated statistical information are misleading. For example, “food consumption”, is invariably equated with food intake, i.e., what is eaten. However, “food consumption” is an economic term that refers to the amount bought or procured for various uses and includes or, rather, ignores food waste. Since losses and waste are in the order of one third of production and since overeating is considerable and a major reason for malnutrition, a proper terminology for what happens to the food produced is vital. With silos and a misleading terminology and associated statistics, evidence, scenarios, planning and management become flawed.

**Projections and contexts** | An authoritative projection of the additional food needed by 2050 suggests an increase by 60 per cent from 2005/07. This is substantially higher than the assumed increase in population and the difference can partly be explained by an ongoing shift in dietary preferences; more grain is needed for fodder to meet a growing demand for animal food items. Projections also includes a calculation that per capita food supply will continue to increase and reach 3,050 kcal/person/day in 2050.

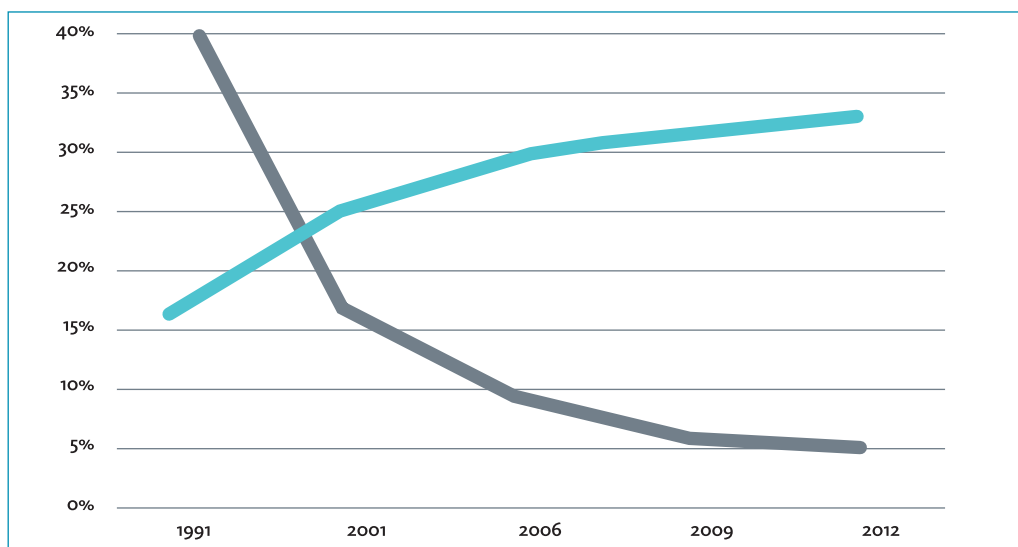


Photo: iStock

Figures on production and supply of food should be compared with the recommended intake for a “healthy and active life”. Healthy diets should contain a combination of protein, fat and carbohydrates, with adequate micro-nutrients. Depending upon demographic and other characteristics, the intake requirement varies between 2,000 to 2,500 kcal/capita/day, on average. However, some studies indicate actual average intakes below 2,000 kcal/capita/day, not only in low-income countries but also in rich societies.

The most recent UN projection suggests a world population of 9.7 billion in 2050 and it may pass 11 billion in 2100. We should also expect that the average disposable income will continue to grow. Indeed, the needs and the wants of consumers, some with

**Figure 1: Overweight/Undernourishment: Ghana**



**The double burden of malnutrition**

While prevalence of undernourishment fortunately goes down, an abundance in the supply of energy-dense food of poor nutritional value contributes to exploding levels of overweight and obesity, also in low-income countries.

● Overweight/obese adults    ● Undernourished population

Photo: iStock



more cash, some with less and some virtually without money, will be a significant driver in food systems. A growing middle-class is already a significant feature in most parts of the world.

As far as we know, nobody has attempted to calculate the various implications of a supply at a level above 3,000 kcal/ person/ day for a population of 9.7 billion, let alone for 11 billion. Among the likely consequences: a more intensive pressure on water – notably water resources below the ground since surface water is increasingly uncertain and already heavily utilized – and other landscape resources. Increased per capita supply also implies that the gap between supply and recommended intake of food widens, that is, more overeating and/ or more losses and waste of food produced.

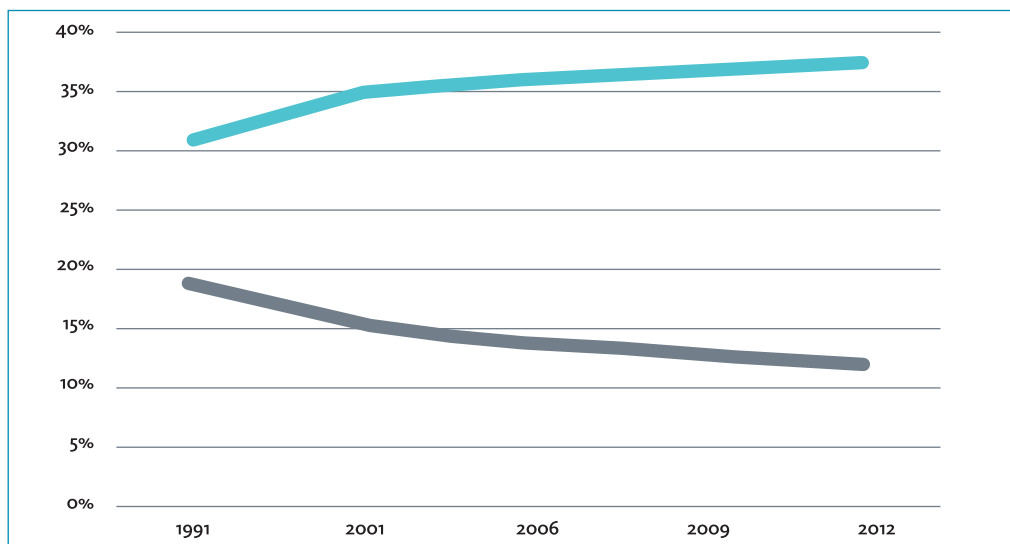
Instead of more of the same, an alternative vision for a desirable development is warranted. The links between food production, supply, demand and consumer preferences and food intake need to be better analyzed. Food policies need to be aligned with both water realities and human well-being and dignity.

Production of food from agriculture and fisheries with a high nutritious value in relation to resource use and with limited environmental implications is sound. Similarly, better transport, (cold) storage and marketing facilitate that more of the produce will reach the market, quicker and in a better condition. Another sensible component is to discourage the losses and waste of food, which are predominantly a phenomenon among consumers. Investments will be required, but expenses in the supply chain must be compared with outlays and risks that are associated with a strategy concentrating on production. Improving supply chain efficiency implies that misuse of water, energy and land are reduced, that farmers can better access places where consumers are, and that consumers do not spend money on food that ends up in the waste bin or leads to over-eating and malnutrition, with high social and environmental costs.

**What is "lagom"?** | Given situations of too much and too little, it is relevant to ask: what kind and how much food may ensure a healthy and active life? How can food best be produced and distributed in an era of growing needs and wants, and pending water crises?

Principles for a desirable future and viable strategies can be found in several concepts. For instance, the notion of a sustainable diet promotes the idea that production should have an orientation which respects environmental conditions while meeting cultural and nutritional requirements. The Swedish word "lagom" is an expression describing norms, practices and behaviour that favour a fair and just distribution, avoiding situations of too little and too much and respecting limitations in what is or could be made available.

**Figure 2: Overweight/Undernourishment: Global**



**Figure 1 and 2.**

Trends in the prevalence of undernourishment and being overweight and obese globally and for Ghana, 1991-2012.

Source: Lundqvist, J., Grönwall, J. and Jägerskog, A. (2015) *Water, food security and human dignity – a nutritional perspective*. Ministry of Enterprise and Innovation, Swedish FAO Committee. Page 33.

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## The road to “lagom”:

- Food, resources and environmental policies must be formulated with due regard to nutritional requirements on the one hand and the water crises on the other.
- Cropping and farming systems and mixed farm-fishery systems need to be designed with consideration to cultural and resource contexts.
- Policies that enhance the efficiency in the food supply and value chain need to be promoted; with special attention paid to the trade-offs concerning investments and institutional arrangements related to: production, distribution (transport, storage, trade and marketing) and consumer behaviour.
- Attention should be paid to synergies of fisheries and agriculture in food systems for good nutrient supply.
- Cross-sectoral trade-offs with food beyond the water perspective, e.g., impacts of energy supply in diminishing food security and nutrition, must be assessed and managed.
- Realistic long-term goals for reduction in losses and waste of food must be decided on, with clear targets and indicators for every second or third year.
- Strong alliances between government agencies and the private sector, as well as civil society organizations, are already a promising feature in governance of water and food systems – these alliances should also involve consumers, for raising awareness and sharing responsibility in the realization of food security and nutrition ambitions.
- The monitoring and evaluation of SDG goals and targets should be carried out inter alia, with the above suggestions in mind.
- Independent, high-quality research units should be provided with the resources and opportunities to analyse and propose effective and viable solutions to the challenges listed above.
- Inaction and laissez-faire erode opportunities for progress. Healthy and forward-looking alliances must be part of every step, from formulation to execution and validation of policies. BAU should be interpreted as: Businesses, Authorities and Us.

### The authors

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It draws on *Lundqvist, J., Grönwall, J. and Jägerskog, A. (2015) Water, food security and human dignity – a nutritional perspective*. Ministry of Enterprise and Innovation, Swedish FAO Committee.

[www.government.se/information-material/2015/07/water-and-food-security-in-a-future-that-is-not-what-it-used-to-be](http://www.government.se/information-material/2015/07/water-and-food-security-in-a-future-that-is-not-what-it-used-to-be)