Photo: SXC

Overeating, Hunger & Waste

– A Recipe for Worsening Food and Water Crises

The world population has increased 50 percent over the last half century alone. That is a staggering 3 billion more mouths to feed. Despite a serious backlash during the last year, never before have so many had food to eat. And never before have so many suffered from being overweight and obese. Both under nourishment and over eating are increasing. Through these questionable trends, vital social issues are linked with dire natural resources consequences: water and other natural resources are over-exploited, rivers are running dry, downstream ecosystems are suffocated and pollution loads are heavy in what little remains of water systems in regions worldwide.

Humans are carving a new chapter of water and environmental history. Populations continue to grow, get richer and substantially increase the demand for food, energy and other water dependent goods and services. Additional pressure is being placed on already taxed water and land resources. With a business-as-usual approach, water requirements for additional food alone may increase another 50 percent during the first half of this century.

Most of these trends are well-known but their drivers and implications are poorly understood. Recently, SIWI released a report that highlights a less known issue, namely that about half of the food grown is either lost, converted or wasted "from field to fork". The lost food is also a loss of water. Reducing this waste is a key opportunity to achieving food security and sustainable water use. But reducing waste is neither easy nor a silver bullet solution to future food crisis. This essay follows up that study with a closer look at the under examined divides in the water-food nexus.

What Food for What Security?

Increasing food supply is generally promoted to improve food security and combat hunger. If domestic production is insufficient or not satisfactory, trade is an option for those with the required money or political clout. But for the more than 900 million people who are undernourished, hunger results from a lack of means to access food. The majority of them live in rural areas, where food is or could be produced. If the poor and hungry do not get access to food or are unable to produce for their needs, food insecurity will remain regardless of the gross production and supply of food at national and international levels.

For a number of years, many developing economies, and also the world economy, have grown three to four times faster than population increase. Current financial and economic turmoil may change these relations. While hundreds of millions of people have been lifted out of extreme poverty, the number of people who have the equivalent of one US dollar or less per day to spend is still alarmingly high. For poor people, increased income implies demand for more food. But gradually the demand also shifts towards more variety, including a larger share of animal and diary food items, fruits and vegetables. The nutritional value of adequate and more varied diet is certainly important.

From a public health, natural resources and environmental point of view, it is important to discuss what is a reasonable diet. But how can this question be approached as a political and human behaviour issue? There is a substantial difference in the consumptive use of water to produce the food supplied for the enjoyment of wealthy people, as compared to the situation among the poor. On an average national basis, the food supply in an OECD country "costs" about five tons of water per person and day. In many African countries, one ton or less is required for food supply.

Even with substantial recent increase in number of undernourished, the number of people who suffer from overeating and obesity is some 25 percent more than those that are hungry. Both numbers are on the rise. Moreover, considerable amounts of food, perfectly fit for consumption are lost and wasted. If production and supply approaches are not combined with demand side solutions, it is likely that unsustainable diet and consumption patterns will spread as developing countries gain purchasing power.

Triple Threat for Water Resources

There are three main reasons for variation between the consumptive water use for food production between rich and poor countries. First, is the diet composition – as outlined above, richer nations demand and consume a greater proportion of water intensive foods. Second, affluent societies have an oversupply of food – much more food is provided and consumed than what is required to be healthy. All the food that is produced, including the discarded amounts, has contributed to the high pressure on water and land resources. Further, the emission of green house gases from the food sector is at par with the transport sector. This occurs during production, distribution, processing and improperly managed food waste.

Third, the vulnerability to spoilage of certain food items can increase waste and losses, and therefore water consumption. Food items that are becoming popular with increasing wealth, such as animal and dairy products, are susceptible to deterioration. They may also carry or develop substances that cause disease. In general, animal and dairy products should be prepared, preserved or consumed within days after they have been produced. We have also all heard about mad cow disease and avian flu. This means the risk for losses and wastage of food along the supply chain is increasing, particularly for items that are most water intensive to produce and are the largest emitters of green house gases.

This does not imply that these food items should be discarded. More care must be paid to their handling. It makes sense to discuss what a reasonable level of consumption of food products is.

Clear Terminology Needed

Literature on food security features considerable confusion in terminology (See Box 1). To better understand the dynamics of the food chain and what constitutes sound and robust food security, it is essential to recognise the large losses, conversions and waste that occur throughout the food production and consumption cycle. Our estimates are that roughly half of the food that is available at field level is lost, converted or wasted as compared to the intake of food. The accuracy of the estimate may be challenged, but not the order of magnitude. Figures on food supply indicate that on average, at a global level, 2,800 kcal per person and day are supplied. This level of food supply at national level, or 2,700, is usually recommended for food security at household or individual level. As a comparison, the amount of food produced at field level is estimated to be 4,600 and the amount of food intake is in the order of 2,000. Incidentally, this is also about the level of energy intake that is recommended in medical and nutrition literature. If we do not use concepts that clarify the differences between production, supply, demand and consumption, gaps in our understanding of food security will prevail. This makes effective policy less likely to be formulated and executed.

Tackling inefficiency, waste and gluttony offers hope. Food security could be improved for a lager share of the world's population provided that losses, waste and overeating are reduced. Such a strategy is also economically rational for individuals and society at large. It is important to define a realistic reduction of losses and waste; the cost and effort will obviously increase for each additional attempt to reduce them.

Photo: Jorc Navarro - SXC

Box 1. Misleading Terminology Compounds Confusion on Food Security

Terminology in literature is unclear and a source of confusion over the main dimensions of food security. Important concepts are used in a manner that makes it impossible for the reader to understand the distinctions between:

- The amount of food that is produced and available at field or farm level.
- The amount of food that is converted from vegetarian to animal food items.
- How much food is available on the market, i.e. the supply?
- How much is food demanded and bought, i.e. the effective demand?
- The intake of food, i.e. how much food is actually eaten?

Losses Mean Losers and Unpaid Costs

Projections point to continued population and economic growth. To reduce poverty and to realise the UN development goals, resources must be wisely and effectively used and not wasted on short-term excessive consumption. The prevailing high rate of losses and wastage in the food sector aggravates water stress, competition and environmental challenges. By and large these costs are not accounted for in conventional budgets and prices. All people, and not only decision makers, should conceive the basic pre-conditions for a stable and sound development.

Produce More and Waste Less

It is prudent to look at different options to improve food security. The demand for water from other sectors and interests, including environmental considerations must be taken into account. Agricultural production and productivity need to be improved. However, if the magnitude of losses and wastage goes unabated, pressure on natural resources will intensify with consequences that are hard to foresee, but are likely to be significant. The situation looks quite different in different parts of the world. In Africa and Asia, low productivity, inadequate production and large-scale poverty result in high food insecurity. In these areas, it is vital to stimulate increased production for domestic consumption, locally and at a wider scale. However, it is not only production per se that is important. Much more attention needs to be paid to post harvesting technologies, better storage, transport and marketing to benefit from what is actually produced.

In other parts, notably in OECD countries, overeating and waste are characteristic features in the food sector. Whether these features may be associated with food security is debatable but it is without question that the food sector in rich countries is putting massive pressure on water and land resources globally. This increasingly reverberates in all regions. Trade can alleviate consequences of local and regional scarcity. But a common future, which is sound and stable, requires a series of actions to improve production and supply and curb over consumption and waste. As indicated, the measures needed look different in different parts of the world, but their urgency is the same.

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Download the report by SIWI "Saving Water: From Field to Fork – Curbing Losses in the Food Chain" at www.siwi.org.