Action Perspectives on Water and Food for the UN Water Conference in 2023

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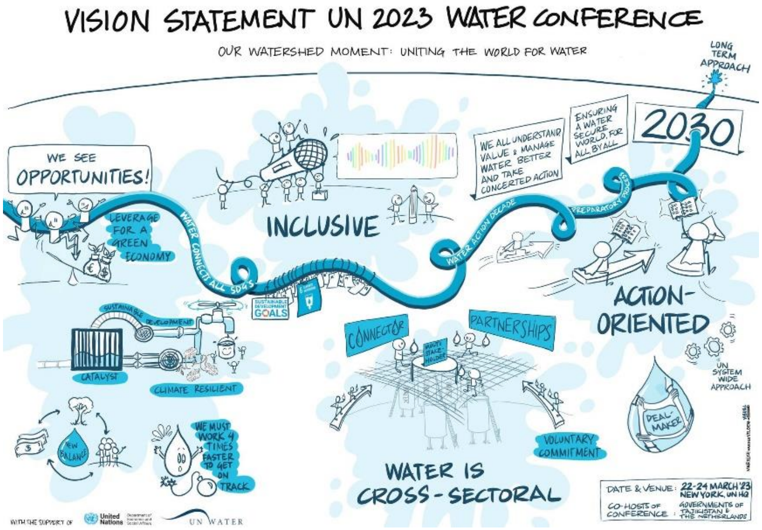
- An invitation to contribute to two action perspectives -



The Kingdom of the Netherlands together with the Republic of Tajikistan jointly organise the first UN Water Conference (22-24 March 2023) in almost half a decade. The UN 2023 Water Conference is a unique opportunity for the world community. It comes at a time when there are urgent needs for water action. The conference will acknowledge water as an enabler for transformations in various domains.

The conference aims to mobilize all sectors, actors and countries and create the political momentum needed to act. A main outcome of the Conference will be the Water Action Agenda. The Water Action Agenda is the collection of all water-related voluntary commitments to accelerate progress in the second half of the Water Action Decade 2018-2028 and second half of the 2030 Agenda.

Water and Food systems and the Water Action Agenda

The government of the Netherlands explores the opportunities for joint commitments around two action perspectives that link water and food systems.

Wageningen University & Research is supporting the host of the UN Water Conference in setting up action perspectives on Water and Food for the UN Water Conference and in getting commitment for these action perspectives with the aim to continue them after the conference on the basis of the Water Action Agenda. The aim of this document is to invite you to share your views and potential commitment regarding the following two action perspectives. A first step will be to have bilateral conversations.

Action perspective 1: Make water pivotal in the Food System Pathways

National Pathways to Sustainable Agrifood Systems are being developed following the UN Food System Summit (2021). A first stocktaking of progress is foreseen in September 2023. Water has been recognized as enabler for transformations of food systems, whereas water is currently not pivotal in the design of Food System Pathways yet. Water for Food will also require special attention in the design of National Water Roadmaps. As water and food are inextricably linked, the design of Food System Pathways and National Water Roadmaps cannot be designed separately, and joint coordinated actions are required.

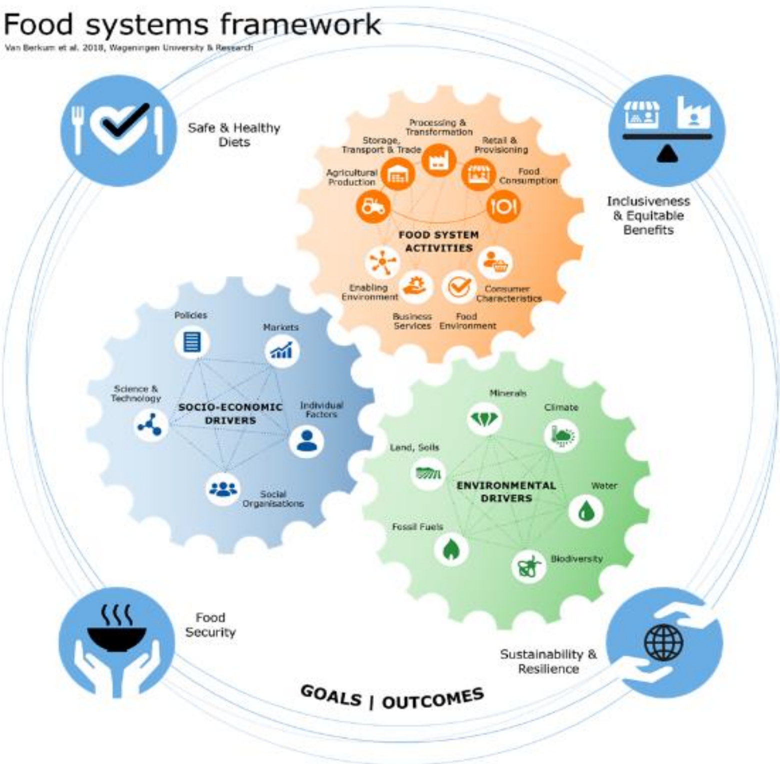
Food System. A Food System encompasses the activities and relationships between the different parts of the food value chain (production, processing, distribution and consumption) and the outcomes of activities within the system in socio-economic and environmental/climate terms (such as food security, soil depletion, water use, diets, consumer behaviour and farmer income) (Van Berkum, 2018)

Water plays a central role in improving the four major outcomes of our food systems:

- ensuring food production;
- providing healthy diets;
- improving inclusiveness & equitable benefits; and
- sustainability & resilience

Obviously, water is essential for food production for domestic use and export. Regional analyses of current and future supply and demand of water for several uses (e.g. food, energy, industrial, domestic, ecology)is important. Also water is essential in other parts of the food value chain. Safeguarding the water quality and quantity is a shared responsibility of farmers, domestic and industrial water users, where water storage, re-use and recycling could increase water availability. Recognising the roles that water plays across the entire food system is highly needed.

Other actions withing this action perspective are linked to production, the value chain, healthy and sustainable diets and circularity of food systems.



Resilient agricultural food production systems

To cope with severer variability in climate and water availability, agricultural & food production systems need to become more stable and robust. This needs both an increase in tolerance in production and also a contribution of farming systems to increase resilience by water resources management. The increasing failures of the current production systems to operate within their tolerance thresholds (e.g. bandwidth) for climate and water (drought, heat, floods), inputs (seed, fertilizer e.g.) and pests shocks has spurred initiatives and developments in agricultural food systems that increase their tolerance. Also good examples are present where farmers increase their contribution to water resource management by adapting farming practises, soil and on-farm water management . In essence, thereby turning around the configuration from production optimization with a pre-imposed narrow tolerance for water and climate shocks, that are controlled with internal (fertility, disease, tillage, etc) and external (variety, water) response mechanisms; to: enhancing the climate/water shock tolerance bandwidth by crop type/variety selection at farm/plot level, water and soil management, land management.

These initiatives and developments, such as embedded in regenerative agriculture and conservation agriculture, have been initiated in rainfed areas where more variable rainfall patterns have urged the development of more effective rainfall capture and use systems – i.e. creating a higher rainfall absorption capacity in the soil, with which the bandwidth to cope with rainfall variations is effectively enlarged. Also the changing availability of surface and river discharge water sparked adaptation in agriculture. Crop choices – in terms of type, variety and diversity – are further deployed to enhance climatic shock robustness by:

1. selecting varieties or crops for higher thresholds in temperature, water quantity (drought, floods) and water quality (salinity, contaminants, nutrients) tolerances and with higher nutritional food security values (such as micronutrients that are deficient in diets of many resource-poor households)
2. diversifying crop types and cropping patterns to hedge against climate variation;
3. create symbiotic relations across soil management and crop systems to enhance specific climate shock coping capacity (e.g. mulch and cover crops to improve soil structure, water infiltration and organic (and thus water) content, and soil nutrients; shading against heat stress; wind protection to reduce ET; etc.). (van Halsema, 2022).
4. enhance application of mixed or multiple trophic production systems (mixed cattle and crop systems; seaweed-shrimp or mangrove-shrimp production Debrot et al 2021, 2022)),
5. precision agriculture and improved agronomy (including water and soil management, nutrient availability, weeding and harvesting technologies) decreases water use and water and soil pollution.

Food security + Inclusiveness & equitable benefits

In preparing commitments connected to resilient production also the a) local/regional food security perspective and b) (economic) perspectives of farmers should be taken into account. Ad a) In parts of the world, food production, soil fertility, access to agricultural inputs and water use efficiency needs to be increased to keep up with population growth and influx from neighbouring areas. Ad b) Farming revenues and the need for affordable food prices should be taken into account. Currently 75% of the agricultural workers worldwide need to make a living from less than a US dollar a day. Farmer's revenues (after deduction of costs) often are low despite relative good yields.

Reduce food loss and waste

30% of food is lost or wasted - lost and wasted food crops account for 24 percent of total freshwater resources used in food crop production (Kummu et al 2012)))

- Improve Water use and water quality in the food (value) chain to prevent food waste, improve food safety and shelf-life.
  This links to water quality/ health/ WASH. Pathogen contamination of fruits and vegetables (that are consumed unheated) can take place in different stages of the food supply system (inadequate hygiene during production, processing, kitchen washing, preparing) (De Lange et al, 2021, blog)
- Invest in post-harvest capacity building, technologies and physical infrastructure that supports on-farm pre- and post-harvest storage, efficient trading and exchange (telecommunications, covered markets), value addition (agro-processing and packaging facilities), and improved transportation and bulk storage (Warner et al., 2008).

Circular food systems and water in the value chain

Farming, horticulture and fishing are trapped inside the current linear (take-make-discard) production system, which is not future-proof. The transition towards a circular food system both on land and at sea requires optimizing the lasting use of earth's natural resources. This implies minimizing (reduce) the input of finite resources, encouraging the use of regenerative ones, preventing the leakage of resources and stimulating the reusing and recycling of inevitable resources (Antonis, A. et al., 2021, DOI: 10.18174/527866). For water in food systems this implies:

- Explicitly addressing water in a circular food system, recognising the many different roles of water in a circular food systems (Antonis, A. et al., 2021, DOI: 10.18174/527866)
- Improve the reduction, reuse and recycling of water at multiple geographical and temporal scales and at several steps of the food value chain (including processing and preparation of food). Explore the opportunities in densely populated areas where nutrient-rich (waste)water can boost agricultural production.
- Water quality: invest in protecting water quality and adapting agricultural production that makes use of less-optimal water qualities (such as saline water)

Sustainable and healthy diets

- Nutritional and health experts should work side by side with water managers at national and farm level to e.g. increase nutrient-dense crops, fruit and vegetables.
- Consumption of fruits and vegetables is promoted for their richness of nutrients like vitamins.
- A recent review of the use of precipitation and irrigation water across diets finds that diets with less meat could reduce use of precipitation (green water) but not of irrigation (blue water) in total food consumption. Better understanding is needed of the amount and type of water used in food production to make informed policy decisions (Harris et al., 2020).
- Financial support (income or production level) for water intensive food should be diminished and nutritionally harmful ingredients (e.g. sugar) should discouraged (Frisvold, 2004, Ringer, 2022).

Perspective 2: Prioritization of water (re)allocation in National Water Roadmaps

FAO supports countries to develop a National Water Roadmap towards the 2030 Agenda, based on the example of the National Pathways to Sustainable Agrifood Systems that were presented at the UN Food System Summit 2021 (https://www.fao.org/land-water/news-archive/news-detail/en/c/1612382/). These National Water Roadmaps serve as a good reference point for countries to reaffirm water-related objectives to achieve all SDGs by 2030 as a voluntary commitment to be shared during the upcoming UN 2023 Water Conference. Water valuation can play a key role in making explicit the trade-offs intrinsic to decision-making and priority setting with respect to water allocation. It is for instance important to consider the societal value of water used by agriculture for food production when assessing the potential trade-offs in water reallocations between diverse water users.

The growing demand for water, due to population growth, climate change and rising energy prices, put pressure on current water allocations. Water reallocation is not just a zero-sum game, but a policy process of transparent and accountable setting of policy priorities and social objectives, while safeguarding defined SDG through regulatory measures. Water valuation can play a key role in making explicit the trade-offs intrinsic to decision-making and priority setting with respect to water allocation; especially, when it concerns societal needs such as food security and stability, which are not revealed in the marketplace. As such, valuing water -based on the true value of natural capital and ecosystems- may be a key tool in guiding decision, whereby its value lays not so much in its numerical assessment as in the process it offers to engage stakeholders across different perspectives and interests of water use. As private and social values are intrinsically different in value and scale, it is difficult to bring these together using a common denominator, typology or methodology. From a policy perspective, this is not necessary – if both are explicitly accounted for and weighted on their merit, they can guide explicit decision-making and negotiated priority setting.

Recently the *Global Commission on the Economics of Water* was initiated by the Dutch Government. The commission develops an action agenda – that might be linked to the Water Action Agenda. This work is coordinated by the OECD. This second action perspective for water and food is aligned with the work of the Global Commission on the Economic of Water.