

Navigating Scarcity

Integrating Water Management for Sustainable Food Security

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Topics of Discussion

Water scarcity, food scarcity, and the nexus between access to water and food as basic human rights and the Sustainable Development Goals (SDGs).

Introduction

What follows is a summary of the roundtable presentation made by Olcay Ünver at ADA University's Institute for Development and Diplomacy (IDD) on 11 March 2024 within the framework of our Water Diplomacy Series. Ünver is a Professor of Practice at the Environmental and Resource Management Program and Senior Global Futures Scientist with the Julie Ann Wrigley Global Futures Laboratory at Arizona State University; he also holds concurrent appointments inter alia at the Food and Agriculture Organization (FAO), where he is Senior Water Advisor and had served as its Vice-Chair and also led its water programs and activities (having previously led UN Water's World Water Assessment Programme and UNESCO's Program Office on Global Water Assessment).

Co-organized with the FAO, the roundtable event was titled "Navigating Scarcity: Integrating Water Management for Sustainable Food Security." Participants included high-level representatives from the Ministry of Agriculture, the Water Resources Agency,

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the Port of Baku, water irrigation experts, Temiz Sheher Joint Open Stock Company, and Azersu Joint Open Stock Company, as well as representatives from the FAO, SOCAR, Azerbaijan Tourist Board, and the Azerbaijan Hydrometeorological Service. The event was co-chaired by Nazrin Baghirova and Rodrigo Labardini.

Framing Questions

Food and water are the most important and basic factors for all life on Earth. It is impossible to survive without these necessities. While clean drinking water and sanitation are essential to the realization of all human rights (these are, in fact, distinct rights), the world is today already facing record-high food-related inflation due to climate change, environmental factors, and the conflict over Ukraine.

In addressing those pressing issues, Ünver began by posing three framing questions: Where do we want to go? Where we are now? Where do we go from here?

Where Do We Want To Go?

There are two main Sustainable Development Goals (SDGs) to ensure access to clean water and food. Ünver reminded the audience that “Both water and food are human rights. Water security and food security have long been among the top national priorities of governments. Water and food are firmly anchored in the 2030 Sustainable Development Agenda. Land, closely linked to both food and water, is also covered under the SDGs as well as in the other international commitments.”

The [Global Report on Food Security 2023](#) indicates that the way forward will be to recognize the urgency and importance of early intervention, which can reduce food gaps and protect assets and livelihoods such as protecting households in daunting situation to ensure immediate wellbeing, to support their ability to sustain themselves, and to protect families from making choices that are likely to lead to worse outcomes. The [FAO projection](#) for 2028 on the Future of Food and Agriculture (titled “Alternative Pathways to 2050 Agriculture”) [explores](#) three different scenarios for the future of food and agriculture, based on alternative trends for key drivers, including income growth and distribution, population growth, technical progress and climate change.

Ünver next compared multilateral definitions of water security and food security whilst evaluating ways that countries can improve both.

On the one hand, the FAO’s 1996 World Food Summit concluding document indicated that food security “exists when all people, at all times, have physical and economic access to sufficient, safe, and nutritious food that meets their dietary needs and food preferences for an active and healthy life.” This can be achieved when it is *available* by

ensuring access to a reliable supply of food of sufficient quality and quantity; when its *accessibility* is ensured whereby individuals and households have adequate resources to obtain appropriate food; when its *stability* is ensured whereby there is permanent and durable access to food; and when its *utilization* is ensured whereby food is *sufficiently* nutritious and can be *adequately* metabolized and used by the body.

On the other hand, UN Water defined water security in 2013 as “the capacity of a population to safeguard sustainable access to adequate quantities of acceptable quality water for sustaining livelihoods, human well-being, and socio-economic development, for ensuring protection against water-borne pollution and water-related disasters, and for preserving ecosystems in a climate of peace and political stability.” UN Water explains the concept in four stages. *First*, water scarcity can be solved if there are good governance practices, which means that adequate legal regimes, institutions, infrastructure, and capacity are in place. *Second*, transboundary cooperation is well developed so that sovereign states discuss and coordinate their actions to meet varied and sometimes competing interests for mutual benefits. *Third*, peace and political stability arise when the negative effects of the conflict are avoided, including reduced water quality, and/or quality, compromised water infrastructure, human resources, and so on. *Fourth*, innovative financing complements funding by public sector, including investments from the private sector and micro-financing scheme.

Where Are We Now?

Ünver presented alarming data and information on food and agriculture that warrant a strategic re-think to catalyze transformative change.

He made five observations regarding the foregoing, based on a 2023 [FAO study](#):

First, world hunger rose further in 2021 following a small increase during the previous year, as inequality widened due to the pandemic, heightening the challenge of eradication hunger. Around 2.3 billion people in the world lacked access to adequate food in 2021 and, almost 3.1 billion people could not afford a healthy diet in 2020, showing the world is not on track to achieve nutrition targets.

Second, the projected number of undernourished people indicates that the world is far off track to achieve zero hunger by 2030.

Third, nearly one in three people in the world (2.37 billion) did not have access to adequate food in 2020 and 2021.

Fourth, women are more likely to live in conditions of food insecurity than men in every region of the world. The global population suffering acute food insecurity increased by 34 percent from 2021 to 2022 due to the wheat crisis brought on by the conflict over

Ukraine. Regarding the impact on global food supplies and prices, Ünver stated that “in 2021, 36 out of the 53 food crisis countries or territories depended on Ukrainian and Russian exports for more than 10 percent of their total wheat imports, including 21 countries with major food crises. Moreover, many food crisis countries or territories have also been impacted by rising energy and fertilizer prices: food crisis countries as geographically diverse as Honduras, Cameroon, Guatemala, Sierra Leone, Nigeria, Mozambique, and Kenya depend on Russia and Ukraine for between 10 and 50 percent of their fertilizer imports.

Fifth, billions around the world still lack access to safe drinking water, sanitation, and handwashing facilities. Water pollution is worsening, funding for water and sanitation has become insufficient, governance structures are weak and fragmented, agriculture exerts huge stress on water but is also a big part of the solution, institutional and human capacities are inadequate, and ecosystems are in continuous decline.

Ünver then examined the state of play in Azerbaijan regarding the foregoing. With respect to SDG6 on water and sanitation, he indicated that Azerbaijan evidences progress in several Global Status indicators. In sanitation, 69 percent of Azerbaijan’s population has access to safely managed sanitation services compared to 57 percent worldwide; in hygiene, 89 percent of Azerbaijan’s population has a handwashing facility with soap and water available at home whereas 75 percent worldwide enjoy such facilities; and in water management Azerbaijan has attained 57 percent in the degree of implementation of integrated water resources management compared to 54 percent worldwide; while areas of opportunity are present in issues such as transboundary water cooperation, particularly considering that 70 percent of Azerbaijan’s fresh water resources originate in neighboring countries. Relatedly, Ünver confidently assured that improving cooperation between Caspian Sea riparian countries should increase collaboration links and guarantee more freshwater for its five countries.

Where Do We Go From Here?

Bearing in mind that the UN projects global food demand to increase by [49 percent](#) by 2050, Ünver brought the roundtable to an end with a discussion revolving around three possible future scenarios: business as usual (BAU), towards sustainability (TSS), and stratified societies (SSS).

In a *business as usual scenario (BAU)*, global incomes grow at moderate levels, without bridging the large gaps between (and within) countries. Mitigation and sectoral development policies are implemented, but not to the extent necessary for substantially addressing various challenges, including climate change. Arable land expands at faster annual rates than in recent decades and land degradation is only partially addressed. Land intensity (i.e., the quantity of land per unit of output) decreases as crop and animal yields increase, but these achievements require an

increase in the use of chemicals, greater deforestation, and unsustainable raw material extraction—all of which continue apace. Moreover, water efficiency improves but a lack of major technological improvements leads to the emergence of more water-stressed countries.

In a *towards sustainability scenario (TSS)*, societies become more equitable overall. Several SDGs are almost universally achieved, agriculture moves towards sustainability thanks to the adoption of strategic orientations and the full implementation of effective policies, GHG emissions within and outside agriculture are drastically reduced, and climate change is mitigated. The adoption of low-input processes results in water intensity to substantially decrease and energy intensity to substantially improve. Hence, this scenario projects land-use intensity to drop with respect to current levels, thanks to sustainable agricultural intensification and/or other practices aimed at improving resource efficiency. This helps to preserve soil quality and restore degraded and/or eroded land. Moreover, agricultural land is no longer substantially expanded, and land degradation is tackled, while water extraction is limited to a smaller fraction of available water resources.

In a *stratified societies scenario (SSS)*, societies are structured in separate layers. Self-protected elite classes, i.e., those with decisional power, protect their position and interests, do not feel the urgency to conserve natural resources or mitigate climate change. Increased poverty, food insecurity and poor nutrition leads to the over-exploitation of natural resources and unmanaged agglomerations. Hence, this scenario envisages the world suffers further deforestation. New agricultural land is used to compensate for increased degradation and to satisfy additional agricultural demand, which is left unmanaged. Land intensity decreases for commercial agriculture but remains stable or increases for family farmers, as they increasingly suffer from crop losses that are also fueled by extreme climate events. Water is not sustainably used in many regions and little investment is made towards water use efficiency. Both water and land constraints are exacerbated by climate change.

Concluding Observations

Since there is a mutual relationship between freshwater and agrifood systems, it is imperative to remember that water demand depends on food habits. On the one hand, on average agriculture represents 70 percent of global freshwater withdrawals. The FAO estimates that approximately 60 percent more food will be needed by 2050 to meet the food requirements of a growing global population. This will require intensive and concentrated industrial farming, as well as moving to new dietary habits. On the other hand, there is a risk of losing irrigated land due to climate change, as some heavily irrigated lands are rainfed, in contrast to others that could see an improvement of the availability of freshwater. Water pollution and poor quality is also having an adverse impact on agricultural output in terms of both the quality and quantity of food.

The optimal scenario in terms of sustainable use of natural resources and energy consumption is TSS. In this scenario, water and energy intensity use are substantially lower in contrast to BAU (the baseline scenario). In addition, the use of land drops with regards to the quantity of land per unit of output due to sustainable agriculture intensification and other practices aimed at enhancing resource efficiency. This helps to preserve soil quality and restore degraded and eroded soil. As a result, agricultural land is no longer substantially expanded, and water abstraction is limited to a smaller fraction of available water resources.

Ünver's presentation spoke to the point that there is a strong link between land, water, food, and sustainability. This is a mega policy area that requires the efforts of not only one or two states, but of entire regions and, indeed, the whole world, to come together in a coordinated and collaborative fashion.