



# STRIVING FOR WATER AND FOOD SECURITY

*The focus for MENA countries should not be to achieve self-sufficiency, but rather food security*

*By Omer Karasapan*

**T**he Middle East and North Africa (MENA) region consists of a diverse set of countries ranging from the oil-rich Gulf Cooperation Council (GCC) nations to its poorest member, Yemen. In between there are countries with varying degrees of income and natural resource endowments. Several nations in the region, such as Libya and Syria, have been weakened by armed conflict, while a fragile Iraq confronts massive protests as it tries to recover from the cataclysm of the Islamic State in Iraq and Syria (ISIS). Popular unrest is also on the rise from Algeria to Iran.

In addition to conflict and the widespread rise in political discontent, many of the MENA countries face threats to their food and water security and a relatively uniform challenge in being among the largest food importers in the world.

These nations greatly depend on imports for staple foods—most MENA countries import at least 50 percent of the calories they consume. This has led to policy decisions over the years in which a focus on food self-sufficiency has been adopted, especially on water-intensive grains, but at the cost of sustainability given the region's water scarcity.

Indeed, the MENA region has the world's lowest water tariffs. Water consumption is subsidized to the tune of 2 percent of its GDP, and water productivity rests at half the world average. The price charged for water from conventional sources (surface and groundwater) in the region is 35 percent the cost of production. In the case of desalinated water, only 10 percent of costs are covered by the consumer—the state picks up the rest.

There are also implications for nutrition and health outcomes in a region beset by obesity and other diseases, which are partly linked to the same policies focused on water-intensive grain production. Rapid population growth, the expanding threat of climate change, increasing unemployment (especially among youth), and a deterioration in services and infrastructure for rural and

largely agricultural populations have also created critical challenges that impact food and water security in this region.

### **A New Social Contract**

The decline in adequate agricultural policies has also led to a decline in development and a rise in poverty in rural areas, and consequently uncontrolled urbanization, with many moving to cities in search of better opportunities. Reforms in agriculture and water resource policies should therefore be seen as part of a bigger agenda which manifests in varying forms across the region. The changing role of the state and the opening up of spaces for the private sector is at the heart of all these reforms. In fact, the dominant role of the state in the economy and beyond is an inescapable certainty across the region. Today's reform agendas take their cues from this reality and its mounting failures.

The goal, as articulated by the World Bank and others in the region, is to move beyond a social contract centered around a large public sector providing employment and subsidized services and goods—including many basic items like bread, sugar, oils, etc.—to a quiescent population. This old social contract is no longer sustainable; it is not only unaffordable, but inefficient and ineffective, including in the agriculture sector. The state can no longer employ millions of people nor can it afford the vast and often untargeted subsidies that the old social contract brings with it.

When it comes to the formulation of a new social contract based on inclusive, private sector-led growth, the role of the state does not disappear. It does change, however, and, in some ways, is reinforced. The goal is to have an efficient and effective state that regulates markets, ensures a level playing field, and pushes back against unfair competition, whether from public and/or private sector incumbents often linked to dominant political forces, or new entrants intent on unfairly gaining market share. Furthermore, as demonstrated by the recent protests in Algeria, Egypt, Iraq, and Lebanon, people are demanding jobs and economic opportunities, as well as a greater voice and accountability.

### **MENA's Conjoined Twins: Water and Food**

It has long been clear that water and food security must be looked at in an integrated manner. The region's increasing water scarcity is well known, as is the fact that agriculture is the largest consumer of water globally, accounting for around 70 percent of annual water withdrawals. According to the World Bank, that number is 85 percent for many countries in the region. Indeed, in a world in which demand for food and water is expected to increase 50 percent by 2050 and global energy demand is set to double, others see the water, energy, and food nexus as the framework on which to build sustainable solutions.

Yet, this emerging framework faces challenges in its operationalization, including

data and knowledge gaps. Meanwhile, analytical tools to apply nexus thinking effectively are only now emerging.

### **Food Security and the Middle East and North Africa**

According to the 1996 World Food Summit, food security is “when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life”. The UN’s Food and Agriculture Organization (FAO) sees this in the context of food availability, economic access, nutritional content, stability of availability, and access.

The supply of available food is more than adequate in all Middle Eastern and North African countries except Yemen. The war-torn country faces unique challenges, such as long-term political instability and the country’s persistent cultivation of the stimulant shrub qat (khat), which depends on large water supplies.

Food availability in MENA has remained stable since 1999–2001. The region currently does not face chronic food shortages, but these do increase due to mismanagement and conflicts. According to the FAO, the salient issues of household food insecurity in the region are malnutrition, economic access to food, and ensuring stability of the food supply.

Yet, underlining the gap between availability and access, in May 2019 the FAO’s Regional Overview of Food Security and Nutrition in the Near East and North Africa noted that hunger in the region had continued to rise since 2011 due to conflicts and protracted crises. Some fifty-two million people in the region were found to be suffering from chronic undernourishment, making meeting the UN’s Sustainable Development Goal (SDG) number 2—reaching Zero Hunger by 2030—doubtful as conflict and widening rural-urban gaps pose significant challenges. Over two-thirds of these people, thirty-four million, were in conflict-affected countries where stunting, wasting, and under-nutrition were also far worse.

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According to FAO figures released in 2017, Syria saw a 67 percent reduction in its GDP, with food security severely undermined. Nearly 80 percent of Syrians needed humanitarian assistance, while 50 percent required food assistance. The figure for those needing humanitarian assistance in Iraq was 30 percent of the population while in Yemen it reached 70 to 80 percent. Meanwhile, 9 percent of Iraqis and 50 percent of Yemenis required food assistance. In Libya, where

the situation has worsened since 2017, 6 percent of the population needed food assistance.

There are also inherent challenges threatening the agriculture sector in the MENA region. For example, while 30 percent of the region's land is suitable for agriculture, 25 percent is pasture and only 5 percent is considered arable. Some 40 percent of that requires irrigation, which is often done wastefully and unsustainably. There are also serious land degradation issues.

According to New York University Abu Dhabi's Diana Francis, "Desertification in the Middle East is caused mainly by four human actions linked to farming and agriculture...overgrazing, over-cultivation, deforestation, and poor irrigation. Indirect causes of desertification include poverty, population growth, and loss of traditional knowledge." Due to degradation, land productivity has been reduced by up to 35 percent of potential productivity and estimates are that the regional cost of land degradation comes to \$9 billion annually.

Furthermore, and quite significantly, regional cropping patterns are difficult to rationalize with the level of water scarcity. While fruits and vegetables consume less water with higher economic returns per drop, and most countries in the region have a comparative advantage in exporting these products, 60 percent of harvested land is dedicated to high-water-consuming cereals. A key reason for these inconsistent policies is a vision of food security whose goal is to achieve self-sufficiency and reduce dependence on imports, especially for cereals. This vision equates self-sufficiency in grain production with national security imperatives and fails to use the comparative advantage of countries in agricultural products other than grains. Aside from inherent inefficiencies in such policies, there are also significant health costs to these policies.

Many countries subsidize basic foodstuffs, but rising incomes mean that the growing share of starches and sugars in diets leads to obesity and other health concerns such as diabetes. Indeed, some of the highest global rates of obesity

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are in the region, and this puts pressure on people's health, lifestyles, and on already stressed national health systems and economies. According to the World Journal of Diabetics, the prevalence of type-2 diabetes mellitus (T2DM) has increased dramatically during the last two decades, driven by the prevalence of obesity.

The number of people in the Arab World with diabetes is projected to increase by 96.2 percent by 2035. Aside from genetics, issues of obesity, rapid urbanization, and lack of exercise are key determinants to this rapid increase. With T2DM highly prevalent among those eighteen years old or younger, and being the fifth leading cause of disability, a major effort is needed to reduce its incidence in MENA populations.

## **The Water Challenge**

The World Resources Institute (WRI) is a Washington-based global research organization supported by companies, governments, and foundations which highlight responsible water use. Its “Aqueduct” project provides web-based tools which identify and evaluate water risks around the world. Data from the WRI in August 2019 revealed that seventeen countries—home to a quarter of the world’s population—faced “extremely high” levels of baseline water stress. This meant that irrigated agriculture, industries, and municipalities were withdrawing on average more than 80 percent of their available supply every year. Of these seventeen countries, twelve were in the MENA region: they were, in order of severity, Qatar, Lebanon, Israel, Iran, Jordan, Libya, Kuwait, Saudi Arabia, UAE, Bahrain, and Oman. All other MENA countries (except Sudan and Mauritania) were in the next grouping of twenty-seven with “high” incidences of baseline water stress. While always short on water, growing demand from an expanding and increasingly urban population, unsustainable agricultural practices, and the growing threat of climate change means that countries now face extreme stress.

A critical goal for the entire region, then, is water security, which is defined 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”.

The World Bank characterizes MENA as a global hotspot for unsustainable water use, especially of groundwater. “Water has always posed great challenges for the Middle East and North Africa. With rapid growth, regional instability, and climate change, these challenges are more pressing than ever,” the World Bank said in its 2017 report “Beyond Scarcity: Water Security in the Middle East and North Africa”.

In some of the region’s countries, more than half of current water withdrawals exceed what is naturally available. The region also suffers from the greatest expected economic losses from climate-related water scarcity, which is estimated to rise to 6–14 percent of GDP by 2050.

Adding to an already complex set of challenges, the region has the highest proportion of GDP (2 percent) spent on public water subsidies. Yet, the World Bank and agencies including the UN and other multilateral and bilateral development groups are not painting an irreversibly stark and dark doomsday scenario—at least not yet. There are solutions at hand, though time is pressing, and while evolving technologies will greatly assist, the challenge lies on the public policy side and how to incentivize behavioral and cultural

changes. This will also need to be undertaken while fighting public and private interests that benefit from current dysfunction, and, as noted earlier, pushing back against decades of counterproductive policies often rooted in old national security approaches. While such solutions may currently exist, they will require mindsets that step back from maximalist demands by all stakeholders, i.e. decision-makers, citizens, the international community, non-governmental organizations and, last but not least, the private sector.

### **The Way Forward for Food Security**

As mentioned earlier, reforms in agriculture and water resources should be seen as part of a bigger reform agenda which extends across this diverse region. The key determinants of food security have been articulated for many years. The World Bank has long said that for the MENA region the issue should not be achieving self-sufficiency (producing all your own food) but achieving food security (having access to affordable, nutritious food). Spending scarce water resources and public funds on unsustainable and often untargeted, ineffective, and inefficient subsidies comes at the expense of future generations.

The approach needs to target an integrated rural development strategy—which goes beyond just a narrow, sectoral focus on agriculture—in order to create jobs in other sectors for broad-based growth in rural areas, where most of the region's poor live.

Here, again, where markets work or can be made to work, the focus should be on the private sector with the state as a regulator. Where markets do not work, there is a role for the government that goes beyond regulation. What is clear now is that the need for the region to import food remains inescapable. However, with sources of grain currently much more diversified with new exporters from the Black Sea region to Latin America, the approach should be on following the rest of the world and liberalizing agricultural markets, allowing production and exports based on the comparative advantages of the region in fruits and vegetables. This will also help create a more diversified, healthier diet for more people.

Similarly, the FAO calls for rural transformation, encompassing agricultural reform, territorial development, and improved public services in rural areas—much along the lines of what the World Bank called integrated rural development. Agricultural reform foresees a shift from traditional farming to commercial, diversified production systems, i.e. shifting to higher value crops (fruits and vegetables in MENA) and livestock and dairy, requiring more sophisticated production and marketing methods. This means more investment, improved transportation, and higher quality processing and packaging, but promises higher incomes which will ripple across rural areas. Governments will have to provide infrastructure, agricultural research, and extension services while

enforcing standards. Governments must also facilitate an environment that enables commercialization and market-orientation of small-scale agriculture, ensuring fair competition and a level playing field while easing access to financial services.

Agriculture relies on linkages with other sectors to reach markets in urban areas, so the key here is to develop agribusiness and agro-industry that are part of a labor-intensive and a pro-poor growth strategy, since most of MENA's poor live in rural areas. This would likely reduce rural-to-urban migration, strengthen rural links with small cities and rural towns connecting producers and agro-industrial firms, and make good use of linkages emerging from migration dynamics. For example, an increase in agricultural prices did lead to an increase in rural employment and even some urban-to-rural migration in Turkey.

Years of neglect of the rural economy, largely due to longstanding policies focused on urban areas and industry in the region and beyond, will entail significant costs. A revitalized rural economy will require investments in human capital and indeed go beyond health and education to invest in energy, sanitation, access to clean water, and other public services. However, while a growing rural economy will need more investment in these areas, it will also generate revenues via taxes and fees that can help it pay for itself. Elements of these policies are beginning to be put in place from Upper Egypt to lagging regions in Morocco and Tunisia.

### **Policies and Technologies to Meet the Water Challenge**

We noted earlier that the MENA region faces many challenges when it comes to its scarce water resources and usage. Yet, it is important to note that there are bright spots, including greater use of the private sector in Jordan, Morocco, and Saudi Arabia, among others. Currently, some twenty-eight million people in the region have better water services thanks to public-private partnerships (PPPs). Bahrain, Egypt, Iran, and Jordan have PPPs in wastewater treatment. For now, however, 82 percent of wastewater in the region is not recycled and represents a huge loss of water. Oman treats 100 percent of its collected wastewater and reuses 78 percent of it. Some 84 percent of all wastewater in the GCC is treated to safe levels, but only 44 percent goes on to be reused; however, the goal is to reuse all of it in the future.

Nearly half of the world's desalination capacity is in the Middle East. Desalination technology is used heavily in the GCC and some countries rely on it for nearly 90 percent of their water needs. However, desalination carries a large carbon footprint since the region is reliant on energy-thirsty thermal desalination plants, using fossil fuels to generate heat to evaporate and condense water to a purified form. Furthermore, chemicals and brine left over from the process are often discharged into the sea, which damages marine

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ecosystems. While there is ongoing research into less energy-intensive solar-powered desalination and reverse osmosis desalination, for most countries this remains an expensive technology. As the World Bank notes, strategies that seek to “desalinate their way out of water insecurity” have their limits. Desalination remains expensive and needs to be used strategically to address a limited range of problems, but can be part of an integrated approach to the challenge at hand.

There are more cost-effective routes like wastewater treatment, groundwater recharge, and the capture of rainwater and storm water to recharge aquifers. If we are to become more efficient with water usage and use less of it, placing a value or price on water to signal its scarcity and promote conservation is the first step. Undervaluing or underpricing water creates incentives for overexploitation and depletion. Appropriate water pricing is essential to provide funds for protecting water resources and paying for infrastructure and service delivery. This is a step that is as necessary as it is politically difficult, but countries like Egypt and Iran have shown that subsidies (on energy and other goods) can be reduced successfully. What is clear is that this will take time and donors will have to be ready to support governments as they move forward on this agenda.

The most important lesson from global and regional experience is that technology, policy, and institutional management must evolve together to achieve water security—a point that also seems to be tailor-made for the agricultural sector. What is also clear is that within and between countries, water and food security need to be looked at together while also increasingly integrating energy into this mix. Ministries of agriculture and agencies responsible for water and energy must work together seamlessly and not at cross purposes.

There is no single silver bullet solution, but there is a reform agenda that largely follows a broader economic agenda around changing the role of the state, bringing a well-regulated market to the fore and making greater use of private investments and expertise. There also needs to be a focus on changing long-held assumptions around food security and water availability. Food security needs to be seen in the context of access to food rather than unsustainable, costly, and ultimately unattainable efforts at self-sufficiency. Water needs to be seen as a scarce resource and priced as such, even if the immediate costs may be deferred for direct producers such as vulnerable small farmers.

Things are already beginning to change: a recent survey carried out by the

Arab Forum for Environment and Development found that 77 percent of respondents were willing to pay more for water in return for improved social benefits. There is also an agenda around regional cooperation and coordination. This is a must since 60 percent of surface water resources in the region are transboundary, and all countries share at least one aquifer. Despite regional fragmentation, and decoupling of economic ties due to political tensions between some countries, common interests around trade in agricultural goods as well as management of common water resources can and must be achieved. This is also true of comprehensive communication campaigns around everything from water scarcity to healthier diets.

While population and economic growth will raise water demand and put additional stress on food production, climate change will be the primary driver of water stress across the region. In short, there is a whole agenda around mitigation and adaptation when it comes to climate change. Family planning and population growth constitute another large but essential agenda, especially for countries like Egypt, which is trying to revive its past successful efforts on this front. Improved education and health services for women in rural areas will have a significant impact on curbing population growth.

Perhaps most pressing of all are the demands articulated by the region's youth: 60 percent of the region's population is under the age of thirty and it is this generation that has gone to the streets from Algeria to Lebanon to Iraq and beyond. They want a voice, an end to corruption, and inclusive economies that produce jobs. A smart agenda on food and water security is part and parcel of the broad reforms needed to meet their demands. (R)