



Breaking the Cycle: How Can the MENA Region Tackle Food Insecurity?

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KEY TAKEAWAYS

The Risk of Food Insecurity Is Escalating across the MENA Region

Food security in MENA is coming under increasing strain due to a host of complex factors. Food shortages are widespread as states fail to sustain sufficient food supplies.

Climate Change and Structural Factors Are Leading Causes of Food Insecurity

Structural issues, such as unsustainable agricultural practices and lack of rural development, along with the intensifying effects of climate change are heightening the state of food insecurity.

Food Access Levels Vary among Countries and Social Segments

Some countries suffer from conflict and financial constraints that further decrease their food security. Marginalized groups, including women and low-income households, experience lower levels of food security.

Developing Research Capacities Is Key to Increasing Food Production

MENA should focus on increasing its domestic food production capacities and using its resources efficiently. This will require further investment in agricultural research and technology that can address existing challenges.

KEYWORDS

Food (In)security

Rural-Urban Divides

Climate Change

Conflict

Agricultural Research

Subsidies

Middle East and North Africa

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COVER IMAGE: Customers order a popular Yemeni meal known as Al-Saltah, at a restaurant in Sanaa on July 3, 2013. According to the United Nations, there are approximately five million people in Yemen who are either suffering from food insecurity or are at risk of acute food insecurity caused by rising food and fuel prices and political instability. REUTERS/Mohamed al-Sayaghi.

INTRODUCTION

Food insecurity¹ has become a pressing issue world-wide. The repercussions of the war in Ukraine and the lingering effects of COVID-19, amidst a global economic slowdown, have all intensified the global state of food insecurity. Food systems have been disrupted leaving many without access to sufficient nutrition. The Food and Agriculture Organization (FAO) estimates that 222 million people² (2.8% of the global population) are currently suffering from acute food insecurity,³ and undernourishment⁴ currently stands at around 10% of the population.⁵ The situation is projected to worsen, with the United Nations (UN) estimating that by 2030, 8% of the global population will face hunger.⁶

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While countries across the world grapple with the complex challenges of food insecurity, the issue is particularly striking in the Middle East and North Africa (MENA) region. MENA is home to approximately 6% of the world's population;⁷ however, it accounts for 54.3 million—12.2%—of the undernourished population.⁸ Coupled with the global challenges of climate change and an economic slowdown,⁹ which have taken a heavy toll on the region, MENA needs to address its own internal issues of unstable food import systems and overreliance on conventional agricultural techniques. Addressing the diverse barriers to food security will require comprehensive efforts that aim to enhance the region's capacities whilst also strengthening MENA countries' cooperation with regional and global actors.

STATUS OF FOOD INSECURITY IN MENA

The MENA region is characterized by water scarcity, volatile economies, and an overreliance on food imports. These factors make the region more prone to higher levels of food insecurity. Climate change is increasingly impacting the region with prolonged droughts and heat waves that directly impact agricultural production. The region's limited adoption of modern agricultural practices makes this an urgent issue, as resources dwindle and the need to improve efficiency in food production increases. The war in Ukraine has further strained food security across the region and the world.¹⁰ Conflict is another key driver of food insecurity in the region itself. The ongoing conflicts in several MENA countries have directly impacted the food security of their populations, and those of their neighbors, and this issue is complicated by political factors and the purposive marginalization of some groups.

The region is grappling with issues of food insecurity across various dimensions. To assess food security, the World Bank draws on four primary measures.¹¹

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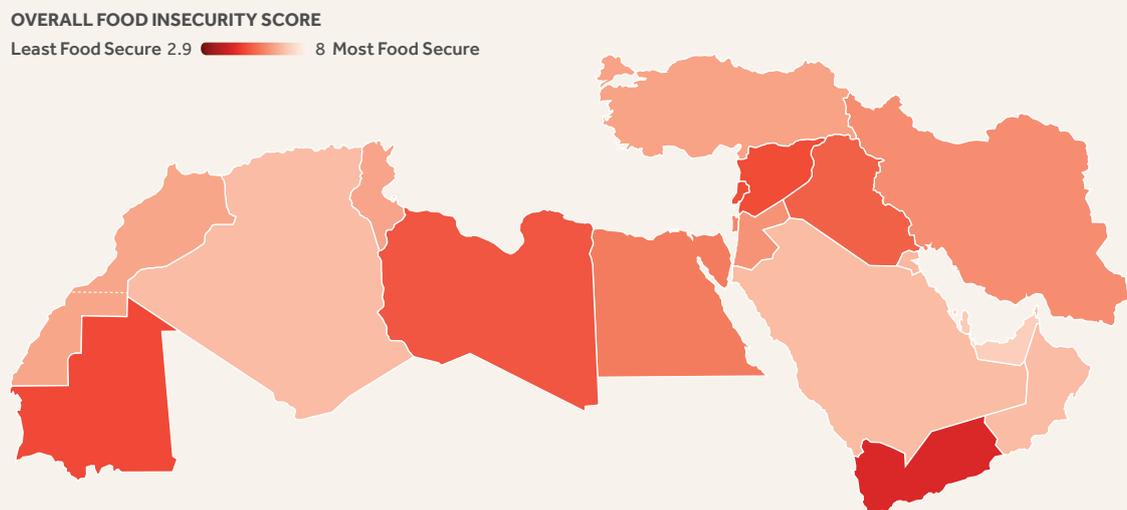
Table 1: Dimensions of Food Insecurity

Dimension	Definition	Relevance to MENA
<i>Availability</i>	This measure captures the supply of existing food in any country and its ability to sufficiently address the needs of the population.	The deficit of arable lands in the region makes this a distinctive challenge for MENA. Without an environment conducive to sustaining food production domestically, states in the region are pushed to rely on imports to maintain their food supplies. This dependence ties the state of food security in the region to the ability to access stable imports. The lack of sufficient food supplies has increased undernourishment in the region; in Jordan, undernourishment increased from 6% in the period from 2013 to 2015 to around 17% in 2021. ¹²
<i>Access</i>	This measure relates to the extent to which a population is able to access sufficient nutrition.	With several existing and emerging conflicts in the region, many groups face marginalization, which means that access to food is not equal across all groups within a country. In response to food shortages in Syria, President Bashar Assad's regime adopted a smart card system in 2021 that would distribute food through rations. ¹³ However, holders of this card would first need to present a social security number, which many do not possess. ¹⁴ The institution of food distribution mechanisms that are based on pre-requisites, which are at times linked to legal and political statuses, further marginalizes certain groups which impacts overall access to food.
<i>Utilization</i>	This measure emphasizes the nutritional value of food consumed on a national level.	The MENA region suffers from high rates of anemia, especially among women. Up to 70% of women of reproductive age are anemic. ¹⁵ The prevalence of anemia and high obesity rates ¹⁶ mean the region is also underperforming when it comes to the utilization of food.
<i>Stability</i>	This measure accounts for the level of stability of the aforementioned factors. ¹⁷	Subregions within MENA are experiencing different issues at varying levels. The lack of stability in the region's social, political, and economic climate complicates the process of achieving food security and has exacerbated issues with food access, availability, and utilization.

Some countries in MENA have it worse than others. Countries in the Gulf rank among the most food secure, despite producing the least amount of food, with The United Arab Emirates (UAE) and Qatar ranking 26 and 29, respectively, among 170 countries in terms of food security.¹⁸ This is due to their financial ability, largely derived from their oil and gas revenues, to purchase the food they need on the global markets. Gulf Cooperation Council (GCC) states have also shown increasing interest in investing in arable lands across sub-Saharan Africa.

In 2018, Uganda and the UAE agreed to cooperate on the establishment of an agricultural free zone in Uganda.¹⁹ The deal would provide UAE-based companies with access to a space of 2,500 hectares to be utilized for various agricultural purposes, increasing the UAE's capacity for food production vis-à-vis fertile land in Uganda.²⁰ On the other hand, Syria and Yemen rank 148 and 160 on food security due to ongoing conflicts in both countries, even though Syria, part of the "fertile crescent," was previously a breadbasket for the region (see map and table).²¹

Figure 1: Map of Food Insecurity in MENA



Source: Deep Knowledge Analytics, 2022.

Note: The map is constructed by the authors based on Deep Knowledge Analytics' Food Security Index.²²

Table 2: Rank of Food Security in MENA

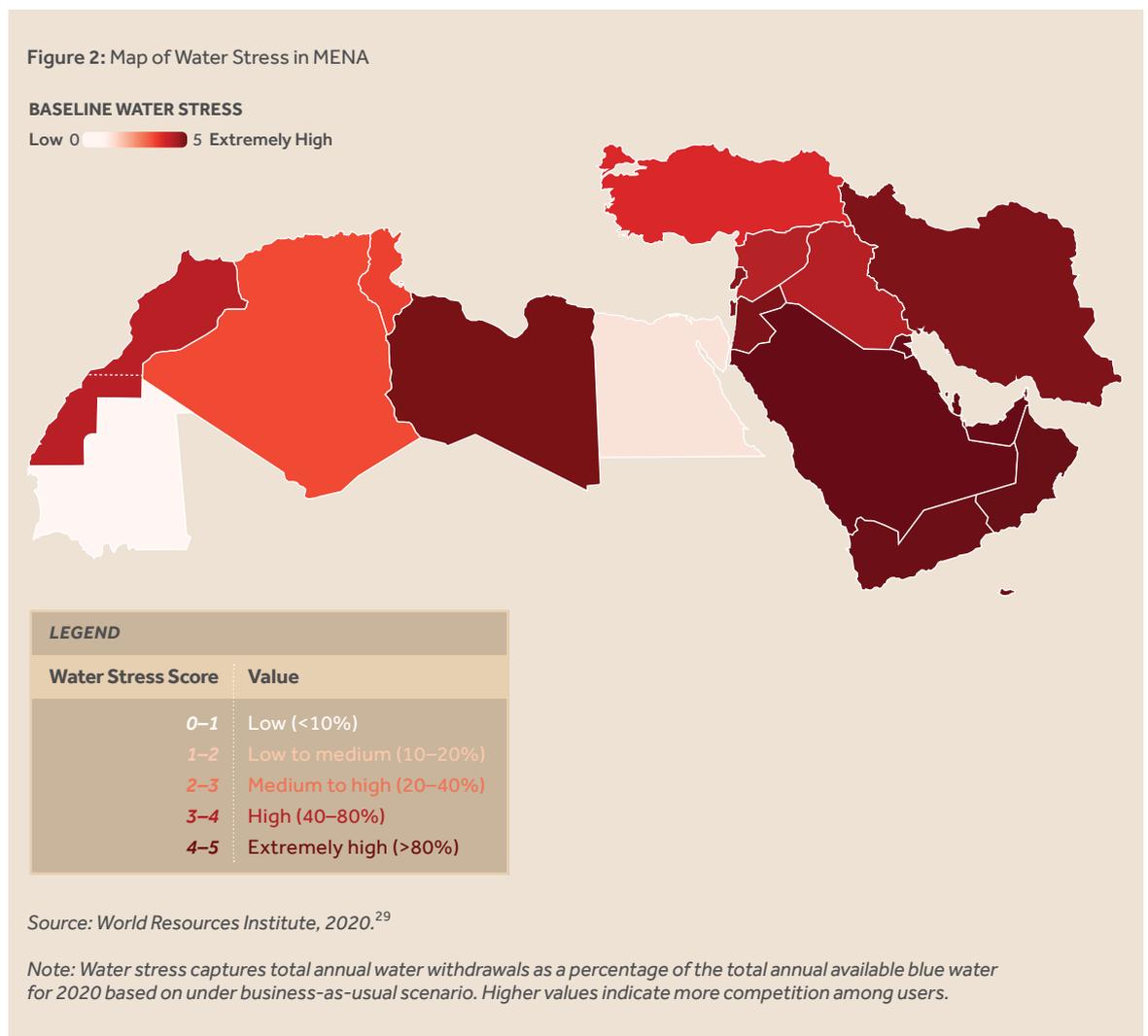
Rank Out of 170 Countries	Country
26	United Arab Emirates
29	Qatar
30	Bahrain
41	Oman
43	Algeria
44	Saudi Arabia
47	Kuwait
63	Morocco
64	Tunisia
65	Türkiye
76	Jordan
82	Iran
91	Lebanon
108	Palestine
110	Egypt
125	Iraq
137	Libya
148	Syria
150	Mauritania
160	Yemen

Across the region, gender and urban-rural divides are significant drivers of inequality when it comes to food security. Both factors capture the income component and affordability of accessing food. Female respondents to Wave VII of the Arab Barometer,²³ from countries with gender divides in terms of labor market outcomes—participation and employment rates—especially in Iraq and Jordan, reported lower access to food than their male counterparts. Meanwhile, female respondents who had access to a personal income stated that they were significantly more food secure compared to women with no access to personal sources of income. The gap between men with access to a personal income and men with no access to such a source of income is much smaller. Rural-urban divides are also notable in several countries, including Lebanon, Morocco, and Tunisia, with people living in rural areas reporting higher levels of and concerns about food insecurity. Although rural areas are often the agricultural belt and the food production basket of the country, they are underserved, short on economic opportunities, and have higher rates of poverty; all these factors limit access to affordable food.²⁴

ENVIRONMENTAL AND STRUCTURAL DRIVERS

Like other regions, climate change and environmental strains are affecting MENA. Over the past decade, countries of the region witnessed more and more extreme weather, higher temperatures, rainfall deficits, and droughts.²⁵ Eleven MENA countries are among the 17 most water-stressed countries in the world, with more than 80% of water use in the region on average going to agriculture compared to a 70% world average (Figure 2).²⁶ Channeling the

bulk of water towards agriculture greatly reduces the region's ability to diversify the use of its water supplies. With increasing water scarcity and a lack of sufficient arable lands, domestic production is at risk. Iraq, for instance, has already lost half of its arable lands as a result of the progressive salinization of its soil since the 1970s.²⁷ This has necessitated cooperation between Iraq and Türkiye on the utilization of the Tigris River through the overarching Blue Peace Strategy.²⁸ In essence, states in the region are recognizing that cooperation will be critical as resources diminish.



Water scarcity has also led to the emergence of political conflict in the region, which is the case in Iraq and Egypt.³⁰ The construction of the Grand Ethiopian Renaissance Dam (GERD) placed pressure on Egypt, a country with pre-existing high levels of water scarcity. In total, 85% of Egypt's water is supplied through the Blue Nile, which originates in Ethiopia, and Ethiopia's decision to unilaterally manage the filling of the dam has caused tension between both states.³¹ This will be difficult as states struggle to grapple with water scarcity in their respective contexts.

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Environmental factors affect domestic agriculture which still lacks the innovation levels needed to use meager resources efficiently and deal with growing environmental stresses. In addition, agricultural strategies in most countries of the region focus on producing and exporting cash crops,³² which consume a large share of water and arable land, while importing staple foods. These issues are exacerbated by a lack of rural development and policy consistency, social stigmas associated with agricultural work, and lower expected earnings for neglected small-scale farmers. Together, these factors have contributed to one of the highest urbanization rates in the world, combined with high rural-urban migration and farmer displacement rates.³³ The region also has one of the highest population growth rates in the world,³⁴ meaning demand for food will keep growing while resources are being depleted and production prospects stray. A lack of rural development and investment in research and agricultural technology further hinders the region's transition towards optimizing its resources, reducing waste, and preparing for a more sustainable future.

Simultaneously, food supply chains in most countries of the region rely predominately on fossil fuel-derived inputs and fertilizers, global commodities imports, and industrial-based food. This reliance trickles down the supply chain, affecting land preparation, production, processing, distribution, and storage and heavily linking the industry to the global energy market. Moreover, the industry is also vulnerable to external shocks impacting global markets and prices, such as the recent COVID-19 pandemic and the war in Ukraine. Food chains in the region also tend to be overregulated and price-controlled through rigid subsidy systems put in place to avoid social grievances such as the bread riots in Tunisia in the early 1980s. Subsidizing inputs, such as seed and fertilizers, and food directly or indirectly through energy subsidies³⁵ accounts for a large share of public spending and is unsustainable. This approach drives public debt, especially in oil-importing countries, such as Egypt, Jordan, and Tunisia, and during economic slowdowns. In addition to creating incentives that distort free market mechanisms, such as producing water and energy-intensive crops, untargeted broad subsidies impact the supply of produced and imported goods and induce higher levels of inequality, as they mostly benefit higher-income farmers and households.³⁶

With modest local food production and high population growth, the region heavily relies on other parts of the world to meet its food needs. MENA is a net food importer; its food is primarily supplied through imports rather than domestic production. Overall, MENA imports around 50% of its food from a few primary importers, with several countries, like Algeria, Iraq, Lebanon, Tunisia, and countries of the Gulf, exceeding this share.³⁷ For instance, in 2020, Lebanon imported 81% and 15% of its wheat from Ukraine and Russia, respectively.³⁸ In Egypt, 80% of wheat imports came from these two countries.³⁹

Such overreliance, combined with weak, distorted, and non-resilient supply chains, make MENA more vulnerable to rising global prices and external shocks. The 2022 crisis of grains and seed oil—staples

in Middle Eastern and North African diets—and global food price increases have harshly impacted several countries, such as Egypt, Iraq, Lebanon, and Tunisia.⁴⁰ While high-income countries in the Gulf are not immediately threatened, since their reliance on imports can be sustained through oil revenues, most other MENA countries continue to grapple with this challenge.⁴¹

Several countries of the region are also dealing with crippling budget deficits and high levels of public debt. Internal economic hardships and a looming recession continue to erode people's purchasing power, limiting their access to food across the region.⁴² According to the latest wave of the Arab Barometer, more than half of the respondents, in nine out of the ten surveyed countries, had concerns about food shortages.⁴³ Lebanon, particularly, is witnessing one of the worst economic crises since the 1990s, with a deteriorating currency, inflation rates in triple digits—food inflation rates were nearly 400% in early 2022—and shortages of essential items including fuel and medicine. The economic crisis has exacerbated the poverty rate, pushing it to 74% in 2021, and food insecurity levels, with 46% of the Lebanese population and 49% of Syrian refugees in Lebanon estimated to be food insecure.⁴⁴ In Syria, due to economic hardships induced by more than a decade of conflict, food inflation continued to increase, reaching 532% between 2020 and 2022.⁴⁵ Meanwhile, the ban on food exports from Ukraine and Russia squeezed Egypt's wheat supply, pushing food inflation to 30% in 2022.⁴⁶ The sharp increase in prices has taken a heavy toll on access to food across the region, with many governments considering cuts to food subsidies that constitute an essential income-support for MENA households with limited resources.⁴⁷ As a result, many families are finding themselves unable to sustain access to essential staples.

Finally, political instability and reoccurring conflicts in several countries add a layer of complexity and challenges. Conflict and violence reduce access to food and destroy local and regional supply chains, driving acute food insecurity. Syria and Yemen, particularly, lead the global list for populations suffering

the most acute food insecurity and malnutrition.⁴⁸ Northwestern Syria—main crop land—is host to intense hostilities between the government and rebel groups, disrupting agriculture, humanitarian assistance, and access to food. These factors, along with economic hardships and shortages of basic items due to sanctions, have pushed 55% of the country's population to be food insecure as of 2021.⁴⁹ In Yemen, the situation is dire. FAO has estimated that 19 million people—more than 57% of the population—were experiencing crisis or worse levels of acute food security during the second half of 2022, and more than 2 million children under the age of five were suffering from acute malnutrition.⁵⁰

IS THERE A WAY FORWARD?

Food insecurity in the region will continue to be a major issue with deep structural roots. Many MENA countries, especially those with limited financial capacities, need to reevaluate their strategies toward food supply and accessibility. Agricultural policies should take into consideration the available resources, their sustainability, and how best to use them; this could mean emphasizing agricultural production toward domestic consumption and self-reliance instead of focusing on cash crops and overdependence on a narrow range of imports. Simultaneously, the unsustainable subsidies system must be restructured to target those in need instead of being absorbed by higher income segments.

Food security in conflict countries deserves extra attention by all relevant stakeholders and prominent organizations to prevent humanitarian crisis levels such as those in Syria and Yemen. During ongoing conflict, routes toward rapid and unimpeded humanitarian access must be maintained. In addition, addressing disruptions within the local and regional food supply chains during conflict de-escalation should be prioritized, together with removing barriers that impact specific segments of the population.

In addition, MENA governments will have to be responsive and adopt solutions tailored to enhancing

production capacities and increasing food security. Intra-regional cooperation will be integral to these efforts. Cooperation includes mutual agreements between relevant countries on the use of water and other shared resources to guarantee equitable access and prevent conflict.

Countries of the region will also have to cooperate on the establishment of sustainable solutions. The UAE's food security strategy, launched in 2018, is a notable example of such efforts. The strategy encompasses various initiatives that aim to increase the UAE's research capacity, by partnering with regional and international organizations, to adopt sustainable and innovative solutions. For instance, FAO has partnered with the UAE on the development of comprehensive systems that aim to address specific conditions related to the Gulf, such as the high occurrence of droughts.⁵¹

“Developing research capacities will also be critical in the road to food security. Investments in research capacities will improve the region's efficiency in the utilization of its resources.”

The India-Middle East Food Corridor is another ambitious food cooperation project seeking joint investment in food parks in India while using clean technology to maximize crop yields. The project envisions tripling food trade between the UAE and India by 2025 while benefiting around 2 million Indian farmers and creating 200,000 jobs in India.⁵²

MENA governments are cognizant of the urgency of food security and its contribution to long-term stability and prosperity. Egypt's Vision 2030, launched in 2016, details the country's ambitions to enhance its agricultural sector, which employs almost 20% of its overall workforce, by increasing the incorporation of technology.⁵³ In doing so, Egypt can capitalize on the wide-reaching benefits of the use of technology and modern practices, which would increase the efficient use of resourc-

es, lower waste and costs to improve food security, and create demand for new technical jobs.

Developing research capacities will also be critical in the road to food security. Investments in research capacities will improve the region's efficiency in the utilization of its resources. Research institutions are already playing a role in the development and implementation of solutions to address food security issues. In Qatar, the Qatar Environment and Energy Research Institute (QEERI) capitalizes on the research-policy nexus by conceptualizing solutions to food security. It provides access to locally developed technology, in alignment with Qatar's National Vision 2030, working alongside the Ministry of Environment and Climate Change.⁵⁴ This reflects promising prospects for the role research can play in the implementation of policies targeted at addressing food insecurity.

Research can also serve as a platform for the region to develop technology from within, which would address one of the major barriers to widescale adoption of existing agricultural-technological solutions—the high costs associated with it.⁵⁵ Moreover, research can address the gaps in data availability across the region. While data collection is on the rise in the region, significant gaps are hindering the process of establishing nuanced responses to the issues of food insecurity facing MENA countries. When assessing the state of food security in Palestine, through the Economic and Social Commission for Western Asia's (ESCWA) monitoring framework, most of the indicators lacked the data necessary.⁵⁶ Without such data, it is difficult to evaluate the state of food insecurity. Accordingly, countries of the region with higher capacities could pave the way by playing a role in the process of data collection and dissemination, along with investing in the infrastructure and resources necessary to ensure that data collection capacities and innovative research are developed.

State-led efforts are critical to the establishment of comprehensive plans that will equip the region with the knowledge and technology necessary to



combat food insecurity. However, empowering small-scale initiatives will be vital to the expansion of these efforts, namely within the field of agricultural technology. Entrepreneurs around the region are already generating innovative solutions that will increase the sustainability of agricultural practices. Examples include Ghallaty, a Moroccan sensor-based project that would allow farmers to gauge the maturity of their harvest.⁵⁷ These solutions can help facilitate the transition towards sustainable farming, which will inevitably increase the region's self-sufficiency.

CONCLUSION

Charting the road towards increasing food security is mired with several challenges; however, the urgency of the issue is growing. Currently, the sowing season for the 2023 grain crops has commenced and several countries in the region are registering significant rainfall deficits and above-average temperatures, which will potentially affect local harvests.⁵⁸ While the level of urgency differs across the region, MENA governments need to pay special attention to this issue and take actions to mitigate this crisis. Investing in advancing agricultural research and improving food production is key to better utilizing the meager resources available, optimizing yields, and moving toward a more sustainable future. Intra- and inter-regional cooperation is also important since food insecurity is a global problem. Strides have already been made by many, and states in the region can draw on these strides to inform their trajectory toward food security. This will also inevitably strengthen MENA's technological capacity, diplomacy between states as food security becomes an avenue for cooperation, and the welfare of the region's populations.

ENDNOTES

1. Food insecurity refers to a state of unstable access to adequate amounts of food that is a result of various social, economic, and political factors, "What is Food Insecurity?," McKinsey & Company, August 17, 2022, <https://www.mckinsey.com/featured-insights/mckinsey-explainers/what-is-food-insecurity>.
2. World Food Programme (WFP) and the Food and Agriculture Organization (FAO), *Hunger Hotspots: FAO-WFP early warnings on acute food insecurity: October 2022 to January 2023 outlook*, Report, (Rome, Italy: WFP/FAO, 2022), September 21, 2022, vii, <https://www.fao.org/3/cc2134en/cc2134en.pdf>.
3. Acute food insecurity is a state where individuals' lives are threatened by their lack of ability to access sufficient food. See Food and Agriculture Organization (FAO), "Global Report on Food Crises: Acute Food Insecurity Hits New Highs," May 4, 2022, <https://www.fao.org/newsroom/detail/global-report-on-food-crises-acute-food-insecurity-hits-new-highs/en#:~:text=Acute%20food%20insecurity%20is%20when,IPC%20and%20the%20Cadre%20Harmonis%C3%A9>; Food and Agriculture Organization (FAO), "In 2023, FAO will require \$1.9 billion to reach 48 million people with life-saving and livelihood assistance," December 1, 2022, <https://www.fao.org/newsroom/detail/in-2023-fao-requires-1.9billion-to-reach-48-million-people-with-life-saving-and-livelihood-assistance/en>.
4. Undernourishment refers to a sustained inability, over one year, to access the sufficient amount of food needed to achieve the daily suggested dietary requirements, see Food and Agriculture Organization (FAO), "Sustainable Development Goals," accessed February 20, 2022, <https://www.fao.org/sustainable-development-goals/indicators/211/en/>.
5. Ibid.
6. Food and Agriculture Organization (FAO), International Fund for Agricultural Development (IFAD), United Nations International Children's Emergency Fund (UNICEF), World Food Program (WFP), and World Health Organization (WHO), *The state of food security and nutrition in the world 2022: Repurposing food and agricultural policies to make healthy diets more affordable*, (Rome, Italy: FAO, IFAD, UNICEF, WFP, and WHO, 2022), 16, <https://www.fao.org/3/cc0639en/cc0639en.pdf>.
7. World Bank, "Population, total - Middle East & North Africa," The World Bank Group, accessed February 20, 2022, <https://data.worldbank.org/indicator/SP.POP.TOTL?locations=ZQ>.
8. Food and Agriculture Organization (FAO), *Food Policy Monitoring in the Near East and North Africa region*, 4th Quarter 2022 Bulletin, (Cairo, Egypt: FAO, 2022), 2, <https://www.fao.org/3/cc3210en/cc3210en.pdf>.
9. Zanny Minton Beddoes, "Why a Global Recession is Inevitable in 2023," November 18, 2022, *The Economist's The World Ahead* (blog), <https://www.economist.com/the-world-ahead/2022/11/18/why-a-global-recession-is-inevitable-in-2023>.
10. Tarek Ben Hassen and Hamid El Bilali, "Impacts of the Russia-Ukraine War on Global Food Security: Towards More Sustainable and Resilient Food Systems?," *Foods* 11, no. 15 (January 2022): 2301, <https://doi.org/10.3390/foods11152301>.
11. "What Is Food Security?," World Bank Group, accessed February 20, 2022, <https://www.worldbank.org/en/topic/agriculture/brief/food-security-update/what-is-food-security>.
12. Klaus von Grebmer, Jill Bernstein, Miriam Wiemers, Laura Reiner, Marilena Bachmeier, Asja Hanano, Olive Towey, et al., *Global Hunger Index: Food Systems Transformation and Local Governance*, (Bonn, Germany/Dublin, Ireland: Welthungerhilfe and Concern Worldwide, 2022), 11, <https://www.globalhungerindex.org/pdf/en/2022.pdf>.
13. Ishtar Al Shami, "Facing Syria's Food Crisis," *Fikra Forum* (an initiative of The Washington Institute for Near East Policy), February 14, 2022, <https://www.washingtoninstitute.org/policy-analysis/facing-syrias-food-crisis>.
14. Ibid.
15. Hala Mohsen, Yonna Sacre, Lara Hanna-Wakim, and Maha Hoteit, "Nutrition and Food Literacy in the MENA Region: A Review to Inform Nutrition Research and Policy Makers," *International Journal of Environmental Research and Public Health* 19, no. 16 (August 2022): 2, <https://doi.org/10.3390/ijerph191610190>.
16. World Population Review Database, "Most Obese Countries 2023," accessed January 24, 2023, <https://worldpopulationreview.com/country-rankings/most-obese-countries>.
17. World Bank, "What Is Food Security?"
18. Deep Knowledge Analytics (DKA), "Global Food Security Q2 2022: Food Security Index," accessed February 19, 2023, <https://www.dka.global/global-food-security-q2-2022>.
19. Charlie Mitchell, "UAE and Uganda to Establish One of the World's First Agricultural Free Zones," *The National*, October 30, 2018, <https://www.thenationalnews.com/uae/uae-and-uganda-to-establish-one-of-the-world-s-first-agricultural-free-zones-1.785734#:~:text=The%20UAE%20signed%20a%20deal,production%20and%20development%20in%20Uganda>.
20. Ibid.

21. Deep Knowledge Analytics (DKA), "Global Food Security Q2 2022."
22. "The index is a ... model constructed from 40 unique factors that measure the drivers of food security.... Essentially... [it] envisages three dimensions: Access to Food, Crisis Level, and Food System and Economy Resilience." The index ranges from a score of 2.97 for the most food insecure country, Somalia, to a score of 7.90 for the most food secure, the United States. Deep Knowledge Analytics (DKA), "Global Food Security Q2 2022."
23. Salma Al-Shami, *Food Insecurity and its Discontents in the Middle East and North Africa*, Report, (New Jersey, U.S.A.: Arab Barometer, September 2022), https://www.arabbarometer.org/wp-content/uploads/ABVII_Food_Insecurity_Report-ENG.pdf.
24. Al-Shami, *Food Insecurity and its Discontents*, 12–17.
25. Christoph Duenwald, Yasser Abdih, Kerstin Gerling, Vahram Stepanyan, Abdullah Al-Hassan, Gareth Anderson, Anja Baum, et al., *Feeling the Heat: Adapting to Climate Change in the Middle East and Central Asia*, Departmental Paper, (Washington, D.C., U.S.A: International Monetary Fund (IMF), 2022), <https://www.imf.org/en/Publications/Departmental-Papers-Policy-Papers/Issues/2022/03/25/Feeling-the-Heat-Adapting-to-Climate-Change-in-the-Middle-East-and-Central-Asia-464856>.
26. "Video: MENA's water crisis and how to fix it," The United Nations Children's Fund (UNICEF), March 28, 2022, accessed February 20, 2022, <https://climatechampions.unfccc.int/video-menas-water-crisis-and-how-to-fix-it/#:~:text=MENA%20has%2011%20out%20of,for%20or%20lost%20in%20leakages>.
27. United Nations Economic and Social Commission for Western Asia (UN ESCWA), *Arab food security monitoring framework: Country reviews*, (Beirut, Lebanon: UN ESCWA, 2021) 92, <https://www.unescwa.org/sites/default/files/pubs/pdf/arab-food-security-country-reviews-english.pdf>.
28. Maghie Ghali, "How Water Cooperation Can Provide Geopolitical Stability in MENA," *Al Jazeera*, April 2, 2022, <https://www.aljazeera.com/news/2022/4/2/blue-peace-how-water-access-can-provide-mena-stability>.
29. Tianyi Luo, Robert Young, and Paul Reig, "Aqueduct projected water stress rankings," Technical Note, (Washington, D.C., U.S.A.: World Resources Institute, August 2015), <http://www.wri.org/publication/aqueduct-projected-water-stress-country-rankings>.
30. Adel Abdel Ghafar, *The Return of Egypt? Assessing Egyptian Foreign Policy under Sissi*, Issue Brief, (Doha, Qatar: Middle East Council on Global Affairs, November 2022), <https://mecouncil.org/publication/the-return-of-egypt-assessing-egyptian-foreign-policy-under-sissi/>;
31. Ranj Alaaldin, *Iraq's Climate Crisis: A Geopolitical Conflagration in the Making*, Policy Note, (Doha, Qatar: Middle East Council on Global Affairs, June 2022), <https://mecouncil.org/publication/iraqs-climate-crisis-a-geopolitical-conflagration-in-the-making/>.
32. Sherif Mohy El Deen, "Egypt's Water Policy After the Construction of the Grand Ethiopian Renaissance Dam," Research Paper in Dossier entitled *Egypt Policy Dialogues*, (Paris, France: Arab Reform Initiative, March, 30 2022), <https://www.arab-reform.net/publication/egypts-water-policy-after-the-construction-of-the-grand-ethiopian-renaissance-dam/>.
33. "Cash crops" or "profit crops" are crops intended for sale and export for profits.
34. World Bank Statistical Database, "Urban population (% of total population) – Middle East & North Africa, World, Sub-Saharan Africa, South Asia," accessed January 3, 2023, <https://data.worldbank.org/indicator/SP.URB.TOTL.IN.ZS?locations=ZQ-1W-ZG-8S>.
35. World Bank Statistical Database, "Population growth (annual %) – World, Middle East & North Africa," accessed January 3, 2023, <https://data.worldbank.org/indicator/SP.POP.GROW?locations=1W-ZQ>.
36. As explained, the food and beverage industry in the region heavily relies on fuel inputs, and hence is indirectly subsidized through fuel subsidies.
37. David Fickling, "To Tackle Hunger, We Need to Fix Food Subsidies," *Bloomberg*, August 15, 2022, <https://www.bloomberg.com/opinion/articles/2022-08-14/to-tackle-hunger-we-need-to-fix-food-subsidies?leadSource=verify%20wall>.
38. Deep Knowledge Analytics (DKA), *Global Food Security Q2 2022*, (London, United Kingdom: Deep Knowledge Analytics, July 2022), 15, 53, https://analytics.dkv.global/Global_Food_Security_Report_Q2_2022/Analytical_Study.pdf.
39. Mohammed Tazroui, "The invasion of Ukraine is supercharging food insecurity in the Middle East and North Africa," *Greenpeace*, April 12, 2022, <https://www.greenpeace.org/international/story/53163/russia-invasion-of-ukraine-supercharging-food-insecurity-middle-east-north-africa/>.
40. Amal Kandeel, "Climate Vulnerability and Food Insecurity in Mena Should Be Priorities for US Policymakers," Atlantic Council *MENASource* (blog), August 31, 2022, <https://www.atlanticcouncil.org/blogs/menasource/climate-vulnerability-and-food-insecurity-in-mena-should-be-priorities-for-us-policymakers/>.

40. Paul Iddon, "How the Ukraine war is driving food insecurity in the Middle East," *The New Arab*, June 2, 2022, <https://www.newarab.com/analysis/middle-east-deepening-food-crisis>; Khouloud Ayari, "War in Ukraine and food insecurity in Tunisia: Where is reform most needed?," Arab Reform Initiative, August 4, 2022, <https://www.arab-reform.net/publication/war-in-ukraine-and-food-insecurity-in-tunisia-where-is-reform-most-needed/>.
41. Simone Borghesi and Elisa Ticci, "Climate Change in the MENA Region: Environmental Risks, Socioeconomic Effects and Policy Challenges for the Future," European Institute of the Mediterranean (IEMed), 2019, <https://www.iemed.org/publication/climate-change-in-the-mena-region-environmental-risks-socioeconomic-effects-and-policy-challenges-for-the-future/>.
42. Middle East Council on Global Affairs, "MENA Outlook 2023 – Council Views," *Afkār* (blog), January 5, 2023, https://mecouncil.org/blog_posts/mena-outlook-2023-council-views/.
43. Al-Shami, *Food Insecurity and its Discontents*, 4.
44. World Food Programme (WFP) and the Food and Agriculture Organization (FAO), *Hunger Hotspots: FAO-WFP early warnings on acute food insecurity: June to September 2022 Outlook*, Report, (Rome, Italy: WFP/FAO, 2022), June 6, 2022, 35.
45. European Civil Protection and Humanitarian Aid Operations (ECHO), "Syria: life in the time of food insecurity," October 14, 2022, https://civil-protection-humanitarian-aid.ec.europa.eu/news-stories/stories/syria-life-time-food-insecurity_en#:~:text=Syria%2C%20a%20country%20that%20used,and%20the%20upward%20trend%20continues.
46. "Egypt Inflation Jumps to Five-Year High in November," *Asharq Al-Awsat*, December 9, 2022, <https://english.aawsat.com/home/article/4033646/egypt-inflation-jumps-five-year-high-november>.
47. Tarek Amara, "Tunisia Cenbank Warns of Consequences If Inflation Rockets," Reuters, January 4, 2023, <https://www.reuters.com/world/africa/tunisias-cbank-governor-says-inflation-average-11-2023-up-83-2022-2023-01-04/>.
48. Deep Knowledge Analytics, "Global Food Security Q2 2022 – Top 25 Food Insecure Countries Ranking," accessed January 4, 2023, <https://www.dka.global/global-food-security-q2-2022>.
49. World Food Programme (WFP), *WFP Syria Country Brief*, (Rome, Italy: World Food Programme, November 2022), https://docs.wfp.org/api/documents/WFP-0000145474/download/?_ga=2.238188038.725556833.1672916770-1193575793.1672916770&_gac=1.217219684.1672916770.CjwKCAiAh9qdBhAOEiwAvxlok36EmC_v6oN-VZmF5fUjRO-7H3ANSAmU7t8KxsuJD7oZLLg_JCjowllBoCvNkQAvD_BwE.
50. World Food Programme (WFP) and Food Agriculture Organization (FAO), *Hunger Hotspots: June to September 2022 Outlook*, 39.
51. Food and Agriculture Organization, "The UAE and FAO: Partnering for Sustainable Agricultural Development and Food Security," September 2019, <https://www.fao.org/3/az580e/az580e.pdf>.
52. Michaël Tanchum, *The India-Middle East Food Corridor: How the UAE, Israel, and India are forging a new inter-regional supply chain*, (Washington D.C., U.S.A.: Middle East Institute, July 27, 2022), <https://www.mei.edu/publications/india-middle-east-food-corridor-how-uae-israel-and-india-are-forging-new-inter>.
53. Saker El Nour, *Agricultural and Food Policies in Egypt between 2014 and 2021: What Changed and What Didn't*, Research Paper, (Arab Reform Initiative, January 5, 2023), 5, <https://www.arab-reform.net/publication/agricultural-and-food-policies-in-egypt-between-2014-and-2021-what-changed-and-what-didnt/>.
54. Annamaria Mazzoni, "Why Qatar's Food Security Efforts are Paying Dividends," Qatar Environment & Energy Research Institute (QEERI), January 10, 2022, <https://www.hbku.edu.qa/en/news/QEERI-SUST-WQFSEAPD>.
55. Salim Ghazaly, Roger Rabbat, Makram Debbas, Aya Hallak, "How the Middle East can Promote Agritech," PricewaterhouseCoopers (PWC) Strategy& (blog), November, 2022, <https://www.strategyand.pwc.com/m1/en/strategic-foresight/sector-strategies/consumer-retail-industry/promoteagritech.html>.
56. United Nations Economic and Social Commission for Western Asia (UN ESCWA), *Arab food security*, 261.
57. Souad Anouar, "Ghallaty: Morocco's Award-Winning, Agri-Tech Solution for Farmers," *Morocco World News*, May 26, 2022, <https://www.morocoworldnews.com/2022/05/349297/moroccans-develop-award-winning-agri-tech-solution-ghallaty>.
58. Food and Agriculture Organization (FAO), *Crop Prospects and Food Situation*, Quarterly Global Report No. 4, (Rome, Italy: FAO, December 2022), 13, <https://reliefweb.int/report/world/crop-prospects-and-food-situation-quarterly-global-report-no4-december-2022>.

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