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Food Dependency in the Middle East and North Africa Region: Retrospective Analysis Projections to 2050

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This book, *Food Dependency in the Middle East and North Africa Region: Retrospective Analysis Projections to 2050,* sets out the risks to food security in the Middle East and North Africa (MENA) region from various issues, including climate change, and how these vulnerabilities interact with other key trends and sources of risk, including population growth, urbanisation, and conflict. Focused on the year 2050, this book contributes to a better understanding of how these trends and threats may affect the region in the coming years. The book predicts that the MENA region will continue to be one of the most import-dependent regions in the world. About half of the food in the region is imported; however, given high population growth rates, with a population growth of 1.7% in 2020 across the MENA region, the second fastest globally, behind only Sub-Saharan Africa. According to the findings of this analysis, import dependency is predicted to expand further by 2050. Some sub-regions are still struggling to attain sustainable levels; the MENA might import 60 to 70% of their food needs.

The book consists of three chapters with an introduction and conclusion. The book has several distinct advantages. First, it includes a detailed evolution of the various components of the food and agricultural system in the MENA region since early 1960. Second, the book examines the effects on the balance between food needs and agricultural resources in 2050. Third, the book offers possible improvements to the region's food and agriculture system.

The first chapter discusses the evolution of the various components of the food and agricultural system in the Middle East-North Africa region since the early 1960s. This chapter covers the development of the multiple components of the food and farming system. To accomplish this, it first examines the supply chains that the region has used in the past to satisfy its demand for food, and then it focuses successively on the developments, from 1961 to 2011, of the components of both food demand (volume and characteristics of the diet) and regional agricultural supply. This chapter helps us comprehend the rise

in agricultural produce demand, driven by three reasons. The first is the demographic component, particularly noticeable in the region, as the population multiplied by 3.6 between 1961 and 2011. The second component is concerned with the characteristics of the human diet. The third component is animal feed, the total amount of which rises in tandem with the growth in the number of animal-based kilocalories consumed in human diets, and the form of which might alter over time. (p.2). To examine the evolution of food demand, the study relied on the idea of "food availability," which is the FAO-standard indicator for determining the total amount of food available for human consumption in a nation or world area. For instance, the MENA area had a dramatic growth in food availability in the 1960s and 1970s, but this increase was halted in the 1990s and 2000s, primarily as a result of regional wars. Currently, the Middle East has the lowest food availability in the area (2,600 kcal per person per day).It should be noted that the chapter demonstrates how the structural imbalance between food consumption and agricultural output was mechanically exacerbated by the quantitative improvement of diets for a population that increased from 139 to 496 million people between 1961 and 2012. Changes in demand structure have aggravated the problem (p.25). This chapter also emphasises that, due to insufficient performance improvements, regional agricultural production has been unable to boost its output to satisfy the demands of the region's rising population.

The following chapter, “By 2050, a Possible Strengthening of the Regional Dependence on Agricultural Imports,” investigates the impacts on the balance of food demands and agricultural resources in 2050. To give a more detailed risk analysis, the GlobAgri-Pluriagri model was used, and its comprehensive results were displayed in charts to predict the demands and resources of the area and its sub-regions until 2050 (p.31). Moreover, this chapter emphasises how population increase, and dietary shifts will worsen the rising demand for cultivable land. The projected population expansion for 2050 and the predicted dietary trends would result in a dramatic rise in food demand and, consequently, a significant increase in the need for cultivable land. Aside from population growth, the region is also seeing the effects of climate change, with water shortages impacting several nations in the region. As a result, the availability of resources required for production in conventional agricultural sectors is limited. Agriculture production in certain nations is anticipated to drop as the region gets increasingly dry, with Egypt and the Maghreb countries particularly vulnerable (p.47).

In the last chapter, “Brakes and Levers to Reduce the Dependence on Imports in the Middle East-North Africa Region” provided some projections using the UN's lowest and highest forecasts to assess the influence of demography on the rise of food demand and to determine the consequences of this factor on potential changes to the agricultural and food system equilibrium in the MENA. The chapter emphasises that, according to the UN's most optimistic projections, the population will likely grow by 12 to 13% higher than the median estimate. Simultaneously, the UN's low prediction indicates that the

region's overall population is around 15% below the median projection (nearly 90 million fewer people), with population levels in the five sub-regions falling between 14% and 16% (p.69). As a result of the high population scenario, food demands in the Middle East-North Africa area, and its five sub-regions expand. As a result, it raises the demand for cultivable land, resulting in a rise in import quantities and increasing the region's net import reliance. The low population situation is the total opposite.

To break the dependence on imports, this chapter offers some practical solutions. The first mechanism concerns the effects of climate change itself. According to some forecasts, climate change and decreasing precipitation would diminish internal renewable water, which refers to rivers and aquifers refilled by precipitation, by roughly 4% in the MENA area by 2050.[1] The second mechanism is known as 'technical progress,' and it refers to a variety of factors that can improve crop productivity, such as the availability and quality of agricultural production factors (seed, inputs, irrigation, mechanisation, labour, and human capital), as well as improved agricultural practises and production technologies (p82).

The third factor relates to a change in the distribution of cultivated areas between rainfed and irrigated agriculture in favour of the latter. In this sense, a change in the share of rainfed/irrigated areas would help to limit the negative impact of climate change on the average yields per hectare in the Middle East-North Africa region. It is noteworthy that "In a context of accentuated climate change and under the hypothesis, which we have used until now, that irrigated agriculture will be little affected by climate change (i.e. wide availability of irrigation water), such a change in the share of rainfed/irrigated areas would help to limit the negative impact of climate change on the average yields per hectare in the Middle East-North Africa region" (p.83). The fourth mechanism is harvest loss reduction (which is counted in the average yields observed in GlobAgri). Greater harvesting mechanisation and improved preservation procedures and management might help prevent these losses, increasing average yields per hectare for plant products.

Food Dependency in the Middle East and North Africa Region is a valuable contribution, providing an outline of future food security challenges in the MENA region. This research presents a comprehensive and extensive retrospective investigation of the region's agri-food system, which serves as a consistent framework for the prospective analysis. The book offers several projections and simulations based on quantitative approaches.

[1] Frederic Wehrey and Ninar Fawal, "Cascading Climate Effects in the Middle East and North Africa: Adapting through Inclusive Governance," Carnegie Endowment for International Peace, February 24, 2022, https://carnegieendowment.org/2022/02/24/cascading-climate-effects-in-middle-east-and-north-africa-adapting-through-inclusive-governance-pub-86510.