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Near East and North Africa
REGIONAL OVERVIEW OF FOOD SECURITY AND NUTRITION

RURAL TRANSFORMATION-KEY FOR SUSTAINABLE DEVELOPMENT IN THE NEAR EAST AND NORTH AFRICA

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KEY MESSAGES

➔ Hunger is worsening in the Near East and North Africa region, continuing a trend since 2011–2013, as highlighted in the *2017 Regional Overview*. This recent upturn is due nearly exclusively to increases in the five conflict countries. While the prevalence of undernourishment has risen from 23 to 26 percent in conflict countries since 2011–2013, it has remained stable at about 5 percent in non-conflict countries.

➔ A review of SDG 2 indicators in the NENA countries reveals that improvements in hunger, food security and nutrition are positively associated with the degree of rural transformation, a process deriving from productivity increases in agriculture, rural poverty alleviation and the improvement of rural infrastructure and services. This suggests that policies and programmes to support sustainable agricultural production, improvement of rural infrastructure and services and the reduction of food insecurity and rural poverty could be accelerators for the achievement of the SDG 2 targets.

➔ Governments in the NENA region have not advanced rural transformation as a goal of development policies. Instead, they have focused on policies prioritizing food security--both availability and access--most notably through support for cereal production and staple food subsidy policies. These policies might have contributed to improving food security in the region by keeping undernourishment rates low, compared to other developing regions. They have however done little to improve the nutrition status of the population, and might have slowed agricultural and rural transformation.

➔ High unemployment in the NENA region requires structural reform policies aimed at limiting the role of the state in the economy, strengthening the enabling environment for the private sector and encouraging the growth of tradeable sectors.

➔ Governments of the region need to devise and implement rural transformation strategies and investment plans to close the rural-urban gap through raising agricultural productivity, strengthening rural-urban linkages, and enhancing public services in rural infrastructure, health, education and other services. Experience of other countries indicates that such policies can make rural areas more attractive for business, increasing economic growth and slowing migration. Proactive policies for rural transformation could also provide a path out of poverty for the rural and semi-rural populations of many of the countries of the region by tapping into unexploited opportunities for agrifood exports and value-added processing.

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FOREWORD

I n *The State of Food Security and Nutrition in the World 2018*, the Food and Agriculture Organization of the United Nations (FAO) monitors progress against targets from Sustainable Development Goal 2 (SDG 2) on ending hunger and all forms of malnutrition. In addition to this global report, FAO has published Regional Overviews of Food Security and Nutrition since 2015. *The Overview of Food Security and Nutrition in the Near East and North Africa 2018* confirms trends already highlighted in 2017: Hunger is on the rise in the region as a result of conflict; child undernutrition indicators continue to improve; while overweight and obesity continue to worsen for children and adults.

Beyond these numbers, this report explores the relationships between food insecurity, economic growth and rural transformation. It demonstrates that economic growth in the NENA has been slow compared to other regions, and suggests that, as advocated by the *State of Food and Agriculture 2017*, a territorial development approach to rural transformation can improve growth rates and generate decent employment through strengthening rural-urban linkages, improving agricultural productivity, and expanding the rural non-farm economy.

The Near East and North Africa region stands in contrast to the successful development policies of East Asia that emphasized agricultural and rural development as a necessary complement to industrialization. NENA development policies have emphasized the mining and extraction industries, with little focus on the labour-intensive manufacturing sector. NENA food policies have emphasized food security policies that prioritize cereal production and the affordability of staple foods. While these policies have contributed to keeping undernourishment among the lowest in the developing countries, they have not paid sufficient attention to the broader role of agriculture in rural transformation and poverty alleviation that results from agricultural transformation, territorial development and rural infrastructure improvements.

This year's *Regional Overview* brings into focus how policies aimed at rural transformation can potentially lead to higher levels of agricultural production, better food security and nutrition outcomes, and reinvigorated labour-intensive growth of the economy with development that seeks to connect rural and urban areas through territorial development. It also assesses how agricultural policies, focused on cereal production, availability and affordability of food as sole objectives, could negatively impact food security and nutrition outcomes and growth more generally.

The ambitious goals of the 2030 Agenda for Sustainable Development are an opportunity to reflect on current policy frameworks and consider new approaches to achieve better results in the Near East and North African region. Policy changes aimed at rural transformation are one step governments in the region can take to accelerate growth, generate employment, alleviate rural poverty and eradicate hunger and all forms of malnutrition on the way towards creating the world we want by 2030.

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ACKNOWLEDGEMENTS

ABBREVIATIONS AND ACRONYMS

ADESA	Average dietary energy supply adequacy
CF	Cost and freight
CV	Coefficient of Variation
DEC	Dietary Energy Consumption
DES	Dietary Energy Supply
DESA	Dietary Energy Supply Adequacy
EPI	Export potential indicator of the International Trade Centre
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FAO RNE	FAO Regional Office for the Near East and North Africa
FAS	Foreign Agricultural Service (of the USDA)
FIES	Food Insecurity Experience Scale
GASC	General Authority for Supply Commodities (Egypt)
GCC	Gulf Cooperation Council
GDP	Gross Domestic Product
IFAD	International Fund for Agricultural Development
IMF	International Monetary Fund
ITC	International Trade Centre, a joint development agency of the WTO and UN
LDC	Least Developed Country
MDER	Minimum Dietary Energy Requirement
MDG	Millennium Development Goal
MFN	Most Favoured Nation
NENA	Near East and North Africa
NRA	Nominal rate of assistance
PoU	Prevalence of Undernourishment
PPP	Purchasing Power Parity
SAGO	Saudi Arabia Grains Organization
SDG	Sustainable Development Goal
SK	Skewness
SSR	Self-sufficiency ratio
UN	United Nations
UNICEF	United Nations Children's Fund
UNSD	UN Statistical Division
UNU	UN University
USD	United States Dollars
USDA	United States Department of Agriculture
VAT	Value Added Tax
WB	World Bank
WDI	World Development Indicators
WHO	World Health Organization
WTO	World Trade Organization

COUNTRY AND TERRITORY ABBREVIATIONS

Following is a list of countries and territory with names that are abbreviated in the text :

Algeria	The People's Democratic Republic of Algeria
Bahrain	The Kingdom of Bahrain
Egypt	The Arab Republic of Egypt
Iran (Islamic Republic of)	The Islamic Republic of Iran
Iraq	The Republic of Iraq
Jordan	The Hashemite Kingdom of Jordan
Kuwait	The State of Kuwait
Lebanon	The Lebanese Republic
Libya	The State of Libya
Mauritania	The Islamic Republic of Mauritania
Morocco	The Kingdom of Morocco
Oman	The Sultanate of Oman
Qatar	The State of Qatar
Saudi Arabia	The Kingdom of Saudi Arabia
Sudan	The Republic of Sudan
Syria	The Syrian Arab Republic
Tunisia	The Republic of Tunisia
UAE	The United Arab Emirates
Yemen	The Republic of Yemen
Palestine	Palestine

The Near East sub-region includes Egypt, Iran (Islamic Republic of), Iraq, Jordan, Lebanon, Sudan, the Syrian Arab Republic, Yemen, as well as Palestine.

The North Africa sub-region includes Algeria, Libya, Mauritania, Morocco and Tunisia.

The Gulf Cooperation Council (GCC) countries include Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates.

INTRODUCTION

The *Regional Overview of Food Security and Nutrition in the Near East and North Africa* is an annual monitor for targets related to Sustainable Development Goal 2 in the NENA region (Table 1). Beyond its monitoring role, however, *the Regional Overview* presents an analysis of the latest food security and nutrition outcomes and policy frameworks that have or can assist countries to realize Sustainable Development Goal 2 on food security and nutrition. *Regional Overview 2017* illustrated that recent increases in hunger and food insecurity have been associated with increased conflict in the region. However, conflict alone is not responsible for the woes of the region. All countries in conflict showed high levels of poverty, hunger and undernutrition even before conflict began, and some countries unaffected by conflict also showed high levels of hunger and undernutrition (cf. Tables 2 and 6). The question considered in *Regional Overview 2018* is why?

Regional Overview 2018 proposes rural transformation as a paradigm through which to view food security and nutrition outcomes in the NENA region (cf. Box 1). In order to provide an empirical foundation for analysis, a database of 81 developing countries was created exclusively for this publication. The global database allowed the designation of countries with high, medium and low levels of rural transformation. These categories were then correlated with the outcome indicators of SDG 2 on hunger, food insecurity and malnutrition. The construction of a global database allowed the measurement of rural transformation in NENA countries using a global scale, and allowed the comparison of NENA high, medium and low transformation countries with their comparators around the world.

Part I of the *Regional Overview 2018* establishes the relevance of the rural transformation paradigm, by showing that most of the SDG 2.1 and 2.2 targets are correlated with the degree of rural transformation in the countries of the region. The countries that have gone furthest in transforming rural areas have achieved better food security and undernutrition outcomes. Part II focuses on food security policies and their effects on both food security and rural transformation. Finally, Part III of the *Regional Overview* places rural transformation in the context of the region's skewed development policies and how these have led to a rural-urban gap, low growth and unemployment. The chapter then focuses on some of the policies employed in other countries aimed at accelerating rural transformation to address food security and nutrition issues.

TABLE 1
Sustainable Development Goal 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture

Targets		Indicators for Monitoring Targets	Other nutrition indicators considered
Target 2.1	By 2030, end hunger and ensure access by all people, in particular, the poor, and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round.	1. Prevalence of undernourishment. 2. Prevalence of severe food insecurity in the population, based on the Food Insecurity Experience Scale (FIES).	
Target 2.2	By 2030, end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under 5 years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women and older persons.	1.Prevalence of stunting among children under 5 years old. 2. Prevalence of malnutrition among children under 5 years of age, by type (wasting and overweight).	1. Prevalence of underweight among children under 5 years of age; 2. Prevalence of obesity in adults; 3. Prevalence of anaemia in women of reproductive age; 4. Exclusive breastfeeding among infants.

While focusing on rural transformation requires a new set of coherent policies that spans across many sectors, from agriculture, to trade, natural resources, education, infrastructure, and food security and nutrition, the core of the policy paradigm is on productivity growth in agriculture, connecting rural with urban areas and improving services in rural areas to attract people and business. The effect of adopting this paradigm is to rebalance the development focus in the region to rural-centred development, aiming to connect rural areas with markets in urban areas and abroad. This rural growth paradigm has long been eclipsed in the region by food security policies that have favoured self-sufficiency in staple crops, partial government controls over trade and marketing, while the significant costs of these policies for the rural sector and economic growth have not been properly considered.

PART 1
REGIONAL OVERVIEW OF FOOD SECURITY AND NUTRITION INDICATORS

Hunger is worsening in the NENA region, continuing a trend since 2011–2013. Food insecurity, according to the Food Insecurity Experience Scale (FIES), has also increased, though this is only the second year that FAO has reported these results. As reported in last year's *Overview*, the recent upturn in hunger and food insecurity in the region seems to be nearly exclusively due to increases in the five conflict countries[1]. However, other countries in the region not affected by conflict also show relatively elevated levels of food insecurity. This suggests that over a longer period, there are other additional factors that cause hunger, food insecurity and undernutrition in the region[2].

IFAD (2016) and FAO (2017b) suggest that *inclusive rural transformation* is a critical factor for the reduction of poverty and food insecurity, as well as for stimulating overall growth of the economy. Rural transformation is "a process in which rising agricultural productivity, increasing marketable surpluses, expanded off-farm employment opportunities, better access to services and infrastructure, and capacity to influence policy all lead to improved rural livelihoods and inclusive growth (IFAD, 2016)." It is also part of the larger structural transformation of the economy in the process of development that involves a shrinking of the role played by agriculture in the economy. The degree of rural transformation is also highly correlated with GDP per capita measured in purchasing power parity terms[3]. Box 1 explains the key concepts connected with rural transformation, and Box 2 explains the measurement of rural transformation used in this publication.

Part I of this *Regional Overview* analyses the main indicators of hunger, food insecurity and malnutrition behind SDG Targets 2.1 and 2.2 for the NENA region through the lens of rural transformation. The goal of the analysis is to ascertain to what extent rural transformation seems to be relevant for the hunger, food security and malnutrition indicators of SDG 2. For SDG Target 2.1, the prevalence of undernourishment and food insecurity according to the FIES are examined as indicators of hunger and food insecurity. For SDG 2.2, children's anthropometric indicators are examined, as well as indicators of adult obesity, the prevalence of anaemia among women of reproductive age, and the prevalence of exclusive breastfeeding of infants for the first six months.

The overall conclusion of Part I is that conflict and the level of rural transformation are two critical issues relevant to food insecurity and undernutrition in the NENA region. Grouping countries by the conflict/non-conflict distinction or by the degree of rural transformation shows that, for all the SDG 2.1 and 2.2 indicators considered here, the countries that are not in conflict or that have undergone higher degrees of transformation perform better in terms of food security and nutrition than those in conflict or with lower levels of rural transformation.

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[1] The five countries in conflict in the NENA region are Iraq, Libya, Sudan, Syria and Yemen.

[2] The distinction alluded to here is one between changes in levels of hunger and food security since 2011, which have coincided with abrupt changes in violence in a few countries of the region, and the level of hunger and food insecurity in countries of the region over a far longer period of time, which is influenced by a greater variety of factors, including rural transformation.

[3] For the 80 countries for which data is available, the correlation between the 2015 Gross Domestic Product (GDP) per capita measured in purchasing power parity (PPP) terms in 2011 international dollars and an index of rural transformation was 0.73 at a 95% confidence level. See the Appendix for the sources of the index of rural transformation. The source of the GDP data is World Bank, 2018d. Of the 81 countries for which rural transformation data is available, Syria is the only country for which GDP data is not available.

BOX 1
Key definitions: structural, agricultural and rural transformation

Structural transformation is the reallocation of economic activities away from the primary sectors (agriculture and natural resources) to industry and services. It is characterized by increasing income and productivities across sectors, expansion of the urban economy, a declining share of agriculture in gross domestic product (GDP), expanded domestic and international trade, and increased specialization and division of labour. If not accompanied by policies aimed at agricultural transformation, structural transformation often leads to significant disparities in living standards and poverty between rural and urban areas, underpinned by differences in labour productivity between traditional agriculture and industry and services.

Source: Adapted from FAO, 2017b.

Agricultural transformation is a shift from mainly traditional farming to commercial production systems. At the individual farm level, the process favours specialization, which allows economies of scale. The driving force of agricultural transformation is technological change on the farm, as well as in input provision, harvesting, storage and marketing. Transformation often includes a shift toward higher value added production, and often exploits new export markets.

Agricultural transformation is part of the wider **rural transformation** process that also includes the emergence of livelihood and income-generating opportunities in the rural non-farm sector, the reduction of rural poverty and improved access to services and infrastructure in rural areas.

BOX 2
Measuring rural transformation

There are no widely-established indicators for measuring rural transformation. Using data from 81 developing and transition countries, this publication proposes an index constructed of three sub-indices to cover three aspects of rural transformation—commercialization and productivity increases in agriculture, increased prosperity in rural areas and improved rural infrastructure and services. The sub-indices focus on outcome measures —what changes are believed to characterize a transforming or transformed economy?

We follow IFAD (2016) in using agricultural labour productivity, measured as agricultural value added per worker (US dollars at current prices), as a partial indicator of rural transformation covering agricultural transformation. The share of non-poor rural residents according to an indicator of income poverty provides a second sub-index for the index of rural transformation. This indicator is intended to capture the effects of increased rural income opportunities. A third sub-index measures the share of non-poor rural residents according to a multidimensional poverty headcount index that tracks rural infrastructure and services. For all three sub-indices, a higher value represents more transformation. The Appendix discusses the calculation of the measure of rural transformation more thoroughly.

The three sub-indices are normalized so that each ranges from 0 to 100, with a higher number indicating more rural transformation. They are then combined into an unweighted index of rural transformation ranging from 0 to 100. Countries with a transformation index in the upper 20 percent (80–100) were designated "high level of transformation" countries, while those with a transformation index in the lowest 50 percent (0–50) were designated as having a low level of transformation. While any grouping of countries according to the rural transformation index is arbitrary, the stricter grouping for high transformation countries is designed to compensate for the selection bias of the country sample, i.e., the lack of developed countries, due to a lack of data. Figure 12 shows the 81 countries plotted according to indices of structural and rural transformation.

Hunger and food insecurity in NENA countries, 2015–2017

SDG Target 2.1

A global comparison of average levels of hunger and food insecurity in the NENA region in 2015–17 indicates that the NENA region is at the level of medium-income developing countries. However, levels of hunger and food insecurity in the countries in conflict are much more like levels in the least developed countries (LDCs) in the world.

TABLE 2
Hunger and severe food insecurity in selected NENA sub-regions, 2015–17

Country	Population-weighted average prevalence of undernourishment (%)	Population-weighted average prevalence of severe food insecurity in the population (%)	Countries in the category*
NENA Countries			
All NENA	11.0	11.3	Algeria, Bahrain, Egypt, Iran (Islamic Republic of), Iraq, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, Oman, Qatar, Saudi Arabia, Sudan, Syrian Arab Republic, United Arab Emirates, Tunisia, Yemen, Palestine
By conflict/non-conflict			
Conflict countries	26.3	17.7	Iraq, Libya, Syrian Arab Republic, Sudan, Yemen
Non-conflict countries	5.3	8.9	Algeria, Bahrain, Egypt, Iran (Islamic Republic of), Iraq, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, Oman, Palestine, Qatar, Saudi Arabia, Sudan, Syrian Arab Republic, Tunisia, United Arab Emirates, Yemen
By level of rural transformation			
--High level	6.1	9.0	Algeria, Jordan, Tunisia
--Medium level	10.5	11.6	Egypt, Iraq, Morocco, Syrian Arab Republic, Palestine
--Low level	27.9	18.1	Mauritania, Sudan, Yemen
By sub-region			
---Mashreq	13.8	13.0	Egypt, Iran (Islamic Rep. of), Iraq, Jordan, Lebanon, Sudan, Syrian Arab Republic, Yemen, Palestine
---Maghreb	5.2	7.8	Algeria, Libya, Mauritania, Morocco, Tunisia
Gulf Cooperation Council (GCC)	5.1	7.6	Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, United Arab Emirates

Country	Population-weighted average prevalence of undernourishment (%)	Population-weighted average prevalence of severe food insecurity in the population (%)	Countries in the category*
Global Comparison Regions or Categories			
Least developed countries (LDCs)	24.2	23.6	
Developing regions	12.8	10.8	
Developed regions	<2.5	1.3	

Note: *For the prevalence of undernourishment in 2015–17 there is no data for Bahrain, Libya, Palestine, Qatar and Syrian Arab Republic ; for the prevalence of severe food insecurity in 2015–17 there is no data for Lebanon, Oman, Qatar, Syrian Arab Republic and Yemen. The PoU and FIES aggregates include imputed estimates for these countries.

Source: FAO FAOSTAT, 2018.

Table 2 shows two of the three main measures of hunger and food insecurity under SDG indicator 2.1. The prevalence of undernourishment is an estimate of the share of the population experiencing absolute food deprivation (hunger) in terms of a daily caloric availability. The prevalence of food insecurity measures the experience of food insecurity along a scale of severity from mild to moderate ("compromising on quality and variety or reducing portions, skipping meals") to severe ("experiencing hunger"). Box 3 explains of the concepts and calculation methods of these measures.

In Table 2, rural transformation seems to matter as much for severe food insecurity as conflict. This can be seen by noting the similar undernourishment and food security gaps between countries with high and low levels of transformation and those with and without conflict[4]. Why should there be a relationship between rural transformation and hunger and food security? Rural transformation is a mix of agricultural commercialization, the inclusive development of the non-farm rural sector and the development of rural services (health, housing, education and others). These three aspects are reflected in the index of rural transformation which incorporates measures of agricultural labour productivity, rural income poverty and an index of rural deprivation. Improvements in these aspects of rural transformation tend to improve the welfare of rural households through increases in income, off-farm employment and rural services, which all have direct and indirect impacts on food security and nutrition.

Finally, Table 2 indicates that it is the Mashreq countries that are afflicted most severely with high levels of hunger and food insecurity. This may be due to the high proportion of conflict countries there and the lower level of rural transformation in the sub-region. Four out of the five conflict countries are in the Mashreq, and the average level of rural transformation in the Maghreb is 30 percent higher than in the Mashreq.

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[4] A more formal analysis by country indicates that the correlation between rural transformation and hunger (r=-0.51) is slightly higher than the correlation between the degree of conflict and hunger (r=0.45). The difference is more noticeable when considering the correlation between rural transformation and food insecurity (r=-0.61), and the correlation between the degree of conflict and food insecurity (r=0.49).

BOX 3
The two main SDG 2 indicators of hunger and food insecurity

Sustainable Development Goal 2, Target 2.1, on ending hunger and ensuring food security is measured through two indicators of hunger and food insecurity, the Prevalence of Undernourishment (PoU) and the Prevalence of Food Insecurity, as measured through the Food Insecurity Experience Scale (FIES).

The PoU indicator is defined as the probability that a randomly selected individual from the reference population is found to consume less than his/her calorie requirement for an active and healthy life. The PoU is calculated using country level information from which a probability distribution of per capita calorie consumption over the population is derived using the mean level of Dietary Energy Supply (DES) (in calories) from food balances, as well as parameters accounting for inequality of food consumption (coefficient of variation-CV) and a skewness parameter (SK) accounting for asymmetry in the distribution of food consumption, derived from household survey data or estimated indirectly from other sources[5]. A minimum caloric cut-off point defined as the Minimum Dietary Energy Requirement (MDER) is calculated as a weighted average of energy requirements according to sex and age group, and is updated each year from UN population data.

The Prevalence of Food Insecurity according to the FIES is a direct measure of the access dimension of household or individual food security based on an annual global survey. The indicator is calculated from data on people's direct responses to eight questions regarding their access to food of adequate quality and quantity. FAO data are from an annual survey known as the Gallup World Poll, which involves respondents 15 years of age or older in

over 150 countries each year. The Gallup World Poll survey is administered to a representative sample of individuals in each country, and contains questions about law and order, food and shelter, institutions and infrastructure, job climate, and financial, social, physical and self-reported well-being. Since 2014, it has also included the FIES module on food insecurity (FAO, 2016). When available, data from national household surveys, including a module on food insecurity experiences that is compatible with the FIES, are used to calculate the prevalence of food insecurity.

This survey-based measure of food insecurity may be calculated at different levels of severity to include only those with severe food insecurity ("experiencing hunger") or also those who experience moderate food insecurity, meaning that the family may compromise on the quality and quantity of food, skip meals or experience hunger.

The PoU indicator series from 2018 should not be compared to those published in 2017, because FAO produces a new series every year with "under the hood" improvements in methodology and data. An important example of data changes that affect PoU past figures is the World Population Prospects which are revised every two years. The 2018 PoU indicator series uses the 2017 Revision of the World Population Prospects (UNPD, 2017), while the 2017 PoU indicator series used the 2015 Revision of the World Population Prospects.

Source: FAO, 2017a.

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[5] DEC is derived as the Dietary Energy Supply from the Food Balance Sheets after excluding the amount of calories wasted at the retail level. CV and Skewness are computed from food consumption data collected through household surveys.

Changes in hunger and food insecurity in the NENA region

Most of the hungry in the NENA region live in the five countries currently in conflict--Iraq, Libya, Syrian Arab Republic, Sudan and Yemen. This is not a new situation. The latest estimates of hunger show that in 1999–2001, 58 percent of those suffering from undernourishment in the NENA region lived in the same five countries. That portion has been growing steadily for 16 years, and in 2015–17, it increased to 65 percent. The growing portion of those suffering from undernourishment in conflict countries can be seen in the widening gap between the line graph of the number of hungry in conflict and non-conflict countries in Figure 1.

Most of the annual increases in the number of hungry have come in the five conflict countries, and these annual changes have become larger in two waves, once after the 2009 global economic downturn and once after the 2011–12 Arab Spring. Up until these two events, the number of hungry in the five conflict countries was rising at slightly less than the rate of the rest of the population in those countries, implying that the *prevalence* of undernourishment in the conflict countries decreased (Figure 2). After 2009, and, particularly after 2011–12, the number of hungry began to rise at a rate higher than the rest of the population (Figure 1). The result was that the *prevalence* of undernourishment in conflict countries began to rise (Figure 2).

In the non-conflict countries, the number of hungry rose at a rate less than the rate of increase in the general population through 2013–15. This resulted in consistent decreases of the prevalence of undernourishment in those countries since the early 2000s (Figure 2). After 2013–15, there have been slight increases in the prevalence of undernourishment, with the largest increases coming in Jordan, Mauritania and Egypt (Table 4).

FIGURE 1

Hunger in the Near East and North Africa: number of undernourished in conflict and non-conflict countries, 1999/01–2015/17 (million)
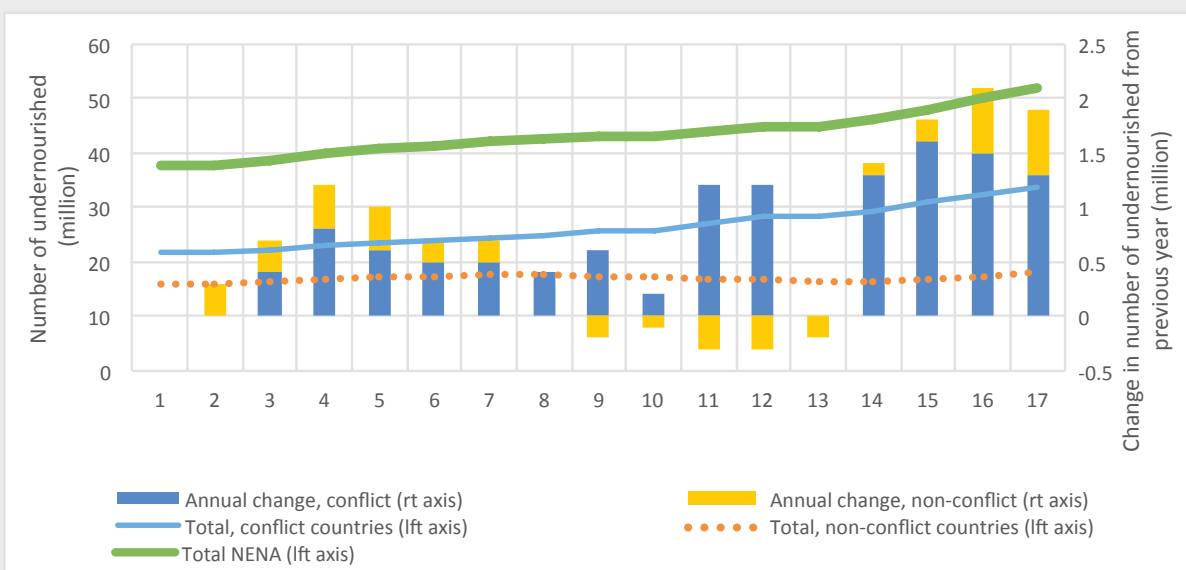
Source: FAO FAOSTAT, 2018.

FIGURE 2
Hunger in the Near East and North Africa: prevalence of undernourishment in conflict and
non-conflict countries, 1999/01–2015/17 (percent)
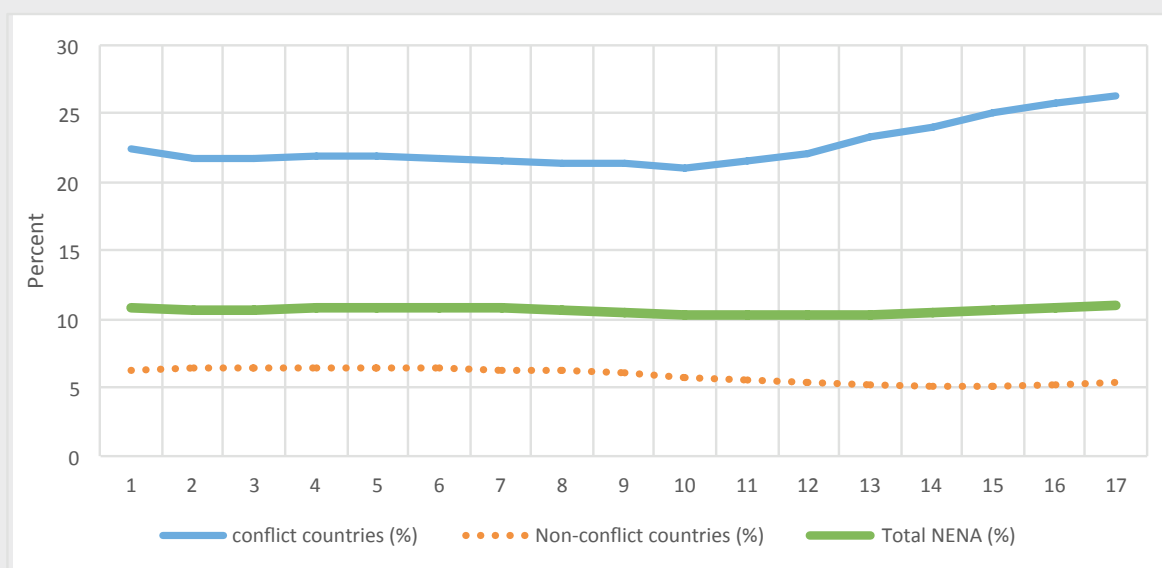
Source: FAO FAOSTAT, 2018.

The data in Table 3 confirms much of what has been shown in Figure 1. The total number of undernourished in the NENA region was increasing moderately every year until 2009, after which the absolute number jumped by 1.8 million (in 2010–12) and then jumped again each year since 2011–13 by an average of 1.8 million. The overwhelming

majority of the increases in the number of undernourished have come from conflict countries, and increases in the conflict countries have come in two waves, with the increases after 2011–13 being more significant.

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TABLE 3
Number of undernourished in the NENA region, sub-regions and countries, 2004/06–2015/17 (million)

	2004 – 06	2006 – 08	2008 – 10	2010 – 12	2011 – 13	2012 – 14	2013 – 15	2014 – 16	2015 – 17
All NENA	41.6	42.6	43.1	44.9	44.7	46.1	47.9	50.0	52.0
NENA Sub-regions									
Conflict countries[1]	24.1	25.0	25.8	28.2	28.2	29.5	31.1	32.6	33.9
Non-conflict countries[2]	17.4	17.6	17.3	16.7	16.5	16.6	16.8	17.4	18.0
High rural transformation[3]	3.9	3.8	3.5	3.2	3.2	3.2	3.4	3.6	3.7
Medium rural transformation[4]	14.4	15.1	15.1	16.5	17.6	18.2	18.8	19.5	20.2
Low rural transformation[5]	16.1	16.0	16.6	17.2	16.0	16.7	17.7	18.9	20.0
Mashreq	33.3	34.3	34.9	37.1	37.2	38.7	40.6	42.5	44.2
Maghreb	5.8	5.5	5.2	5.0	4.9	4.7	4.7	4.8	5.0
Gulf Cooperation Council	2.5	2.8	3.0	2.8	2.7	2.6	2.6	2.7	2.7
Countries									
Algeria	2.9	2.8	2.5	2.1	1.9	1.8	1.8	1.9	1.9
Egypt	4.2	3.8	3.8	3.8	3.9	3.9	4.0	4.3	4.6
Iran (Islamic Republic of)	4.3	4.7	4.5	4.3	4.3	4.2	4.1	4.0	4.0
Iraq	7.6	8.5	8.5	8.5	8.8	9.3	9.7	10.1	10.3
Jordan	0.4	0.4	0.5	0.7	0.8	0.9	1.1	1.2	1.3
Kuwait	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Lebanon	0.1	0.1	0.2	0.3	0.4	0.5	0.6	0.6	0.7
Mauritania	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.5
Morocco	1.7	1.7	1.7	1.6	1.5	1.4	1.4	1.3	1.4
Oman	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Saudi Arabia	1.9	1.9	2.0	1.8	1.7	1.6	1.7	1.7	1.8
Sudan	--	--	--	--	9.2	9.3	9.5	9.7	10.0
Tunisia	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.6
United Arab Emirates	0.2	0.3	0.5	0.5	0.4	0.4	0.4	0.3	0.2
Yemen	6.2	6.0	6.0	6.1	6.5	7.1	7.9	8.8	9.5

Notes: For the number of undernourished there is no data for Bahrain, Libya, Qatar, Palestine, Sudan (2004–2010) and Syrian Arab Republic. The aggregates include imputed estimates for these countries. 1. Libya, Sudan, Yemen, Syrian Arab Republic and Iraq; 2. Iran (Islamic Rep. of), Mauritania, Morocco, Algeria, Tunisia, Jordan, Lebanon, Palestine, Egypt, Sudan, Oman, United Arab Emirates, Saudi Arabia, Bahrain, Qatar and Kuwait; 3. Jordan, Algeria and Tunisia; 4. Egypt, Morocco, Syrian Arab Republic and Iraq; 5. Mauritania, Sudan and Yemen. For more information on the degree of rural transformation in countries of the NENA and other regions, including the calculation method, see Appendix.

Sources: FAO FAOSTAT, 2018.

TABLE 4
Prevalence of undernourishment in the NENA region, sub-regions and countries, 2004/06–2015/17 (percent)

	2004 – 06	2006 – 08	2008 – 10	2010 – 12	2011 – 13	2012 – 14	2013 – 15	2014 – 16	2015 – 17
All NENA	10.8	10.6	10.3	10.3	10.3	10.4	10.6	10.8	11.0
NENA Sub-regions									
Conflict countries[1]	21.8	21.4	21.0	22.0	23.4	24.1	25.0	25.7	26.3
Non-conflict countries[2]	6.4	6.2	5.8	5.4	5.2	5.1	5.1	5.2	5.3
High rural transformation[3]	7.9	7.4	6.7	5.8	5.6	5.6	5.7	5.9	6.1
Medium rural transformation[4]	9.2	9.3	8.9	9.4	9.9	10.0	10.2	10.4	10.5
Low rural transformation[5]	25.7	24.1	23.8	23.6	24.5	25.1	26.1	27.0	27.9
Mashreq	12.5	12.4	12.1	12.4	12.6	12.9	13.2	13.6	13.8
Maghreb	7.0	6.5	5.9	5.5	5.3	5.1	4.9	5.0	5.2
Gulf Cooperation Council	7.2	7.1	6.9	6.0	5.5	5.3	5.1	5.1	5.1
Countries									
Algeria	8.8	8.0	7.0	5.6	5.0	4.7	4.6	4.6	4.7
Egypt	5.4	4.8	4.5	4.5	4.4	4.4	4.4	4.6	4.8
Iran (Islamic Republic of)	6.1	6.5	6.1	5.7	5.6	5.4	5.2	5.1	4.9
Iraq	28.2	30.0	28.5	26.7	26.8	27.4	27.7	27.8	27.7
Jordan	6.6	7.1	7.9	8.6	9.5	10.7	12.0	12.9	13.5
Kuwait	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5
Lebanon	3.4	3.4	3.8	5.9	7.6	9.3	10.5	10.9	10.9
Mauritania	12.1	10.2	8.7	7.8	7.2	7.1	7.2	9.4	11.3
Morocco	5.7	5.5	5.4	4.9	4.6	4.2	4.0	3.9	3.9
Oman	10.5	8.3	6.1	5.3	5.1	5.1	5.1	5.3	5.4
Saudi Arabia	7.9	7.7	7.6	6.4	5.7	5.5	5.4	5.5	5.5
Sudan	--	--	--	--	25.4	25.2	25.1	25.1	25.2
Tunisia	5.6	5.4	5.0	4.6	4.5	4.5	4.5	4.7	4.9
United Arab Emirates	4.1	5.6	6.0	5.6	5.1	4.5	3.9	3.1	2.5
Yemen	30.1	27.6	26.2	25.2	25.9	27.7	30.2	32.6	34.4

Notes: For the prevalence of undernourishment there is no data for Bahrain, Libya, Qatar, Palestine, Sudan (2004–2010) and Syrian Arab Republic. The PoU aggregates include imputed estimates for these countries. 1. Libya, Sudan, Yemen, Syrian Arab Republic and Iraq; 2. Iran (Islamic Rep. of), Mauritania, Morocco, Algeria, Tunisia, Jordan, Lebanon, Palestine, Egypt, Sudan, Oman, United Arab Emirates, Saudi Arabia, Bahrain, Qatar and Kuwait; 3. Jordan, Algeria and Tunisia; 4. Egypt, Morocco, Syrian Arab Republic and Iraq; 5. Mauritania, Sudan and Yemen. For more information on the degree of rural transformation in countries of the NENA and other regions, including the calculation method, see Appendix.

Sources: FAO FAOSTAT, 2018.

The prevalence of undernourishment in the NENA region as a whole shows a distinct pattern. While it gradually declined between 2004 and 2010 it started to noticeably rise after 2011–2013 (Table 4). In 2015–2017 this indicator stood at 11 percent, up from 10.30 percent in 2011–2013. While this change for the entire region is relatively small, it is misleading, since it is an average of two independent and quite different series from conflict and non-conflict countries. The slight rise in the all-NENA average has been driven by a significant rise in hunger in conflict countries since 2010–2012, while hunger in the non-conflict countries has remained nearly constant (Table 4).

Conflict is also probably responsible for the difference in the trajectories of the prevalence of undernourishment in countries with a high degree of rural transformation and all others. Since 2004–06, the prevalence of undernourishment

has generally fallen in countries with high degrees of rural transformation, all of which have avoided conflict. During the same period, the prevalence of undernourishment has risen in countries with medium or low levels of rural transformation, both groups of which contain countries that fell into conflict. This supposition is supported by the rising level of hunger in Mashreq countries, where most conflicts have occurred since 2004–06, and falling levels in the Maghreb and GCC countries.

Severe food insecurity under SDG target 2.1 is measured through the FIES (Table 5). Severe food insecurity is inversely correlated with the degree of rural transformation and positively correlated with the presence of conflict, and both correlations are significant at the 90 percent level[6]. Moreover, severe food insecurity in the region appears to be growing, though it is difficult to make firm statements about a 3-year average time series limited to two years.

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[6] The Pearson correlation coefficient between the degree of rural transformation (2010–15) and the prevalence of food insecurity (2015–17) is -0.61 with a P-value of 0.08. This indicates that a significant negative relationship between the two indicators can be inferred with a confidence level of 92%.

TABLE 5
Prevalence of people affected by severe food insecurity in the NENA region, sub-regions and countries, 2014/16–2015/17

	2014 – 2016	2015 – 2017
All NENA	10.9	11.3
Sub-regions		
High rural transformation	9.3	9.0
Medium rural transformation	10.7	11.6
Low rural transformation	17.6	18.1
Mashreq	12.5	13.0
Maghreb	7.4	7.8
Gulf Cooperation Council	7.5	7.6
Countries		
Algeria	8.5	8.3
Bahrain	6.4	6.6
Egypt	9.4	10.1
Iran (Islamic Republic of)	9.1	8.9
Iraq	20.5	22.5
Jordan	14.7	13.9
Kuwait	4.3	4.3
Libya	8.8	9.9
Mauritania	13.9	18.3
Morocco	5.1	5.7
Saudi Arabia	8.1	8.1
Sudan	23.9	23.9
Tunisia	7.4	7.5
United Arab Emirates	5.9	6.1
Palestine	9.7	9.2

Source: FAO FAOSTAT, 2018.
Missing: Lebanon, Oman, Qatar, Syrian Arab Republic and Yemen.

Malnutrition in NENA countries

SDG Target 2.2

SDG Target 2.2 is about ending all forms of malnutrition for children and adults alike. Good nutrition in children is associated with better cognitive development and academic performance in later years. SDG Target 2.2 focuses on anthropometric indicators of stunting, wasting, and overweight for children under five years of age. The prevalence of underweight for children under five is also considered (Table 6). Information about this age group is supplemented with indicators of infant (0–1 years of age) nutrition, the prevalence of anaemia among women of reproductive age (15–49) and the prevalence of exclusive breastfeeding among infants for the first six months of life (Table 8). Undernutrition during pregnancy can stunt foetal growth and lead to poor brain development. Likewise, poor nutrition during the first 6 months can have negative impacts on a child's health. In addition to indicators impacting on children's nutrition, this section presents the prevalence of adult obesity, a nutrition issue that cuts across the region from the poorer to the richest countries.

Child (0–5 years) malnutrition indicators indicate that stunting, wasting and underweight are far worse in conflict countries (Figure 3), and are inversely correlated with the level of rural transformation (Figure 4). Countries with low or medium levels of rural transformation have higher levels of child undernutrition than those with a higher level of rural transformation. Childhood overweight is less correlated with rural transformation, though the correlation is still significant[7]. Figure 4 illustrates the strong negative association between rural transformation and the childhood undernutrition indicators and the much less clear positive association between rural transformation and childhood overweight.

Table 6 shows the latest country-level figures on the anthropometric status of children under five years of age in the NENA region, while Table 7 shows the public health significance of anthropometry measurements. On average, the NENA countries have a high level of stunting, medium level of wasting, medium level of underweight and medium level of overweight in children under five. In a global developing country perspective, the NENA countries that have undergone a high degree of rural transformation have the same level of stunting, underweight, wasting and overweight levels as their comparator counterparts in the rest of the world (Table 6, lines 7 and 8), while low rural transformation countries do slightly worse than their global counterparts (Table 6, lines 19 and 20).

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[7] Pearson correlation coefficients for childhood stunting, wasting, underweight and overweight are -0.80, -0.83, -0.84 and 0.52 at a 95% confidence level for the first three and 90% for overweight.

FIGURE 3
Child (0–5) malnutrition indicators for conflict and non-conflict countries, 2012*
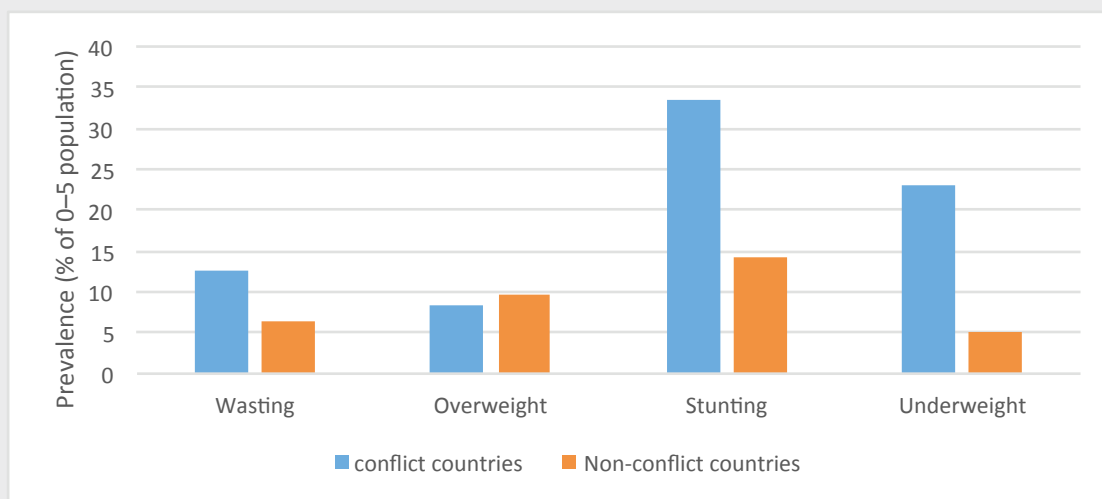
Source: UNICEF-WHO-WB, 2017. *The aggregates are weighted by the country 0–5 populations in 2012, the average year of data available.

FIGURE 4
Child (0–5) malnutrition indicators for countries with different levels of rural transformation, 2012*
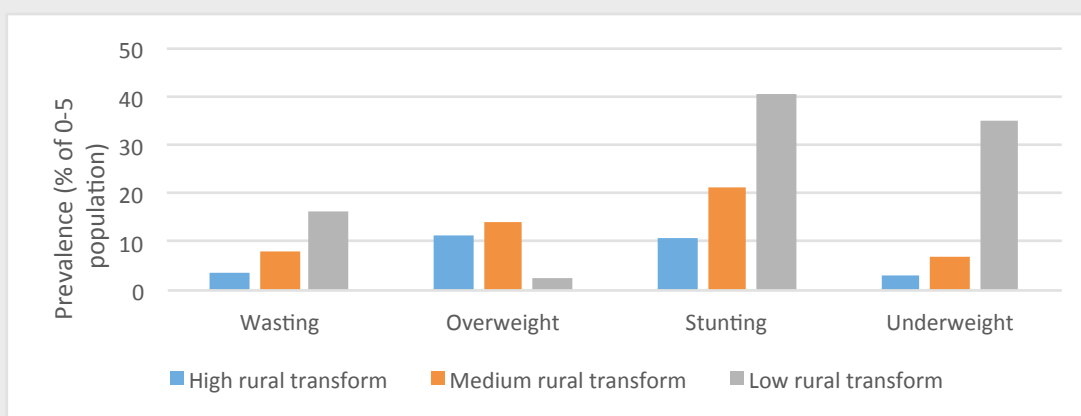
Source: UNICEF-WHO-WB, 2017. *The aggregates are weighted by the country 0–5 populations in 2012, the average year of data available.

NENA medium level transformation countries exhibit the extreme traits of countries caught in a "double burden" of malnutrition. The medium transformation NENA countries have the worst overweight prevalence of all NENA countries, with high or very high levels of overweight, with the exception of Palestine. Levels of overweight are also generally higher than their global counterparts (Table 6, lines 12 and 13). Though the prevalence of stunting and wasting in the NENA medium transformation countries is lower than in low rural transformation countries, it is still high or very high by world standards (Table 7), with the exceptions of Morocco and Palestine. A similar pattern can be observed in other regions as well, where middle-income countries have been observed to still have relatively high levels of undernutrition, while levels of overweight are often higher than their high-income counterparts (FAO, 2015).

At the two extremes, the predominant child malnutrition problem of NENA high rural transformation countries is overweight, while in low rural transformation countries it is undernutrition. Overweight in high rural transformation countries is high, except in Jordan. The NENA low rural transformation countries all have low or very low levels of overweight and high or very high levels of stunting and wasting (Table 6).

It should be noted that not all data in Table 6 are recent. The survey years for the Syrian Arab Republic and Libya, in particular, predate the conflicts in those countries. Thus, undernutrition figures are likely to be worse than reported in Table 6.

TABLE 6
Children's anthropometric status estimates for NENA countries

	Country	Children, 0–5 years old, prevalence, latest year data				Survey year
		Stunting (%)	Wasting (%)	Underweight (%)	Overweight (%)	
1	**Total NENA**	**21.1**	**8.7**	**11.6**	**9.1**	**2012**
2	Conflict countries	**33.4**	**12.7**	**23.1**	**8.3**	2012
3	Non-conflict countries	**14.3**	**6.5**	**5.2**	**9.5**	2012
4	Mashreq	31.7	11.5	21.7	8.5	2011
5	Maghreb	14.2	4.2	4.5	12.0	2012
6	Gulf Cooperation Council	9.5	10.3	5.5	5.9	2006
7	**Global developing high rural transformation (N=4)**	**10.9**	**3.7**	**3.0**	**11.5**	**2011**
8	**NENA high rural transformation**	10.8	3.6	2.9	11.4	2012
9	Algeria	11.7	4.1	3.0	12.4	2013
10	Jordan	7.8	2.4	3.0	4.7	2012
11	Tunisia	10.1	2.8	2.3	14.3	2012
12	**Global developing medium rural transformation (N=16)**	**17.1**	**5.5**	**7.6**	**8.8**	**2013**
13	**NENA medium rural transformation**	**21.5**	**8.0**	**6.8**	**14.1**	**2012**
14	Egypt	22.3	9.5	7.0	15.7	2014
15	Iraq	22.6	7.4	8.5	11.8	2011
16	Morocco	14.9	2.3	3.1	10.7	2011
17	Syrian Arab Republic	27.5	11.5	10.1	17.9	2009
18	Palestine	7.4	1.2	1.4	8.2	2014
19	**Global developing low rural transformation (N=46)**	**37.5**	**13.5**	**27.4**	**3.0**	**2013**
20	**NENA low rural transformation**	**40.9**	**16.2**	**35.1**	**2.7**	**2014**
21	Mauritania	27.9	14.8	24.9	1.3	2015
22	Sudan	38.2	16.3	33.0	3.0	2014
23	Yemen	46.8	16.2	39.9	2.5	2013
24	**NENA Other**	9.5	10.3	5.5	5.9	**2006**
25	Bahrain	13.6	6.6	7.6		1995

	Country	Children, 0–5 years old, prevalence, latest year data				Survey year
		Stunting (%)	Wasting (%)	Underweight (%)	Overweight (%)	
26	Iran (Islamic Rep. of)	6.8	4.0	4.1		2011
27	Kuwait	4.9	3.1	3.0	6.0	2015
28	Lebanon	16.5	6.6	4.2	16.7	2004
29	Libya	21.0	6.5	5.6	22.4	2007
30	Oman	14.1	7.5	9.7	4.4	2014
31	Qatar	11.6	2.1	4.8	104	1995
32	Saudi Arabia	9.3	11.8	5.3	6.1	2005

Note: Global developing country aggregates are computed from a database of 66 developing countries for which children's anthropometric and rural transformation data are available. This is a subset of the 81 countries listed in the Appendix for which data on rural transformation is available.

Source: UNICEF-WHO-WB, 2017.

TABLE 7
Public health significance of anthropometry measurements in children under 5 years

Indicator	Prevalence cut-off values for public health significance	
Stunting	<2.5 2.5- <10 10- <20 20- <30 >=30	Very low Low Medium High Very high
Wasting	<2.5 2.5- <5 5- <10 10- <15 >=15	Very low Low Medium High Very high
Underweight	<10 10–19 20-29 >=30	Low Medium High Very high
Overweight	<2.5 2.5- <5 5- <10 10- <15 >=15	Very low Low Medium High Very high
Anaemia* (blood haemoglobin concentration<110 g/L)	<5 5–20 20–40 >=40	Normal Mild Moderate Severe

*For children, 0–5 years, and for women of reproductive age, 15–49 years.

Source: UNICEF/WHO/WB, 2018; WHO, 2010; WHO/UNICEF/UNU, 2001.

Table 8 shows two indicators of maternal and infant nutrition, the prevalence of anaemia among women of reproductive age and the prevalence of exclusive breast-feeding among infants 0 to 6 months of age. The NENA region has generally moderate levels of anaemia among women of reproductive age (Tables 7 and 8). Anaemia is worse in the conflict and low transformation countries of the region. Mauritania and Yemen, two countries with low levels of rural transformation, had severe levels of anaemia of women of reproductive age in 2016, while all high and medium transformation countries had moderate levels of anaemia. The prevalence of exclusive breastfeeding of infants from birth to six months of age is far lower in countries with high levels of rural transformation, compared to countries with medium or low levels of rural transformation.

TABLE 8
Maternal, infant and adult nutrition indicators for NENA countries, 2016 or latest year

	Country	Indicators of maternal and infant nutrition			Prevalence of Obesity in Adults (%), 2016
		Prevalence of anaemia among women of reproductive age (15–49), 2016	Exclusive breastfeeding among infants for first six months (% of women with children, 0–6 months)	Year Of survey (breast-feeding)	
1	**Total NENA**	35.8	38.7	2013	26.7
2	Conflict countries	41.1	31.9	2012	19.6
3	Non-conflict countries	34.7	42.6	2010	29.3
4	Mashreq	35.9	44.6	2012	25.3
5	Maghreb	35.2	25.6	2013	26.7
6	Gulf Cooperation Council	40.4	31.7	2012	34.0
7	**Global developing high rural transformation (N=5)**	34.2	22.8	2012	28.2
8	**NENA high rural transformation**	34.1	22.8	2012	28.4
9	Algeria	36.5	22.7	2012	27.4
10	Jordan	34.7	25.4	2013	35.5
11	Tunisia	31.2	8.5	2012	26.9
12	**Global developing medium rural transformation (N=23)**	28.3	30.8	2012	9.9
13	**NENA medium rural transformation**	36.1	40.1	2010	29.3
14	Egypt	35.4	52.8	2008	32.0
15	Iraq	37.5	19.4	2011	27.4
16	Morocco	36.9	27.8	2011	26.1
17	Syrian Arab Republic	35.6	42.6	2009	27.8
18	Palestine		38.6	2014	
19	**Global developing low rural transformation (N=51)**	49.5	39.1	2013	6.4
20	**NENA low rural transformation**	45.9	36.7	2014	12.2
21	Mauritania	41.9	41.4	2015	12.7
22	Sudan	35.9	54.6	2014	8.6
23	Yemen	69.6	9.7	2013	17.1
24	**NENA Other**				
25	Bahrain	44.6			29.8

| | Country | Indicators of maternal and infant nutrition | | | Prevalence of Obesity in Adults (%), 2016 |
		Prevalence of anaemia among women of reproductive age (15–49), 2016	Exclusive breastfeeding among infants for first six months (% of women with children, 0–6 months)	Year Of survey (breast-feeding)	
26	Iran (Islamic Rep. of)	30.5	53.1	2011	25.8
27	Kuwait	23.8			37.9
28	Lebanon	31.2			32.0
29	Libya	34.4			32.5
30	Oman	39.8	32.8	2014	27.0
31	Qatar	28.4	29.3	2012	35.1
32	Saudi Arabia	45.7			35.4
33	United Arab Emirates	27.8			31.7

Note: Global developing country aggregates are computed from a database of 79 developing countries for which both the three indicators in Table 7 and rural transformation data are available. This is a subset of the 81 countries listed in the Appendix for which data on rural transformation is available.

Source: WHO GLOBAL HEALTH, 2018.

Adult obesity levels in the NENA region are quite high, particularly for the high-income countries of the region (GCC countries) and the high and medium transformation countries (Table 8). For countries of low and medium levels of rural transformation, adult obesity in the NENA region exceeds that in other comparator developing countries. Levels above 30 percent in the United Arab Emirates, Saudi Arabia, Qatar, Libya, Lebanon, Kuwait, Egypt and Jordan are similar to those found in countries such as the United States (37.3), Turkey (32.2) and New Zealand (32.0) in 2016 (FAO FAOSTAT, 2018).

PART 2
REGIONAL FOOD SECURITY POLICIES AND ACHIEVEMENT OF SDG 2 TARGETS

The 2030 Agenda, "transforming our world", is a far more ambitious task than can be achieved through business-as-usual. Transformation requires adjustments in policy capable of addressing the root causes of economic, political and environmental problems, and the re-evaluation of outdated notions of food security. The kind of transformational change necessary to achieve Sustainable Development Goal 2 will not emerge from the food security policies currently in place in the NENA region. Rather, achievement of Sustainable Development Goal 2 will require adjustments in policies to better eliminate hunger, achieve food security and eradicate all forms of malnutrition.

In Part I it was shown that the degree of rural transformation of countries in the region is correlated with the SDG 2 indicators of food insecurity and malnutrition. Part II reviews the main food security policies in the NENA region related to agriculture, assessing how they affect food security and rural transformation. The review begins with an analysis of food security in the region, focusing on the concern with the stability of the food supply. The chapter then considers three sets of policies ostensibly aimed at improving food security: (1) those aimed at mitigating the price and availability risks inherent in international trade, (2) cereal and livestock support policies and (3) food subsidies. The last part of the chapter weighs the relevance of these policies to food security and rural transformation, and the efficiency with which they address these two issues.

Part II finds ample room for adjustment of food security policies in the region to better fit their task of reducing hunger, strengthening food security and reducing malnutrition in ways consistent with rural transformation. Risk management strategies of NENA governments such as Saudi Arabia, the United Arab Emirates and Jordan seem well-suited to contribute to the security of food supplies, and thus to food security. They also do not seem to interfere with rural transformation. However, some cereal production and consumer subsidy policies have had multiple negative effects on food security and rural transformation which must be weighed against their advantages. Cereal production policies may have led to a net loss of agricultural value added, reducing the efficiency of food systems and probably leading to lower overall food security and slower rural transformation. Cereal production

and consumer subsidy policies are implemented through a myriad of market restrictions that suppress competition in the agriculture, food processing and retail sectors, leading to an undynamic, uncompetitive agrifood sector. These policies also increase the burden on government budgets and may have led to unsustainable groundwater extraction. Finally, consumer subsidies for staple foods seem to contribute to the unbalanced diet in the region, a risk factor for the high rates of child stunting and overweight observed in the middle-income countries of the region.

Food security in the NENA region

The World Food Summit of 1996 defined food security as existing "when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life." The concept is usually analysed in terms of the availability of food, economic access, the nutritional content of food and the stability of availability and access (FAO, 2008).

The available food supply is more than adequate in all NENA countries with the exception of Yemen, and has been that way at least since 1999–2001. This can be seen in Figure 5, which shows the average dietary energy supply adequacy (ADESA) for 1999–2001 and 2015–2017. The ADESA expresses the Dietary Energy Supply (DES) as a percentage of the Average Dietary Energy Requirement (ADER). A value of 100 indicates that the DES available to the population was equal to the estimated ADER estimated for its population. Only Yemen, a conflict country in 2015–17, scores relatively low on the adequacy scale with 100 in 1999–2001 and 95 in 2015–2017. The diagonal line serves to separate those countries for whom the ADESA has increased between 1999–01 and 2014–16 (right side of the diagonal) and those countries for which the ADESA has decreased (left side of diagonal). For most countries, the average availability of calories in the food supply increased over the past 15 years, and those countries for which it decreased are comfortably above the level of calories deemed adequate.

FIGURE 5
Average dietary energy supply adequacy for NENA countries, 1999/01, 2015/17
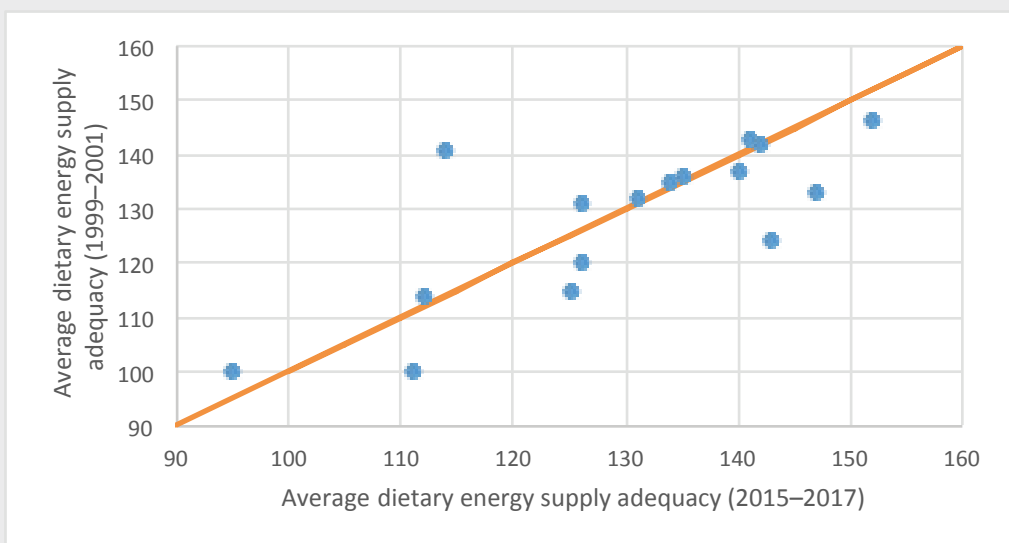
Source: FAO FAOSTAT, 2018.

Since the average availability of food in the NENA region (measured by the ADESA) appears adequate (except for Yemen), the salient issues of household food insecurity relate to (1) malnutrition, (2) economic access to food, and (3) ensuring the stability of the food supply. While there are many policies aimed at addressing child malnutrition (Nanitashvili and Tyler, 2018) and economic access to food (*see consumer subsidy policies* later in this chapter), in the NENA region, much of the concern of policymakers is focused on the potential for instability in the food supply, as experienced in world cereal markets in 2007–2009

(Sharma, 2011). The tendency to direct attention to food supply is primarily because NENA countries are highly dependent on imports to meet their consumption needs, particularly for cereals, sugar and sweeteners and vegetable oils (Table 9). On average, the NENA region imports about 54 percent of its cereal needs, 63 percent of sugar and sweeteners and 75 percent of vegetable oils.

TABLE 9
Food self-sufficiency ratios (SSR) in NENA countries, average, 2011—13 (percent)

SSR	Cereals*	Meats**	Fruits, vegetables	Milk***	Vegetable Oils	Oil crops	Sugar, Sweeteners
Algeria	30	91	93	51	11	88	0
Egypt	58	83	107	89	26	35	73
Iran (Islamic Republic of)	61	95	104	106	15	58	58
Iraq	50	34	86	45	2	80	0
Jordan	4	72	139	51	17	80	0
Kuwait	2	34	36	14	1	0	0
Lebanon	14	77	111	49	20	67	0
Mauritania	27	89	18	65	0	95	0
Morocco	59	100	116	95	29	98	28
Oman	7	31	52	32	4	0	0
Saudi Arabia	8	45	73	76	18	1	0
Sudan (2012–13)	82	100	98	96	89	112	72
Tunisia	42	98	110	90	91	65	1
United Arab Emirates	2	26	21	14	82	0	0
Yemen	17	79	90	35	5	63	1
NENA Total	46	79	99	82	25	64	37

Note: The self-sufficiency ratio is defined as food production*100/(production+imports-exports).
*Excluding beer. **Includes meat and offal. ***Excluding butter.
Source: FAO FAOSTAT, 2018.

FIGURE 6
Wheat production, net imports and self-sufficiency ratios in NENA countries in 2013
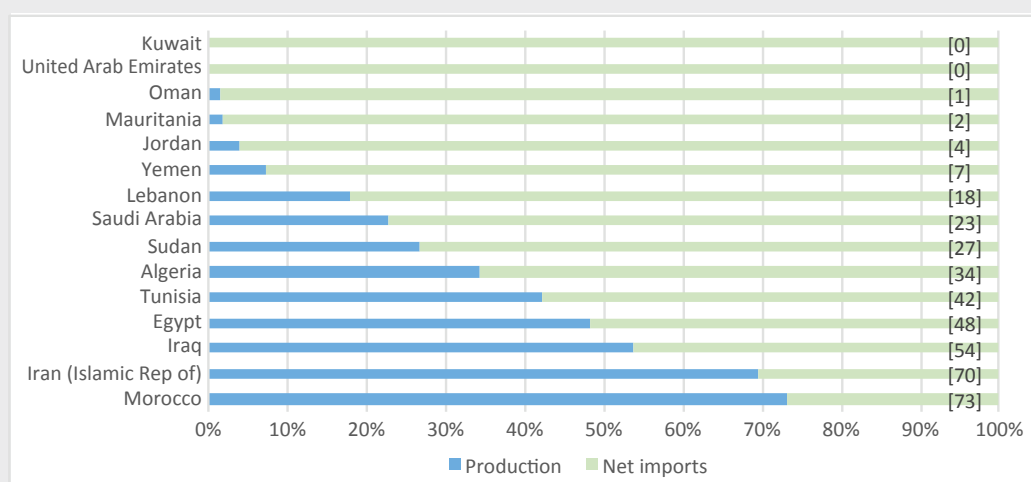
Note: The self-sufficiency ratio (SSR) is defined as wheat production*100/(production+imports-exports).
Source: FAO FAOSTAT, 2018.

Wheat import dependence is of particular concern in the region. Figure 6 shows the countries arrayed in order of self-sufficiency in wheat production along with the wheat self-sufficiency ratios in 2013. On average, domestic production made up 48 percent of total wheat supply for the countries in Figure 6. However, for many countries this portion was much smaller. Yemen, the United Arab Emirates, Jordan, Mauritania, Kuwait and Oman covered under 10 percent of their wheat supplies from domestic production.

Following the above analysis, food security policies in the region have focused mostly on ensuring the stability of the food supply and ensuring economic access to staple foods. NENA governments have implemented two sets of policies aimed at ensuring the stability of the food supply: (1) risk management strategies and (2) food production policies. To address the issue of economic access to food, NENA governments have implemented consumer subsidies for bread, flour, vegetable oil and other staples.

Risk management strategies for food security

A variety of risk management strategies are employed in the region to mitigate the price and availability risk for food imports[8]. Public stockholding can be an effective strategy for mitigating price risk, if in times of high prices public stocks are sold to domestic flour mills at prices below international market prices. In the NENA region, the Governments of Jordan and Saudi Arabia hold between 8 and 12 months of public wheat stocks to offset potential import supply interruptions (USDA FAS, 2017e, 2018b), and importers in the United Arab Emirates hold six months of supplies of rice, barley and wheat (USDA FAS, 2017d). A second strategy used to mitigate availability risk is that of the United Arab Emirates which acts as a regional food trade hub, re-exporting about 30 percent of wheat imports in 2016 to neighbouring countries of the Gulf Cooperation Council (GCC) (USDA FAS, 2017d). The food hub strategy ensures that at any given time the country has access to considerable food stocks that can be redirected to domestic

use if necessary. A variant of the public stockholding strategy is to hold stocks abroad as planted crop. Gulf countries have invested in agricultural production abroad in such countries as Egypt, Sudan, Ethiopia, Ukraine, Argentina, Morocco, Mauritania, Senegal, South Sudan, Pakistan, Namibia and India. The United Arab Emirates and Saudi Arabia are ranked in the 10 largest investor countries in the world in terms of land investments abroad (Land Matrix, 2018).

Other strategies aimed at mitigating availability and price risk are the diversification of food import contracts and options contracts (for price risk). A review of wheat tenders for Egypt from 2013 to 2018 indicates that wheat is sourced from a variety of countries, including Russia, Ukraine, Romania, Poland, France, the US and Argentina (AgFlow, 2018). Options are widely used in the region to mitigate price risk, by parastatals in Algeria, Egypt, Jordan, Saudi Arabia and Tunisia (AgFlow, 2018)[9].

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[8] Price risk describes the risk that international prices for commodities will increase above acceptable levels for the importing country, while availability risk is the risk that commodities may not be physically available for import, due to widespread crop failures in producing countries, export bans or to barriers to import (from embargoes, for instance) (Sadler and Magnan, 2011).

[9] An option is an opportunity to purchase a contract for the future delivery of grain at a predetermined price for delivery at a specific future date. The opportunity (option) is sold to the buyer for a fee called a premium, the size of which varies with the volatility of the market, the future delivery date and wheat crop price prospects. Premiums are paid at the time of the purchase of the option.

Domestic food production policies

Despite the above substantial measures taken to mitigate the risks of international trade, policymakers in the region still feel the need to augment these with policies aimed at raising domestic food production, focusing on reducing the reliance on imported staples through encouraging domestic production. About 58 percent of the harvested area in the NENA region was planted with cereals in 2016 (FAO FAOSTAT, 2018). Iraq, Iran (Islamic Rep. of), Egypt, Yemen, Sudan and Mauritania all have a particular focus on cereals (Figure 7). In a region characterized by extreme water scarcity, where most countries fall below the generally accepted water scarcity line of 1 000 m^3 per capita per annum of renewable water resources, producing low-value and water-demanding crops is both economically inefficient and environmentally unsustainable.

Food self-sufficiency in staples was a central element of agricultural policies in some NENA countries. This was the case in the Syrian Arab Republic (Westlake, 2001), Iran (Islamic Rep. of) (FAO, 2014), Algeria (USDA FAS, 2016a), and Tunisia (USDA FAS, 2018c), among others. Following structural reform programmes in the 1980s and 1990s, NENA agricultural policies started giving more weight to comparative advantages in agricultural planning and the design of support policies. This has been a promising move towards the more efficient and sustainable use of available resources, particularly water and land. However, the food price crisis of 2007–2008 and the following political instability since 2011 have increased concerns among NENA governments and led to the revival of food self-sufficiency in staple food items as a central element in agricultural and trade policies.

Several NENA Governments now encourage domestic production of wheat using four policy instruments: (1) State trading enterprises, (2) border policies, (3) state procurement and (4) input subsidies. In most NENA counties, wheat imports and exports, marketing and storage are managed by state or semi-public trading enterprises (Larson, *et al.*, 2014). Furthermore, the ability to control the flow of wheat across the border is ensured through licensing, tariffs and quotas. For instance, the Moroccan Government controls the domestic price of wheat by restricting imports of wheat and wheat flour through state trading, tariffs and import quotas. Most Favoured Nation (MFN) tariffs are raised during the harvest and marketing period of domestic wheat, in order to restrict market supplies, thus raising the domestic price of wheat[10] (WTO, 2018). The Government of Egypt controls wheat imports through state tenders issued by the Ministry of Supply's General Authority for Supply Commodities (GASC), support prices and state procurement for domestic wheat (USDA FAS, 2017a). In Tunisia, the Cereal Board issues tenders to international traders specifying the size and quality of import shipments, and the Ministry of Agriculture maintains support prices for wheat and barley (USDA FAS, 2016b).

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[10] Import quotas for wheat are adjusted depending on the domestic harvest. During a good harvest imports are restricted, and when domestic production is low import quotas are loosened. For example, in 2016, Moroccan average import duties for common wheat were 28 percent, for durum wheat 86 percent and for wheat flour 68 percent (WTO, 2018).

FIGURE 7
Portion of harvested area, by crop type, 2016
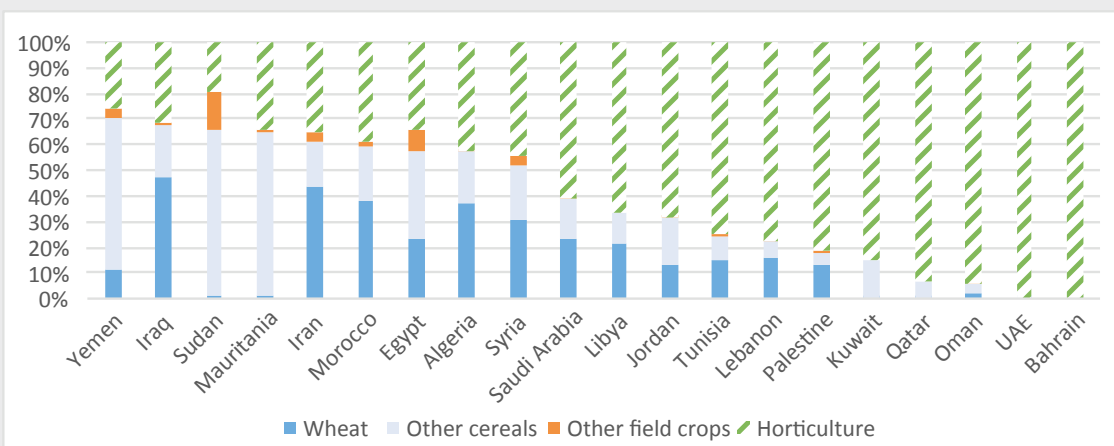
Note: Horticultural crops include citrus, fruit, tree nuts, roots and tubers, vegetables, melons, tea, coffee, olives, herbs, spices, beverage crops, pulses. Other field crops include Oilseeds, fibers and sugar crops.

Source: FAO FAOSTAT, 2018.

Restrictive border policies allow governments in the region to offer state-set procurement prices to domestic producers, often at higher prices than those prevailing on international markets. The Government of Iran (Islamic Rep. of) procures more than 20 crops from producers at state set prices, wheat and rice being the most important (FAO, 2014). In Morocco, the National Inter-Professional Office for Cereals and Legumes establishes a reference price at which it offers to purchase common (bread) wheat from farmers. It may also offer storage subsidies to traders and cooperatives, in order to keep wheat off the market in an effort to stabilize the price. Farmers may sell their common wheat to either government licensed traders (grain merchants, cooperatives, and mills) at the support price or on the free market. Prices of durum wheat and barley have no guaranteed price (USDA FAS, 2017c). In Tunisia, the Ministry of Agriculture maintains support prices for wheat and barley. Since 2017 government support prices have been about 312 USD per metric ton for durum wheat, 225 USD for common wheat and 200 USD per ton for barley (USDA FAS, 2018c). Finally, in Saudi Arabia, the Ministry of Agriculture maintains support prices for wheat and barley. Since 2017 government support prices have been about 312 USD per metric ton for durum wheat, 225 USD for common wheat and 200 USD per ton for barley (USDA FAS, 2018d).

In Egypt, border controls restricting the quantity of wheat allow the government to offer domestic producers high prices relative to world prices. However, budget constraints in the past few years have severely constrained the ability of the state to maintain these prices. In early January 2017, the Government of Egypt announced that procurement prices for the year's domestic wheat crop would be based on prevailing international market prices, as a moving average of prices paid by GASC on wheat import purchases. This measure is part of government reforms to curb costly subsidies (USDA FAS, 2017a).

Table 10 illustrates the ability of governments to control domestic prices with a comparison of prices of imported and domestically produced wheat. In an open economy with low border costs, one would expect that the differences between these two prices would be small, reflecting only customs and inland transportation costs[11]. Though Table 10 has no claims to exactitude, it does suggest that the price of domestically-produced wheat in NENA countries has often been significantly above that of imported wheat in 2016, meaning that the state cereal parastatals typically paid more for domestically grown wheat than for imports. However, there is also a noticeable downward trend in the differentials between domestic and import prices, reflecting a possible re-evaluation of price support policy.

[11] The import price is a weighted average of CF import prices derived from state tenders over the calendar year measured at the border. This price does not include border costs for documentary or customs compliance, import tariffs, excise, VAT or other taxes and inland transportation costs. These factors tend to raise the price of imported wheat measured at the farmgate, so that the actual cost of importing wheat is undoubtedly higher than those shown in the table. The domestic price is the weighted average producer price measured at the farmgate for the calendar year. This does not include the costs of fuel, water and input subsidies to the farmer which raise the actual costs to the state of domestically produced wheat.

TABLE 10
NENA prices for imported and domestically produced wheat, 2013–2018
(current US dollars per metric ton)

		2013	2014	2015	2016	2017	2018
Algeria	Import	282	287	234	166	149	221
	Domestic	567	559	447	411	378	
Egypt	Import	258	276	218	189	209	225
	Domestic	377	388	359	286		
Iran (Islamic Republic of)	Import	300	278				
	Domestic	413	404	398	402	388	
Iraq	Import	345	330	250	242	297	310
	Domestic	596	499	460	408	350	
Jordan	Import	292	295	232	203	214	224
	Domestic	530	616				
Lebanon	Import	317	311	256			
	Domestic	391	391	232			
Morocco	Import				187		
	Domestic	300	296	243	272	244	
Oman	Import	296	295	219			
	Domestic	1 157	1 144	1 130	930	930	
Saudi Arabia	Import	303	303	235	205	221	243
	Domestic	384	384	437	437	437	
Tunisia	Import	290	279	211	192	199	221
	Domestic	265	283	349	299		

Note: Import price is the CF border price derived from state import tenders. CF indicates that the price incorporates all costs and freight of the shipment up until it reaches the destination port. As such, this price does not include border costs for documentary or border compliance, import tariffs, excise, VAT or other taxes and inland transportation costs to the mill. Domestic price is the average weighted producer price at the farmgate.

Sources: CF import price from AgFlow, 2018; domestic producer price from FAO FAOSTAT, 2018.

A further example of state parastatals paying higher prices for domestic wheat than for imports can be seen by comparing domestic procurement prices in Iraq with import prices in neighbouring Kuwait (Table 11). Iraq's Ministry of Trade procures wheat from farmers at prices that are considerably above the border import price of wheat to Iraq's neighbour, Kuwait. Even after adding 100 USD per ton to the Kuwait import price to account for border and overland transport costs to Iraq, the cost of importing wheat into Iraq was still less expensive by 200 USD per tonin 2015 and 2016.

TABLE 11
Iraq government purchase prices for no. 1 wheat, 2015–17

Year	Procurement price (1000 Iraqi Dinars per metric ton)	USD per metric ton (using end of year exchange rate)	Border price of wheat, CIF Kuwait (USD per ton)
	(1)	(2)	(3)
2015	795	673	309
2016	700	592	399
2017	560	473	

Sources: (1) USDA FAS, 2017b (Iraq); (2) calculated using exchange rates from IMF, 2018a; (3) calculated from UN COMTRADE, 2018.

Input subsidies are also used to encourage wheatcultivation. For example, in 2014, the Government of Iran (Islamic Rep. of) offered subsidies to farmers for improved seeds, mechanization, and training. In addition, farmers received soft loans from a specialized state owned agricultural bank, which constitutes the main form of support (FAO, 2014). In Algeria, the primary means for increasing domestic wheat production is producer subsidies for irrigation equipment, machinery, fertilizers, seeds, storage. The government is also expanding areas under irrigation, in an effort to reach its production goals (USDA FAS, 2016a). In Morocco, the Ministry of Agriculture offered subsidies for certified durum wheat, common wheat and barley seeds. In 2016, seed subsidies covered 40 to 60 percent of the costs (USDA FAS, 2017c). In Tunisia, the Government offers state subsidies for certified seeds, agricultural machinery, irrigation water and irrigation equipment, as well as technical support for raising wheat yields on irrigated land and state support for the expansion of irrigated land in wheat (USDA FAS, 2018c). The Government also supports improved access to credit for small and medium-sized farms, which represent 62 percent of cereal producers operating on 21 percent of land sown in cereals (USDA FAS, 2016b).

Consumer subsidy policies

In addition to public policies aimed at increasing domestic cereal production, governments in the NENA region also provide subsidies to consumers through either generalized subsidies for staples (including wheat flour and bread), or targeted subsidies through social protection programs. Food subsidies and price controls are long-standing policies in the region. In Morocco, food price controls and subsidies were introduced in 1941. In Tunisia and Libya, food and fuel subsidies were introduced in the 1970s. In Egypt, they were introduced after the British withdrawal in 1956. Finally, Jordan's consumer subsidies have a long history, with food price subsidies dating back to the 1960s (Verme and Araar, 2017).

Generalized subsidies for bread remain a central part of consumer subsidies in the NENA countries. In Egypt, for example, low prices (about $0.01 per loaf, about one tenth of the cost) for "Baladi" bread are a mainstay of the domestic food subsidy program (USDA FAS, 2017a). Each beneficiary is allowed 150 loaves of bread per month at this price, and, as of February 2018, any unused bread quota could be converted into points toward the purchase of 44 other foodstuffs (including beef, chicken, rice, and cheese) offered in government or government-partnered grocery stores (USDA FAS, 2018a). In Iraq, the state-run Public Distribution System provides rationed quantities of wheat flour, rice, vegetable oil and sugar to citizens. In 2010–11, 71 percent of Iraqi households received wheat products through this system and 64 percent of households received rice (Iraq Knowledge Network, 2011).

Some countries have, however, been reforming their subsidy policies by moving away from generalized to targeted programmes. For Example, in February 2018, Jordan replacedits generalized wheat bread subsidy program with a targeted assistance program. The Government still sets a maximum bread price, but no longer subsidizes the cost of wheat flour provided to bakeries (USDA FAS, 2018b). Morocco also provides subsidies for common wheat flour, but the volume of subsidized flour has shrunk in the past few years (USDA FAS, 2017c). Finally, according to the Saudi National Transformation Program 2020, the Government of Saudi Arabia plans to phase out consumer subsidies by the end of 2020, part of the Saudi effort to diversify its economy under its ambitious Vision 2030 program. Currently, 500 grams of samoli bread is sold for one Saudi riyal or $0.27, and bakeries are sold flour at a price below the cost of production by the Saudi Arabia Grains Organization (SAGO) (USDA FAS, 2018d).

Assessment of food security policies in NENA countries

Comprehensive region-wide analysis of the effects and the costs of cereal production and consumer staples in the NENA region is beyond the scope of the current study[12]. However, even a brief assessment indicates that these policies have had both intended and unintended consequences. Cereal production policies have supported domestic production and staples' subsidies have made certain foods more affordable for the population, including the poor. However, at the same time, these policies have limited relevance to the concept of food security endorsed at the World Food Summit of 1996. Moreover, they have had substantial costs for state budgets; they have impeded agricultural production according to comparative advantage and have had unintended environmental, nutritional and market-distorting side effects.

Relevance of food security policies

Food security policies, as they are commonly understood in the NENA region, have limited relevance to the concept of food securityas endorsed by Member States at the World Food Summit of 1996. Policies aimed at increasing the domestic production of stapleswouldnotensure a more stable supply of food than obtained from imports. Domestic droughts and climate change, to which the NENA region is particularly vulnerable, can result in more unstable supplies than sourcing food from geographically diverse international marketsandgrowing regions.

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[12] Notable specialized studies for an assessment of producer policies include World Bank figures on cereal production subsidies through 2009 or 2010 in Morocco, Egypt and Sudan (Andersen, Nelgen and Valenzuela, 2013), and McGill, *et al.* (2015) calculations of the profit gains per ha for farms selling wheat at state procurement prices vs. market prices in Egypt in 2012/13. On consumer subsidies, World Bank (2014a), Ecker, *et al* (2016), Sdralevich, *et al.* (2014), Verme, *et al.* (2017) and Devereux (2015) all have estimated the budget costs of consumer food and fuel subsidies.

Low food self-sufficiency ratios and a food trade deficit by themselves do not present a problem for national food security. Many countries around the world depend partially or wholly on imports to satisfy their food needs. An adequate supply of imported food can be ensured if the value of total exports is adequate to cover them, and if their share is relatively stable over time. The share of total food imports in total merchandise exports can be used as an indicator to assess the capacity of a country to sustain food imports (Table 12). If food imports account for a small and stable share of merchandise exports, a country should be able to sustain this level of food imports. However, if the share of food imports in total merchandise exports is large and unstable, this may mean that food imports of that level are unsustainable. For the world as a whole, the share of food imports in total merchandise exports is about 5 percent. The NENA average has been about 8 percent in recent years (2011–13), and has shown a downward trend from earlier years.

Only the Syrian Arab Republic, a country engaged in a civil conflict since 2011, had high and volatile levels of agricultural imports as a portion of merchandise exports in 2011–13. A few other NENA countries have had relatively high levels of food imports measured against their exports, but these imports have been quite stable over time. Lebanon, Egypt, Jordan, Yemen and Sudan had stable food import bills that exceeded 30 percent of total merchandise exports. These are the countries of the region perhaps most vulnerable to the risks associated with spikes in world food prices such as those experienced during the 2007–2008 global food crisis.

TABLE 12
Value of agricultural imports as a portion of the value of merchandise exports, 2011–13 (percent)

	Agriculture imports as a percent of merchandise exports (%)	Status of agricultural imports (Stable/volatile)
Total NENA	8	Stable
Countries		
Palestine	74	Volatile, 1990–2002
Syrian Arab Republic	58	Volatile since 2007
Lebanon	58	Stable
Egypt	49	Stable
Jordan	44	Stable
Yemen	39	Stable
Sudan	34	Stable
Morocco	25	Stable
Mauritania	17	Stable
Tunisia	15	Stable
Algeria	15	Stable
Iran (Islamic Rep. of)	11	Stable
Libya	9	Stable
Iraq	9	Volatile, 1990–99
Bahrain	8	Stable
Saudi Arabia	6	Stable
Oman	5	Stable
United Arab Emirates	4	Stable
Kuwait	3	Stable
Qatar	2	Stable

Source: OECD-FAO, 2018.

Beyond these financial aspects of ensuring a stable supply of food for the population of a country, the risk management strategies employed in the region to ensure a stable food supply are reasonable policies with a proven track record of reducing international trade risk (Chance, 2017). By mitigating international trade risks, these policies contribute to the security of food supplies, and thus to food security.

A second fundamental difference between "food security," as endorsed at the World Food Summit of 1996, and current food security policies in the NENA region concerns untargeted consumer food subsidies. Governments in the NENA region expend substantial sums on generalized consumer subsidies for energy and food, and relatively little on social protection programmes benefiting the poor and marginalized (FAO, 2017a). Though both types of programmes can potentially play a role in increasing economic access of the poor to food, general consumer subsidies as applied in the region are expensive and may not be sustainable, as large shares of the benefits are accorded to the non-poor. They are thus of dubious effectiveness and efficiency as social protection measures. Improving the food security status of the poor would be better achieved through cash transfer policies targeted specifically at the poor.

Efficiency of food production policies for food security

The efficiency of a policy describes its ability to attain a goal while minimizing side effects that may hinder its attainment of that goal. For example, while domestic cereal production policies areperceived to offer benefits to food security through mitigating international trade risks, they may have costs that tend to surpass the benefits. A more prudent approach to ensuring food security needs to carefully weigh the costs of these policies against the added benefits they may offer in mitigating international trade risks.

Using the example of wheat, the costs to the economy of domestic production support policies falls into four categories:

(1) *Net loss of GDP.* Countries have a comparative advantage at making products that are intensive in the use of the factors with which they are relatively well endowed. NENA countries are generally relatively well-endowed with labour (except for those in the GCC), but have relatively scarce supplies of cultivableland and water. It is therefore to be expected that NENA countries would have a comparative advantage in the production of crops and livestock products that are least intensive in land and water and more intensive in use of labour. Cereals and oilseeds are crops that requiremuch land

and water under the agro-climatic conditions of most NENA countries. Horticultural crops, on the other hand, are labour-intensive, with economic productivities of water and land that are much higher than their counterparts for cereals and oilseeds (Elbehri and Sadiddin, 2016;Santos and Ceccacci, 2015).

Wheat production programs involve the expansion of wheat area at the expense of other crops. Sometimes the wheat is rain-fed, but it is often irrigated. Though each country in the NENA is different in its exact endowments, the substitution of wheat for more labour-intensive fruits and vegetables often entails a loss of GDP compared to what could have been had the farmer raised different crops. To see this, considerthe example of wheat, vegetables and fruit in Egypt. Table 13 shows the area harvested, yield, producer price, and value of production per ha of wheat, tomatoes, strawberries, lettuce and onions in Egypt in 2014 and 2015.

TABLE 13
Egypt: value of production of wheat, tomatoes, strawberries, lettuce and onions, 2014–2015

	Commodity	Unit	Wheat	Tomatoes	Strawberries	Lettuce	Onions
	Actual area, yield and price, 2013–2015						
1	Area harvested 2014	ha	1 425 060	214 016	6 509	4 541	68 487
2	Area harvested 2015	ha	1 457 506	196 853	9 614	4 514	83 042
3	Yield 2014	t/ha	6.5	38.7	43.6	24.9	36.6
4	Yield 2015	t/ha	6.6	39.3	45.3	22.9	36.7
5	Actual producer price 2014	USD/t	388	207	346	63	136
6	Actual producer price 2015	USD/t	359	200	333	58	131
7	"Scarcity price" 2014	USD/t	276	207	346	63	136
8	"Scarcity price" 2015	USD/t	218	200	333	58	131
	Value of production per ha, 2014 and 2015						
9	Value of production per ha, average 2014 and 2015, *at actual prices*	USD/ha	2 444	7 938	15 060	1 455	4 878
10	Value of production per ha, average 2014 and 2015, *at scarcity* prices*	USD/ha	1 622	7 938	15 060	1 455	4 878

*"Scarcity price" for wheat is approximated by the CF import price. For other crops it is assumed to be the same as the actual producer price.

Sources: Lines 1–6, FAO FAOSTAT, 2018; lines 7 and 8, Table 10 and lines 5 and 6; lines 9 and 10 are calculations based on previous lines
(e.g., line 9=line 1*line 3*line5; line 10=line2*line6*line8).

Lines 9 and 10 of Table 13 show the average value of production per ha for the five crops in 2014 and 2015. Even though wheat had the highest producer prices in 2014 and 2015, in fact the value of production per ha for wheat is lower compared to every vegetable, except lettuce. The main message from Table 13 is that wheat is a relatively low-value product compared to most vegetables, whose production can bring a higher gross return per ha. This is true whether we use the actual producer prices or if we use the import price of wheat to approximate a non-subsidized wheat price. The implication of lines 9 and 10 is that if the total area in wheat were to be reduced and that area planted with vegetables (except for lettuce), there would be a net increase in the total value of agricultural production (and GDP).

The analysis presented here is a generalization, which applies to many, though not all NENA countries. Sudan, in particular, is an exception, since it is rich in both land and water resources. Some countries of the region (Sudan, Yemen, Morocco and Jordan) may have a comparative advantage in the production of animal products. The GCC countries, moreover, have such a scarcity of labour and water that intensive farming of even high value vegetables is probably quite expensive. However, most of the countries of the region are well endowed with labour, but have scarce water and land resources. The Egypt example may fit these countries quite well.

(2) *Lack of competitive pressures.* Protection and controls in NENA countries extend far beyond cereal markets, encompassing much of the food sector. Table 14 illustrates the size of protection of domestic food products in the NENA countries. Most Favoured Nation (MFN) average tariffs in the NENA countries for agricultural goods are some of the highest in the world, ranking with highest agricultural tariff countries in 2016, such as Korea (56.9), Turkey (43.2), Bhutan (41.8), Norway (39.9), Switzerland (34.2), India (32.7), Thailand (31.0), Zimbabwe (26.4) and Iceland (24.4) (WTO Tariff Profiles 2017, 2018). For context, the European Union, which is often faulted for having highly restrictive food tariff policies, had a simple average MFN applied duty rate for agriculture of 11.1 percent in 2016. All the non-GCC NENA countries (except for Yemen) for which we have data met or exceeded this rate.

TABLE 14
Simple average of Most Favoured Nation (MFN) applied duties, ranked by level of agricultural protection, 2016

Country	MFN average tariffs		Of which, by product group:						
	Non ag	Ag	Animal prod	Dairy	Fruits, veg, plants	Cereals	Sugar	Bev and tobacco	Fish and prod
Egypt	10.7	61	15	6.1	12.5	12.9	14.6	803	9.6
Tunisia	8.3	31	36	35.2	33.3	32.2	36	35.5	33.8
Sudan	19.7	30.3	34.9	38.9	36	23.6	22.9	40	39.5
Morocco	8.9	27.6	69.8	50.9	26.2	21.7	20.2	35.9	15.6
Syrian Arab Republic	15.3	24	24.7	20.9	37	21.9	8.8	49.5	16.5
Algeria	18.1	23.4	27.9	22.7	25.5	23.5	23.8	26.8	29.7
Jordan	8.6	16.8	10.7	8.2	19.8	10.4	7.2	78.2	10.7
Lebanon	4.1	15.1	7.8	19.8	33.3	7.9	6.3	21.4	5
Mauritania	12.2	11.1	18.3	14.5	7.8	11.1	7.7	18.3	19.8
Oman	4.7	11	18	5	5.7	3.2	4.2	58.2	3.6
Yemen	7	10.4	12	6	16.2	6.4	5.4	12.9	24.6
Saudi Arabia	5	6.1	3.5	5	3.5	3.6	4	47	3.6
Qatar	4.6	5.7	5.7	5	3.3	3.2	3.5	44	3.6
Bahrain	4.6	5.6	2.8	5	3.3	3.2	3.5	42.2	3.6
United Arab Emirates	4.6	5.5	2.8	5	3.3	3.2	3.5	41.2	3.6
Kuwait	4.6	5.1	2.8	5	3.3	3.2	3.5	32.9	3.6

Source: WTO tariff profiles 2017, 2018.

Cereals and cereal products are not the most protected food sector in NENA countries. Animal products, dairy, beverages and tobacco seem to have higher tariffs. Tariffs tend to raise domestic consumer and producer prices above world prices, reducing the competitiveness of domestic producers vis-à-vis international producers. For instance, high tariffs on imported cereals in Tunisia not only raise the price of cereals sold in the country. They also raise the costs of producing meat and milk in the country as well, insofar as cattle and cows consume cereals as part of their rations. Even if the state provides subsidies to consumers and producers to offset high prices and high costs of production, the fact remains that producers face little competitive pressures from world prices.

Another policy ostensibly aimed at food security, but with the direct effect of reducing competitive pressures and stifling innovation, is wholesale and retail price and margin controls. These are the instruments used to deliver generalized food subsidies to the population. If producers were allowed to pass on their high costs of production to the consumer, populations would find their basic foods more expensive than in other countries. In order to shield urban consumers from these costs, price and margin controls are introduced on flour and/or bread and other staples, and mills or bakers are offered subsidies that compensate for high costs of raw materials. Table 15 shows an example from Tunisia, but all NENA countries with food subsidies deliver them through price and margin controls. The sheer quantity of controls in Table 15 is astounding. With the exception of certain meats, there are hardly any food prices or margins that are not controlled.

TABLE 15
Tunisia: Products subject to price or margin controls

Products and services whose prices are controlled at all levels of distribution	Products and services whose prices are controlled at the production level	Products subject to control of the distribution margins
Subsidized bread	Bakers' yeast	Rice
Subsidized flour and semolina	Beer	Fruits
Subsidized couscous and pasta	Vegetables, plants and condiments	Vegetables, plants and condiments
Subsidized edible oils	Barrels and metallic packaging	Poultry
Subsidized sugar	Motor vehicles	Eggs
Papers, textbooks and notebooks, subsidized school exercise books	Lime, cement and reinforcing bars	Bran and derivatives of milling
Tea	Compressed gas	Roasted coffee
Drugs and medical procedures		Butter
Fuel		Tomato paste
Electricity, gas and water		Sugar cubes
Passenger transport		Yeast
Subsidized regenerated milk		Beer
Postal communications services (rates for communications services that fall under universal telecommunications services framework cannot exceed maximum ceilings)		Tobacco
Tobacco, matches and alcohol		Salt
Harbour services		Artificial cement
Hot drinks (coffee and tea) served in coffee shops and bars		White cement
		Reinforcing bars
		Metal cans
		Auto vehicles
		School ink
		Compressed gas
		School paper
		School text books
		Lacteal powder for children

Source: World Bank, 2014b, p. 94, citing Government of Tunisia Decree 31–1996 (23 December 1991) modified by Decree 95–1142.

A further policy ostensibly aimed at food security is the control of substantial portions of food trade and production through government state-owned enterprises or parastatals. These organizations are the tools used to regulate markets, in addition to subsidy programs. As noted before, all NENA countries except Yemen seem to have cereal state trading enterprises and marketing boards. Marketing boards intervene in agricultural markets through regulation of production, distribution, and marketing of agriculture products. For example, in Tunisia, the Cereal Marketing Board is involved in the import, collection and transportation of cereals. The Oil Marketing Board is responsible for the import of oils and the export of olive oil. Though it does not have a monopoly on olive oil export, it controls access to EU tariff-free quotas. The Trade Office in Tunisia is the sole importer of coffee, sugar and potatoes. Though the share of commodity markets controlled by these parastatals is relatively small, they use other means to influence markets, such as the issuance of quality certificates to private exporters (World Bank, 2014b).

The effect of tariff and non-tariff protection measures, price and margin controls, and ubiquitous regulation is to make food markets in the NENA countries uncompetitive, highly non-transparent and controlled. Such markets are characterized by low quality, high costs of production and little variety. Beyond this, they create opportunities for rent-seeking, cronyism and insider markets.

It is difficult to see how this degree of control furthers the food security of the countries in the NENA region. Protected agriculture, subsidized production and food subsidies do not contribute to building a competitive agrifood sector capable of producing and exporting according to comparative advantage. Rather, they lead to high costs of production due to a lack of competitive pressures, and low agricultural productivity, both of which limit rural transformation.

(3) Budget costs. The most apparent costs of domestic support policies for cereals relate to their fiscal impact. If governments pay substantially more for domestic wheat production than imports, then the added costs are an avoidable fiscal burden for the state. To illustrate the magnitude of these added costs, a counterfactual example on Egypt is used to show what would have happened if Egypt kept its 2015/16 policies of high procurement prices for wheat for the period 2016/17 and 2017/18. The Egyptian state procured 4.9 million tons of wheat from its farmers in 2015/16 and 3.4 million tons in 2016/17 (personal communication from Mohammed Elgammal, 23 May 2018). If the state had maintained the 2015/16 ratio of procurement price to CF import price of 1.9 (Table 16, line 4), the procurement price would have been $358 per ton. This would have meant that the Egyptian state would pay $368 million in extra costs, not including input subsidies to farmers (Table 16, line 9). Revenues of the Egyptian state budget for marketing year 2016/17 have been estimated at $48 billion. Thus, the extra costs from high wheat procurement prices alone would have amounted to about 0.8 percent of state revenues. In 2017/18, this sum would have grown to 1.35 percent of budget revenues under similar assumptions. These additional costs are what led the Egyptian government to announce on January 5, 2017 that the price to be paid for local wheat to be harvested starting in mid-April, would be based upon the announced average international price of wheat which GASC pays via its tendering process (USDA FAS, 2017a). Egyptian domestic procurement price and the import price were nearly identical in 2017/18 after being substantially different in previous years (Table 16, line 4).

TABLE 16
Egypt: taxpayer costs of food security policies under counterfactual for 2016/2017 and 2017/2018

			2015/2016	2016/2017	2017/2018
1	Wheat prices	Import (USD/ton)	189	188	202
2		Domestic (EGP/ardab)		415	565
3		Domestic (USD/ton)	359	250	209
4		Note: Ratio: Dom/Import price	1.90	1.33	1.04
5		Counterfactual domestic price with same ratio to import price as in 2015/16 (USD/ton)	359	358	384
6	GASC procurement quantity	Million tons	4.9	3.4	3.6
7	Actual GASC procurement cost	Million USD	1 759	850	753
8	GASC procurement costs under counterfactual	Million USD	1 759	1 218	1 381
9	Difference: overpay for GASC domestic wheat under counterfactual (line8-line 7)	Million USD	0	368	628
10	Egyptian budget revenues (MY)	Billion EGP	561	662	831
11	Egyptian budget revenues (MY)	Billion USD	63	48	46
12	Overpay in % of budget revenues	%	0	0.77	1.35

Sources: Import prices are MY CF tender prices from AgFlow (2018); 2016/17 and 2017/18 domestic prices are from personal communication from Mohammed Elgammal (23 May 2018); 2015/16 domestic price from FAO FAOSTAT (2018); GASC procurement quantity from personal communication from Mohammed Elgammal (23 May 2018); actual GASC procurement costs is calculated as line 3*line 6; GASC procurement costs under hypothetical is calculated as line 5*line 6; calendar year Egyptian budget revenues from IMF (2018b). Marketing year revenues estimated as sum of half of each calendar year in the marketing year; line 12 is line 9/line 11*100.

(*4*) *Environmental costs.* Growing wheat, rather than alternative, less water-intensive crops, has environmental costs, as it increases the unsustainable use of water resources in the NENA region above the level that would prevail if less water intensive crops were raised. Certainly, the real culprit in this evaluation is water policy in the region. However, food security policies only serve to exacerbate the long term environmental damage done by water policies. Water policy in the NENA region is a major factor in the long-term unsustainable surface and groundwater abstraction, leading to the depletion of underground aquifers on which the Near East depends heavily (World Bank, 2018a). Out of the 20 countries in the NENA region, 13 withdrew more freshwater in 2014 than was available from renewable resources (FAO AQUASTAT, 2018). The cost of water faced by farmers is far below the actual scarcity cost of water, and there is little metering of water use in the region. Moreover, most countries in the NENA region fall below the generally accepted (UNDP, 2006) water scarcity line of 1,000 m^3 per capita per annum of renewable water resources (Figure 8), yet the region has the lowest water tariffs in the world, subsidizes water consumption (about 2 percent of GDP) and has total water productivity of only half the world average (World Bank, 2018a).

FIGURE 8
Annual renewable water per capita, 2014
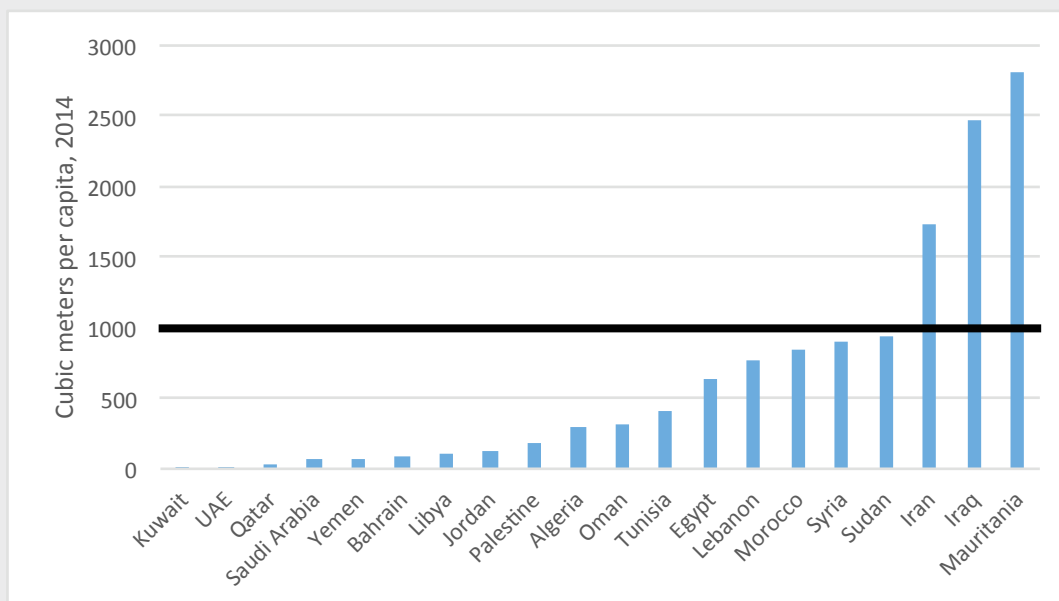
Source: FAO AQUASTAT, 2018.

The degree to which wheat represents a water-intensive crop compared to other crops can be illustrated by comparing the water productivity of one crop to another. The productivity of water used in agricultural production may be measured in various ways. Physical water productivity is the ratio of agricultural output to the volume of water consumed in the production of that output. Economic water productivity may be defined as the value of production per unit of water used. Water "used" means that it is (1) depleted through evapotranspiration, (2) absorbed into a product, (3) flows to a location where it cannot be readily reused, or (4) it becomes heavily polluted (Molden, *et al.,* 2010).

The concept of physical water productivity needs to be interpreted carefully. First, each crop variety under a given climate has a definite relationship between plant biomass produced and the evapotranspiration of water. For instance, crops such as wheat and barley produce less biomass per drop of water than maize and sugarcane, while crops such as pineapple are the most water efficient. However, biomass produced is not the same as the portion of each crop or agricultural product that is marketed or ingested. To measure the usable part of the agricultural product it is necessary to compare the agricultural commodity (which typically excludes much of the non-usable biomass) to the volume of water used. Table 17 (column 1) illustrates that the physical water productivity of raising vegetables and fruits is highest, followed by cereals, groundnuts and livestock products. Second, there are many additional

factors that determine physical water productivity of plants and other agricultural products. For instance, low soil fertility, plant disease, pests, and the timing of watering and planting can all limit yield and therefore crop water productivity. By extension, the more a farmer can control these other factors, through irrigation, proper agronomic practices, fertilization and control of plant disease and pests, the higher physical water productivity that can be attained.

A severely water constrained region such as the NENA would seem to have a natural advantage in the production of vegetables and fruits and a disadvantage in producing cereals and livestock products, because the former have higher economic water productivity than the latter. In fact, in the NENA countries, the highest paying commodities per cubic meter of water used are vegetables and fruits, followed by olives, dates and lentils, followed by cereals and beef (Table 17, column 3).

TABLE 17
Average water productivity for selected commodities

	Average physical water productivity, (kilograms per M^3)*	Average producer price in NENA, 2010–16 (US dollars per kg)**	Average economic water productivity (US dollars per M^3 of water in producing agricultural commodity)
	(1)	(2)	(1)*(2)=(3)
Tomato	12.5	0.49	6.18
Onion	6.5	0.41	2.64
Apples	3.0	0.84	2.51
Potato	5.0	0.45	2.23
Olives	2.0	0.94	1.89
Dates	0.6	1.78	1.07
Lentils	0.7	1.23	0.86
Bovine meat	0.1	7.07	0.71
Rice	0.9	0.67	0.60
Fava beans	0.6	0.90	0.54
Maize	1.2	0.43	0.51
Groundnut	0.3	1.20	0.36
Wheat	0.7	0.50	0.35

Note: *Calculated as the mean of minima and maxima listed in Molden, *et al.,* 2010. **NENA country average, 2010–16, from FAO FAOSTAT, 2018.
Sources: FAO FAOSTAT, 2018; Molden, *et al.,* 2010.

Because of the artificially low prices for water in the region, its use is not likely to be determined either by its physical productivity or economic productivity. However, this does not change the fact that in terms of environmental consequences, wheat is one of the most environmentally unsustainable crops of all those considered in Table 17 merely because it uses more water per kilogram of product or per dollar earned. This finding is confirmed by a study on agricultural adaptation to climate change under water scarcity in Egypt, Jordan and Lebanon (Elbehri and Sadiddin, 2016).

Efficiency of generalized consumer subsidies for food security

Generalized consumer subsidy policies are also inefficient instruments in ensuring the attainment of food security as conceived in the World Food Summit of 1996. There are two types of costs inherent in the consumer subsidy policies in the NENA region—the economic costs to taxpayers and consumers from supporting these policies, and the health costs stemming from a diet distorted by these subsidies to include excessive consumption of cereals.

(1) Budget costs. The static costs of consumer subsidies for government budgets has been a prominent theme of research and policy discussion over the past few years (World Bank, 2014a; Ecker, *et al.,* 2016; Sdralevich, *et al.,* 2014; Verme, *et al.,* 2017; Devereux, 2015).

Generalized subsidies present a substantial fiscal burden for governments of the region, ranging from less than 1–21 percent of GDP between 2008 and 2013. Though the majority of the fiscal costs stem from fuel subsidies, countries such as Egypt and Iraq still have sizeable consumer food subsidies. In addition, the fact that fiscal costs are actually passed on to the taxpayer is not always appreciated although the fiscal aspects of these costs are often considered. Part of the blame for low quality government services can often be attributed to generalized subsidy systems. By keeping prices low, the government bears consistent losses which are passed on to its citizens (including businesses) in higher taxes and by providing lower quality services.

The fiscal burden associated with consumer food (and fuel) subsidies has prompted governments to reduce them in the past few years. These have included reducing the scope, and quantity of subsidies, and by partial conversion to money transfers. Though reforms of food subsidies have generally been welcomed, they have been largely aimed at limiting the fiscal burden of the subsidies, and have not dealt with the wider impact of the entire system of the state involvement in the marketing, import, distribution of commodities and food by the state. State domination of much of the marketing, import, distribution, processing and storage of wheat and flour needs to be re-evaluated as it may be crowding out private sector investment and innovation from the food production, processing and marketing of wheat and wheat products.

(2) Nutritional costs. The second cost of consumer bread subsidies is the contribution they have made to the poor diet in the NENA region. Considering that food subsidies have existed in the NENA region for more than 50 years, it is a challenge to establish a cause and effect relation between them and malnutrition outcomes. Ecker, *et al.* (2016) found a statistical relationship indicating that higher food subsidies in Egypt increase the risk of malnutrition among both children and their mothers, particularly the risk of overweight. However, beyond this country study, it is clear that diets in the NENA region are quite different than in other areas of the developing world. All economies in the NENA region are either middle or high income, except for Yemen (low income), according to the latest World Bank categorization (World Bank, 2018c). This would lead one to assume that diets would be more or less similar to the world average, perhaps approaching levels in high-income countries on some indicators. However, in many ways, NENA diets are more similar to diets in the least developed countries.

Three indicators usually associated with rising incomes are here considered—the total number of calories in the diet, the portion of animal products and the portion of calories derived from cereals and starchy roots. Diets in the NENA region are surprisingly high in calories. At over 3,000 kcal per capita per day, the total number of calories in the NENA region is higher than the world average (Table 18, line 1). However, two thirds of these calories are derived from carbohydrates and sugar, while a mere 12 percent of calories are derived from animal products, and 9 percent are derived from fruits and vegetables. Consider, first, the average availability of animal products as a portion of total calories in the NENA region, the world, LDCs and the EU. Despite the NENA's position in the ranks of middle-income countries, consumers in this region consume very little animal products. At 12 percent, this portion is closer to that of LDCs than the world average. This makes NENA countries outliers regarding meat consumption, consuming less meat per capita than in other countries of similar income per capita (37.4 kg per capita per year, Table 18, line 3) (FAO FAOSTAT, 2018). FAO (2017a) argued that an increase in animal product consumption in the NENA region would be a reasonable way followed in the rest of the world to increase protein in the diet and reduce child stunting.

TABLE 18
The NENA diet in comparative perspective, 2013

	2013	NENA	World	LDCs	European Union (28)
1	Grand Total (kcal/capita/day)	3 060	2 884	2 348	3 409
2	Animal products (meat, dairy, fish) (%)	12	18	8	29
3	*Note: Meat and offal only, In kg/cap/yr*	*37.4*	*45.5*	*15.7*	*84.1*
4	Vegetal Products (%)	88	82	92	71
5	1. Of which, Cereals and starchy roots (%)	55	50	67	32
6	*Note: In kg/cap/yr*	*226.5*	*210.4*	*236.7*	*197.1*
7	2. Of which, Sugar & Sweeteners (%)	9	8	5	11
8	*Note: In kg/cap/yr*	*30.4*	*24.7*	*11.7*	*39.6*
9	3. Of which, Fruits and vegetables (%)	9	7	4	6
10	*Note: In kg/cap/yr*	*259.7*	*218.4*	*86.9*	*213.1*
11	4. Of which, Vegetable Oils (%)	9	9	7	14
12	5. Of which, Other (%)	6	8	9	9

Source: FAO FAOSTAT, 2018.

The counterpart of low animal product consumption is high vegetal product consumption, the largest category of which is cereals and starchy roots. At 55 percent (226.5 kg. per capita per year), this portion is higher than the average portion in the world as a whole, nearly double the consumption in EU countries (32 percent), though less than in the LDCs (67 percent). 53 percent and 9 percent of total calories consumed by the population in NENA countries derive from cereals and from sugar and sweeteners respectively. On the positive side, the NENA diet contains a high portion of fruits and vegetables. At 259.7 kg per capita per year, the NENA region consumes more fruits and vegetables than even consumers in the EU high-income countries.

It is difficult not to suspect a connection between the high number of calories and the nutrition outcomes observed in Part I, Tables 6 and 8. The particularly high rates of adult obesity of countries with a medium level of rural transformation in the NENA region are consistent with the diet observed in Table 18. Ecker, *et al.* (2016), Asfaw (2006) and Powell and Chaloupka (2009) have illustrated the connection between consumer food subsidy programs in Egypt and mother's body mass index (BMI). Many countries in the region employ similar programs to subsidize consumer staple foods. Though there are many reasons for poor nutrition in the region, consumer staple food programs which subsidize flour, bread, vegetable oils and sugar are a source of concern. Ramadan and Thomas (2011) showed that there are other ways to design social protection food programs with potentially less direct support for a high carbohydrate and sugar diet.

PART 3
SUSTAINABLE DEVELOPMENT THROUGH RURAL TRANSFORMATION IN THE NENA REGION

There is perhaps no sector in the NENA region where "the future we want" diverges more dramatically from reality than employment, particularly youth employment. NENA countries show unemployment rates that are persistently higher than in other regions around the world, particularly for young workers aged 15–24. NENA countries show unemployment rates that are persistently higher than in other world regions, particularly for young workers aged 15–24. Generating decent jobs that provide a living wage for all adults is one of the most challenging tasks for sustainable development in the NENA region. Job creation lies at the heart of not only SDG 8 on decent work and economic growth, but also of SDG 1 on poverty and SDG 2 on ending hunger, achieving food security and improved nutrition.

Part III therefore analyses youth unemployment in the NENA countries, beginning with a description of the problem and the consensus for structural policy reforms aimed at increasing economic growth. It then considers how structural transformation, while an indication of rising average incomes, has an unintended side-effect of widening the rural-urban welfare gap as agricultural productivity lags behind that of the rest of the economy and poverty and the deprivation of services become concentrated in rural areas. General structural reforms by default focus predominantly on industries and services that account for the largest portions of GDP. In so doing, they can perpetuate and deepen the rural-urban gap. Rural transformation policies are aimed at closing this rural-urban gap, explicitly including rural areas into structural reforms in the rest of the economy. Experiences of other countries suggest that proactive policies to raise agricultural productivity, reduce rural poverty and improve infrastructure, health, education and other rural services can bring enhanced and inclusive growth to the economy by making rural areas more attractive for business. These policies are the central core of inclusive rural transformation.

High unemployment and anaemic growth in the NENA region

Unemployment rates in NENA countries are persistently higher than in other world regions, particularly for young workers (aged 15–24) and women (Table 19). This problem is acute in the middle income, as well as in some high-income countries of the region, and has worsened in some of them in the past two decades. For women, unemployment is only part of the problem. Female participation rates in NENA countries are the lowest in the world and have risen little in the past four decades (World Bank, 2009).

TABLE 19
Total, female and youth unemployment, averages, 2000–2010, 2011–2015, percent

	Total		Female		Youth (15–24)	
	2000–2010	2011–2015	2000–2010	2011–2015	2000–2010	2011–2015
High income						
Global	7	8	7	8	15	18
Bahrain	1	1	4	4	5	5
Kuwait	1	3	1	3	8	15
Oman	19	18	38	35	47	46
Qatar	2	0	8	2	9	1
Saudi Arabia	5	6	15	21	30	29
United Arab Emirates	3	4	9	10	9	12
Upper middle income						
Global	6	6	6	6	15	15
Algeria	18	10	34	17	35	25
Iraq	19	15	30	25	39	33
Jordan	14	13	24	22	31	32
Iran (Islamic Rep. of)	12	11	18	18	24	25
Libya	19	19	30	28	43	46
Lebanon	8	6	11	12	21	21
Lower middle income						
Global	6	5	7	6	13	13
Mauritania	14	10	16	12	22	17
Syrian Arab Republic	10	15	24	35	20	33
Sudan	14	13	20	19	23	22
Morocco	11	9	11	10	18	19
Egypt	10	13	28	35	28	35
Tunisia	14	17	19	24	30	38
Yemen	15	18	22	38	28	32

Source: World Bank, 2018d.

Unemployment (particularly youth unemployment) is a common characteristic of development, but it is perhaps highest in the world in the NENA region. In 2016, for example, unemployment was highest in North Africa (12 percent), though it was also high in Latin America and the Caribbean (8 percent), North, South and Western Europe (9 percent) and in Eastern Europe (6 percent) (ILO, 2018). Youth unemployment was significantly higher than general unemployment in all regions. However, it was highest in North Africa, reaching 30 percent, compared to 19 percent in Latin America and the Caribbean and in North, South and Western Europe, while it was 17 percent in Eastern Europe (ILO, 2018).

The root causes of high unemployment lie in some fundamental economic and demographic issues in NENA economies. NENA economies have experienced anaemic growth and high labour force growth rates since the 1970s (Yousef, 2004). The anaemic growth of the region is rooted in an outdated state-driven development model with a strong interventionist-redistributive orientation (Yousef, 2004; Malik and Awadallah, 2013), which has left a legacy of high share of government jobs at all education levels (Schmidt and Hassanien, n.d.; Barsoum, Wahby and Sarkar, 2017), protectionist trade policies (Abed, 2013), an (over)reliance on natural resource exports and foreign aid and a bias toward capital-intensive mining and extraction industries (Malik and Awadallah, 2013). The skewed structure of industry in the NENA region can be seen in Figure 9 which shows the low share of industrial value added accounted for by manufacturing, the more labour-intensive portion of industry. A low share of manufacturing in industry limits the ability of industry to absorb a growing labour force.

FIGURE 9
Manufacturing as a share of industrial value added by region, 1975–2016 (percent)
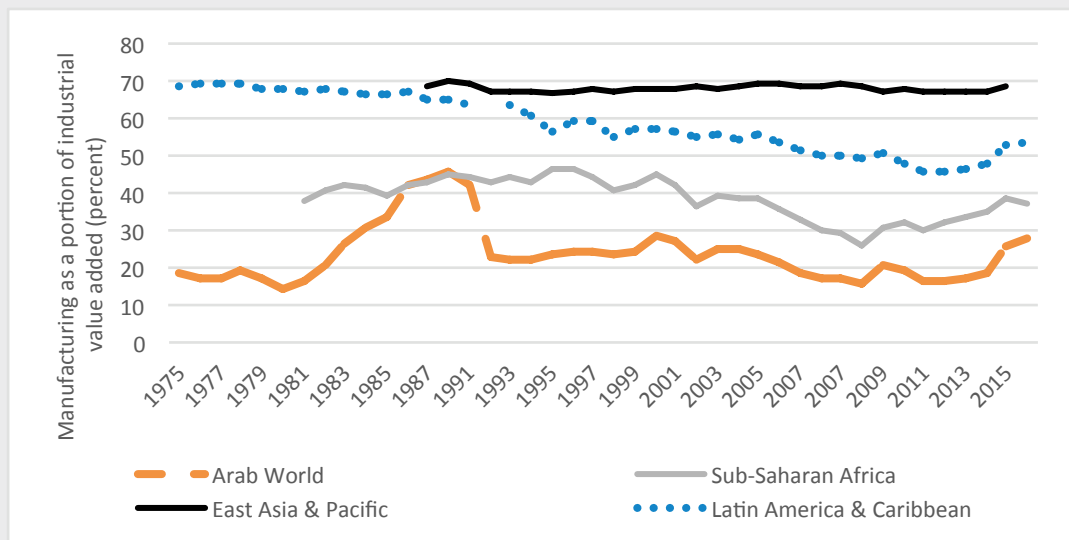
Source: World Bank, 2018d.

While NENA governments have made and continue to make sizeable efforts at economic reform, these efforts started late in comparison to other regions (only from the mid-1990s), and have made the most progress in macroeconomic stability (expenditure reduction and control of inflation), rather than structural reform (trade policy, private investment environment) (Dasgupta, Keller and Srinivasan, 2002). Government employment continues to crowd out private sector jobs (Behar and Mok, 2013) and good employment is allotted more through privilege than competition (Gatti, *et al.*, 2013). Finally, the business environment is plagued by legal and regulatory ambiguity, suppressing private sector investment (Gatti, *et al.*, 2013). Two-thirds of NENA economies are in the bottom half of the World Bank Doing Business Index ranking, and only one country (United Arab Emirates) has a business environment comparable to the Organization for Economic Co-operation and Development (OECD) countries (World Bank, 2018b).

High population growth has led to high labour force growth particularly in the non-agricultural sector, with a speed that has far outstripped GDP growth for many years (Table 20)[13]. The associated anaemic growth of industry and services has led to the widespread unemployment observed in NENA countries today.

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[13] Rural migration can take different forms, including rural-rural migration and seasonal/circular migration. However, the majority of rural people in the region, and especially the youth, tend to move from rural to urban areas and mainly in search of better employment opportunities in sectors others than agriculture.

TABLE 20
NENA labour force and sectoral growth performance in comparative perspective, 1980–2015 (percent)

| Sector | Region | Average annual growth, 1980–2015 | |
		Labour Force	GDP
Total	NENA	2.9	2.8
	Developing without LDCs	2.0	7.0
Industry, services	NENA	4.0	2.8
	Developing without LDCs	3.3	7.2

Source: UNCTAD, 2018.

The role of transformation

The above analysis of the unemployment issue in the NENA region leads to the conclusion that the non-agricultural sectors of the economies in the NENA region are in need of structural reform aimed at limiting the size of the state in the economy, strengthening the enabling environment for the private sector and encouraging the growth of tradeable sectors. While there is nothing wrong with this analysis, it neglects how the process of development impacts disproportionately on productivity, poverty and deprivation in the economy.

To see this, consider how the structure of the economy changes in the course of development. Structural transformation is characterized by a declining share of agriculture and an increasing share of industry and services in GDP and employment, are shown in Figures 10 and 11. Most of the GDP transformation in the NENA region has been completed, as the share of agriculture in GDP is below 6 percent. However, the transformation of the labour force has lagged behind. Twenty percent of the labour force remains in agriculture in the NENA economies. This twenty percent of the labour force of NENA economies in agriculture, then, produces only 5 percent of the GDP of the region.

FIGURE 10
Value added by sector in NENA economies, 1970–2015
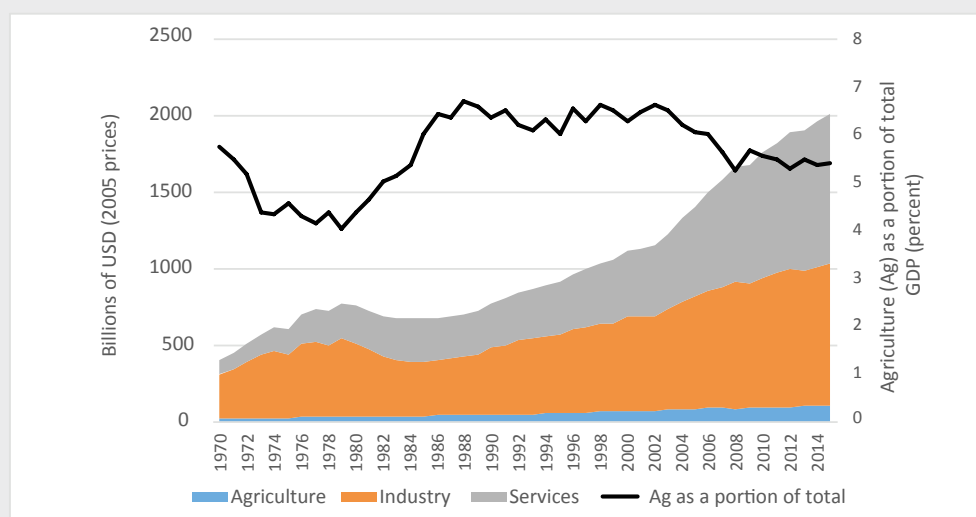
Source: UNCTAD, 2018.

The structural transformation shown in Figures 10 and 11 has mainly been a passive by-product of industrialization. In contrast, *agricultural transformation*, a shift from mainly traditional farming to commercial production systems (Box 1), is mainly a proactive policy-driven process. The driving forces of agricultural transformation are policies supporting technological and institutional change in rural areas, including a shift toward higher value added products, and the exploitation of new export markets. Public policies to support agricultural research (for improvement of seeds and breeds) combined with technological outreach (extension), animal health services (vaccinations, best practice advice), public pest control, and other public goods, thus play a key role in agricultural transformation. Agricultural transformation is part of a wider *rural transformation* process that includes the emergence of income-generating opportunities in the rural non-farm sector, including more access to services and infrastructure, the driving forces of which are public investment in rural areas in the form of infrastructure development (roads, storage facilities, terminal markets, housing, health facilities, etc.), effective food safety control, support for rural SME development, and state incentives for the location of agroindustry and services in rural areas to connect rural markets with urban centres of consumption.

FIGURE 11
Labour force by sector in NENA economies, 1980–2020
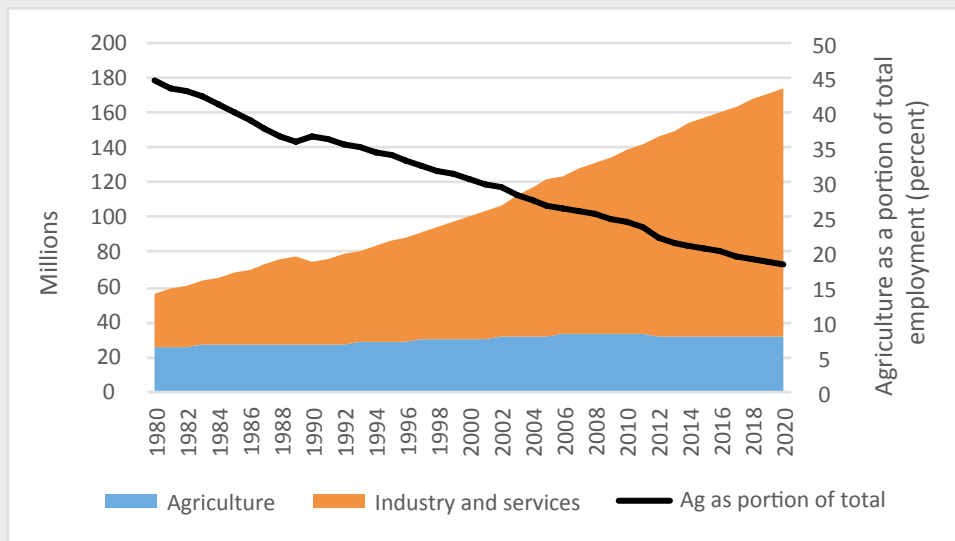
Source: UNCTAD, 2018.

A review of the 81 developing countries for which data is available shows that structural and rural transformation tend to be correlated. In Figure 12, the NENA countries for which data is available are shown in boxes, while countries from other regions are dots. The slope of the fitted regression line indicates that the countries that have undergone a high degree of structural transformation tend to undergo rural transformation as well. However, there is hardly a one-to-one relationship between structural and rural transformation. Countries with relatively high levels of structural transformation (on the right side of Figures 10 and 11) may have either a low, medium or high level of rural transformation. Since rural transformation is largely a policy choice, countries can choose to enact policies to support the transformation of rural areas or not. In Figure 12 high rural transformation countries are those with a transformation index value 80 or above, while low rural transformation countries are those with a transformation index value of 50 or below.

FIGURE 12
Structural and rural transformation in selected developing countries, 2010*
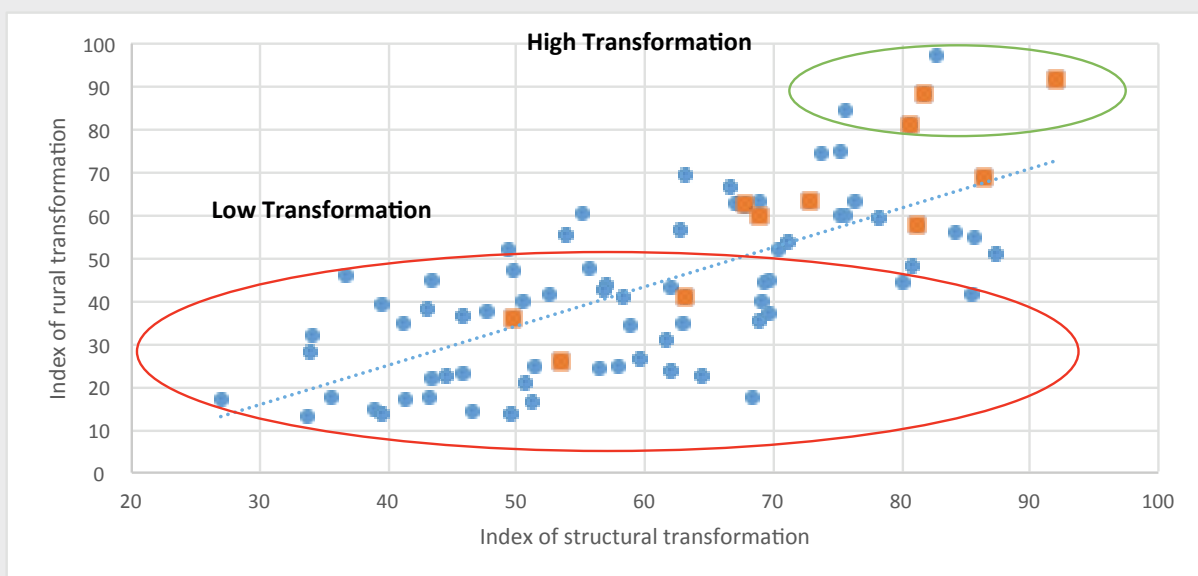
*Structural transformation calculated from average figures, 2010–16. Rural transformation calculated from latest available figures.
See Appendix for calculation details.

Sources: Tables 26 and 27.

Rural transformation and agricultural transformation support each other. The growth of off-farm incomes through rural transformation supports agricultural transformation by providing demand for agricultural products. Agricultural transformation, in turn, supports rural transformation by providing demand for off farm inputs (such as seeds, machinery and technical expertise) and marketing and transportation services.

Not all countries can be said to undergo an agricultural transformation. The GCC countries, for example, have never had large agricultural sectors, if we discount the state-directed (over)expansion of agriculture in some of these countries (e.g., Saudi Arabia in the 1980s). They also never underwent the large-scale rural-urban migration that has so affected productivity in the transforming countries through the reallocation of labour (Breisinger, *et al.*, 2016). These countries are accordingly left out of the analysis of agricultural and rural transformation, because the significance of the agricultural sector is so small that to speak about the "transformation" of agriculture is a misnomer.

The legacy of transformation in the NENA region: the rural-urban gap

Structural transformation, lying at the centre of economic development, is a double-edged sword. In one respect, it signifies the transition to higher value production in industry and services, leading to economic growth and rising average incomes. However, by itself, structural transformation is not capable of effecting inclusive and widespread development without specific policies aimed at transforming agriculture and rural areas. Instead, it causes a widening rural-urban gap in productivity and living standards. The productivity gap is visible in the results of structural transformation in the NENA region where in 2015 20 percent of the labour force employed in agriculture produced only 5 percent of GDP.

More formally, the productivity gap can be illustrated by plotting productivity of labour employed in agriculture and other sectors over time. Figure 13 illustrates the gap between the productivity of labour (value-added per worker per year) in agriculture versus other sectors. In 2015, an average worker in agriculture in the NENA countries produced USD 3 400 worth of products per year, about one third of that produced by an average worker outside of agriculture. The large differences in labour productivity suggest that average wages for those employed in agriculture are likely far below those of workers outside the sector.

FIGURE 13
The rural-urban productivity gap: productivity of labour in agriculture vs other sectors, NENA countries, 1980–2015
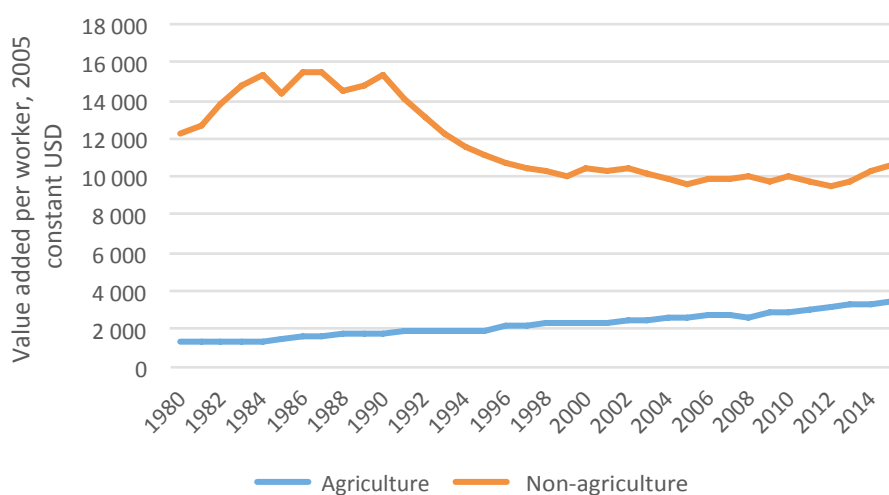
Source: UNCTAD, 2018.

Partially as a result of lower wages in agriculture, rural areas in the NENA region generally have higher income poverty rates than urban areas. On average, rural poverty is about twice as high as poverty in urban areas (Table 21).

TABLE 21
Income poverty: rural and urban poverty headcount evaluated at national poverty line, selected NENA countries

	Rural poverty headcount (%)	Urban poverty headcount (%)	Year
Algeria	4.8	5.8	2011
Egypt	32.3	15.3	2010
Iraq	30.6	14.8	2012
Jordan	16.8	13.9	2010
Mauritania	59.4	20.8	2008
Morocco	14.4	4.8	2007
The Sudan	57.6	26.5	2009
Syrian Arab Republic	36.9	30.8	2007
Yemen	40.1	20.7	2005

Source: World Bank, 2018d.

The rural-urban income and poverty gap is deepened by differences in access to education, health, and other public services and housing. In most countries, access is between 3 and 20 times lower in rural areas. Indicators of deprivation provide an indication of aspects of poverty that are not captured by estimates of income poverty. Table 22 defines various indicators of deprivation by area, while Tables 23 and 24 present the share of urban and rural residents that meet the definitions of deprivation in Table 22. The sources of all data are country population, health and living standards surveys conducted by country governments.

TABLE 22
Indicators of deprivation

Deprivation area	Indicator	Household members are deprived if….
Education	Years of schooling	No household member aged 10 years or older has completed 5 years of schooling
	Child school attendance	Any school-aged child is not attending school up to the age at which he/she would complete class 8.
Health	Child mortality	Any child has died in the family in the five-year period preceding the survey.
	Nutrition	Any adult under 70 years of age or any child (0–5 years) for whom there is nutritional information is underweight*
Living standard	Electricity	Household has no electricity
	Sanitation	Household sanitation is not improved (according to MDG guidelines), or it is improved but shared with another household**
	Drinking water	Household does not have access to improved drinking water (according to MDG guidelines)***
	Floor	Household has a dirt, sand, dung or other (unspecified) type of floor

Note: According to Alkire and Kanagaratnam (2018):
*Adults and children over 5 years of age are considered underweight if their BMI is below 18.5. Children (0–5 years of age) are considered underweight if their z-score of weight-for-age is below minus two standard deviations from the median of the WHO reference population.
**A household is considered to have access to improved sanitation if it has some type of flush toilet or latrine, or ventilated improved pit or composting toilet, provided that they are not shared.
***A household has access to improved drinking water if the water source is any of the following types: piped water, public tap, borehole or pump, protected well, protected spring or rainwater, and it is less than 30 minutes' walk (roundtrip).

Source: Alkire and Kanagaratnam, 2018.

TABLE 23
Share of rural and urban populations deprived of education and health services (percent)

	Education deprivation				Health deprivation			
	Years of schooling		Child school attendance		Child mortality		Nutrition	
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
Algeria	1.5	0.3	1.5	0.5	1.5	0.5	0.4	0.2
Egypt	2.1	0.9	3.2	1.7	2.6	1.3	1.4	0.7
Iraq	7.7	2.4	17.5	6.3	10.5	5.1	5.9	2.5
Jordan	0.1	0.1	1.2	0.6	1.2	1.5	1.0	1.3
Morocco	25.6	1.9	13.2	1.1	11.8	1.4	2.7	0.3
The Sudan	31.0	7.8	28.5	7.9	18.4	12.6	29.0	12.5
Syrian Arab Republic	3.1	1.3	4.4	2.5	2.3	1.3	2.2	1.0
Tunisia	1.9	0.1	1.6	0.0	1.4	0.1	0.4	0.0
Yemen	17.9	3.3	32.7	11.5	21.5	10.7	41.8	15.4

Source: Alkire and Robles, 2017, based on data from Multiple Indicator Cluster Surveys carried out by UNICEF, the Demographic and Health Surveys funded by USAID, the Living Standards Measurement Surveys funded by the World Bank, World Health Surveys carried out by WHO, and health surveys by the National Institute for Demographic Studies (France).

TABLE 24
Share of rural and urban populations deprived of public services and decent housing (percent)

	Electricity		Improved sanitation		Drinking water		Flooring	
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
Algeria	0.7	0.1	1.5	0.2	1.2	0.2	0.7	0.1
Egypt	0.1	0.0	0.8	0.0	0.2	0.0	0.9	0.1
Iraq	2.2	0.0	4.2	0.4	7.6	0.3	6.4	0.3
Jordan	0.3	0.0	0.0	0.0	0.5	0.0	0.2	0.0
Morocco	10.3	0.3	17.6	0.4	23.9	0.4	17.8	0.2
The Sudan	55.3	15.3	57.8	21.4	45.6	16.2	63.3	27.5
Syrian Arab Republic	0.1	0.0	1.5	0.3	1.7	0.3	2.0	0.3
Tunisia	0.5	0.0	1.9	0.0	1.6	0.0	0.2	0.0
Yemen	27.3	1.2	47.2	6.1	36.6	7.0	33.3	3.3

Source: Alkire and Robles, 2017, based on data from Multiple Indicator Cluster Surveys carried out by UNICEF, the Demographic and Health Surveys funded by USAID, the Living Standards Measurement Surveys funded by the World Bank, World Health Surveys carried out by WHO, and health surveys by the National Institute for Demographic Studies (France).

The rural-urban gap is a sign of the neglect of agriculture and rural development in the policy agendas of the region. Though it is to some extent inevitable during the industrialization process as low productivity agriculture is left behind by the faster growing industry and service sectors, many countries have narrowed and even eliminated the gap through policies aimed at agricultural development, territorial development and infrastructure investment. The continuation and deepening of the gap is therefore also a result of neglect.

Part of the reason for neglect may be that policies for agriculture and agroindustry are often thought of in strictly sectoral terms, such that agricultural and rural development are believed to benefit only a sector of diminishing importance in the economy. The GDP lens underestimates the importance of agriculture and rural areas to the economy in two fundamental ways. First, for many NENA countries agriculture is a potential source of substantial export, much of which remains unexploited (Figure 14). The Export Potential Indicator (EPI) of the International Trade Centre (ITC) provides an estimate of the value of potential exports in products in which the exporting country has already proven to be internationally competitive and which have good prospects of export success in a given target market[14].

The EPI indicates both the size of the potential export market and the degree to which the potential has been realized. Figure 14 cites only the unexploited market potential of the leading five subsectors for each country, comparing it to the trade deficit for food and agricultural products in 2015. The results show that for many middle income countries in the region, such as Egypt, Morocco, Tunisia and Jordan, unexploited agricultural export opportunities are nearly equal to or larger than the food trade deficit. Even for Sudan and Mauritania, two of the poorest countries of the region, the value of only the top five potential export subsectors is equivalent to a substantial portion of the food trade deficit.

Second, because rural areas are where most of the poor live, agricultural development has special poverty alleviation powers. Cross-country estimates show that agricultural growth is at least twice as effective in reducing poverty as growth from other sectors of the economy (World Bank, 2007).

Another reason for the neglect of agriculture has been that policies have focused on protection and subsidies rather than growth opportunities (cf. the discussion in Part II). Subsidies tend to take up most of the fiscal space accorded to rural areas, crowding out investment in public goods and rural services (health, education, infrastructure, etc.). Without an enabling environment for growth, the private sector has substantially less interest in agricultural investment than would be if policymakers focused on growth rather than subsidies.

[14] The International Trade Centre is a joint development agency of the World Trade Organization and the UN.

FIGURE 14
Unexploited agriculture-related exports, from the 5 leading subsectors for unexploited export opportunities in NENA countries (million US dollars)
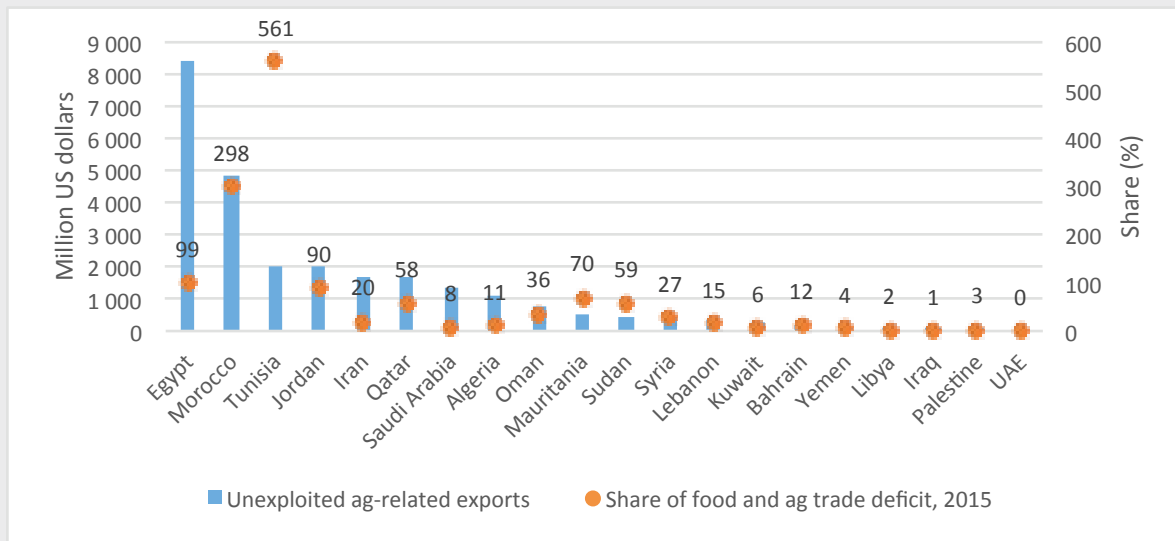
Source: ITC, 2018; FAO FAOSTAT, 2018.

Policies for the elimination of the rural -urban gap: towards rural transformation

Neither the rural-urban gap nor unemployment will resolve itself without policy change. In a review of successful agricultural transformations, Tsakok (2011) found that no country with a significant agricultural sector has bridged the gap without substantial policy actions. These policies can be divided into three groups: policies for agricultural transformation, for territorial development and for improving public services in rural areas.

Policies for agricultural transformation

Agricultural transformation refers to the shift from traditional farming to commercial, diversified production systems. At the farm level, the process includes diversification of the crop mix into higher value crops, as well as into livestock and dairy farming. A more diversified and higher value crop mix requires more technologically sophisticated production and marketing methods. Higher value products require higher investment, improved transportation, higher quality processing and packaging and better agricultural practices, but they also allow for higher incomes. The transformation of agriculture, therefore, has an economic ripple effect throughout rural areas. Government has a crucial role in this process of providing public goods, including infrastructure (roads, railways, terminal markets, storage facilities, etc.), as well as providing agricultural research and extension services and enforcing standards and regulations for food quality, processing and safety. In addition, governments have a critical task of fostering a conducive environment for the engagement of service providers from private sector, producer organizations and civil society to provide a wide range of technical, financial and business services that are needed to support commercialization and market-orientation of the small-scale agriculture.

Policies for agricultural transformation extend far beyond agricultural and agro-industrial policies. In a review of successful and non-successful agricultural transformations, Tsakok (2011) noted five overall conditions that have led to successful agricultural transformation around the world: (1) a stable framework of macroeconomic and political stability with peace; (2) an effective technology-transfer system that ensures that research and extension messages reach the majority of farmers; (3) access to lucrative and expanding markets, such that investing in agriculture is good business; (4) a usufruct rights system that rewards individual initiative; and (5) employment creation in non-agricultural sectors. We can also add (6) government provision of public goods

for enabling modern agriculture and food production, such as roads, railways, terminal markets and storage facilities, as well as enforcing standards and regulations for food quality, processing and safety. Reinforcing the role of producer organizations and their capacity to provide services and link producers to input and output markets is another dimension that requires policy considerations. The same applies for the brokerage of arrangements that benefit smallholders and adopting improved vehicles for financial inclusion. Contract farming and outgrower schemes are at the heart of most cluster, agro-park and SEZ initiatives and can be combined with dedicated credit as part of agroterritorial development strategies, to support farmers and agribusiness and counter the lack of insurance and credit availability.

Education and continuous training are central parts of technical change in agriculture, for farmers, agroprocessors, as well as for research and extension personnel and other service providers (Reimers and Klasen, 2011). However, the current agricultural education system in the NENA countries does not prepare students well for a career in agribusiness. Reform of agricultural colleges and universities is needed in order to produce graduates committed to agriculture and rural development who are qualified to address present and future challenges. This requires a reform of university governance, teaching concepts, curricula, as well as stronger collaboration with the community and the private sector.

In addition to education, there is a need to reinvigorate agricultural research and extension and to engage with other service providers, producer and youth organizations as well as migrants and diaspora's associations to include facilitation of village-level small enterprise development, establishment of innovation platforms for agricultural products, livestock, fruits, vegetables, poultry and small ruminants and the development of rural towns as hubs for product markets and agrifood business. Agro-innovation platforms are particularly helpful for women and youth, serving as a tool for increasing employment that will contribute to slowing excessive rural outmigration, particularly of youth. However, they require a reconceptualization of the role of research and extension, and the acknowledgement of the plurality of actors and service providers engaged in the development of the rural economy.

Experiences of other countries illustrate that agricultural transformation through technical change can generate growth, product diversification and a reduction in rural poverty. Policy reforms in Brazil and Chile in the 1970s and 1980s focused on improving incentives in agriculture through land reform, elimination of state controlled monopolies for crop procurement, and opening agriculture to trade. These were fundamental contributors to increases in rural incomes and the reduction of rural poverty (FAO, 2017b). In Chile, growth of production of diversified crops on small farms, such as fruits, vegetables and wine, significantly contributed to poverty reduction and rural employment in the central regions, leading to lower rates of rural-urban migration. Valdes and Jara (2008) note that these developments were largely a consequence of the labour-intensity of horticultural production and exports, which employ more labour per ton than import substitution crops like wheat and sugar. Between 1987 and 2000, the national poverty rate fell from 45 to 20 percent and the rural poverty rate fell from over 50 to 23 percent (Valdes and Jara, 2008).

China began its economic reforms in 1978 in agriculture, and has seen unprecedented reductions in poverty. Agricultural reforms established robust incentives for small-farm production as a pathway out of poverty through instituting strong land user rights, partial price liberalization and increases in government procurement prices. These reforms led rural incomes to rise by 15 percent per year between 1978 and 1984, and rural poverty to decline from 76 percent in 1980 to 20 percent in 1985 and 12 percent in 2001 (World Bank, 2007). From agriculture, the reforms spread to rural industry, trade and urban areas, causing national poverty rates to fall from 53 percent in 1981 to 8 percent in 2001.

Policies for territorial development

Agriculture relies on forward and backward linkages with other sectors to reach growing markets in urban areas. Therefore, efforts aimed at the elimination of the rural-urban gap cannot focus exclusively on technical change in agriculture, but must leverage agricultural transformation to develop agribusiness and agroindustry along the value chain from input suppliers to downstream processing, packaging, transport and retailing. This is all the more important because NENA industry is currently far less labour-intensive than in other regions, offering fewer job opportunities (Figure 9). A focus on agriculture and agroindustry transformation is a labour-intensive growth strategy, as well as a pro-poor growth strategy, since poverty is predominantly rural in the NENA region (Table 21). As part of a strategy to improve livelihood opportunities in rural areas, a territorial approach would strengthen rural links with small cities and rural towns in order to connect producers, agro-industrial processors and ancillary non-agricultural services, as well as other downstream segments of food value chains, making also the best use of the new rural-urban linkages emerging from migration dynamics.

In the NENA region, food processing enterprises are often small, with low productivity operations that are inhibited by their reliance on an unpredictable supply of products from low productivity farms (Breisinger, *et al.,* 2017). Policies to support agriculture, as well as connections between agriculture and agro-processing, are critical for the development of non-agricultural jobs in rural areas. This requires infrastructure and services, but also planning and consultation with local government and business. It requires a wide range of technical, financial and business support services, engaging service providers from various sectors and strengthening of collective action and producer organizations in rural areas. Governments in Latin America have recognized the need for rural territorial development to alleviate rural poverty and rural-urban disparities in living standards. Rural territorial development planning in Mexico focuses on inducing endogenous development through the creation of "micro-poles of development," and the National Plan for Rural Development in Brazil is designed to improve market access and promote diversification for small farmers (FAO, 2017b). Examples of agro-territorial development tools include agro-corridors and agro-clusters, but the fundamental purpose of these tools is the development of multi-stakeholder consultative planning with the participation of local, regional and national governments, as well as private business and communities. The goal of such planning is improving rural-urban connectivity and creating rural employment (FAO, 2017b).

Policies for improvements in public services in rural areas

The longstanding policy focus on urban areas and industry has led to a neglect of basic rural infrastructure, beginning with deprivations in education and health, as well as the provision of public services such as electricity, drinking water and sanitation (Tables 23 and 24). The gap in education, health and public services deprives rural inhabitants of the opportunities available to urban residents. Substandard education, health and public services severely constrain development in rural areas, discouraging private investment. They thus impede the closing of the rural-urban income and employment gap.

Agriculture relies on forward and backward linkages with other sectors to reach growing markets in urban areas. Therefore, efforts aimed at the elimination of the rural-urban gap cannot focus exclusively on technical change in agriculture, but must leverage agricultural transformation to develop agribusiness and agroindustry along the value chain from input suppliers to downstream processing, packaging, transport and retailing. This is all the more important because NENA industry is currently far less labour-intensive than in other regions, offering fewer job opportunities (Figure 9). A focus on agriculture and agroindustry transformation is a labour-intensive growth strategy, as well as a pro-poor growth strategy, since poverty is predominantly rural in the NENA region (Table 21). As part of a strategy to improve livelihood opportunities in rural areas, a territorial approach would strengthen rural links with small cities and rural towns in order to connect producers, agro-industrial processors and ancillary non-agricultural services, as well as other downstream segments of food value chains, making also the best use of the new rural-urban linkages emerging from migration dynamics.

CONCLUSION

The Path to Sustainable Development

The 2030 Agenda calls for "transforming our world" through bold policy action in order to set economies on the path to sustainable development and the achievement of the Sustainable Development Goals. This publication has reviewed progress in SDG 2 indicators, surveyed key food security policies pertinent to the attainment of SDG 2 and argued that rural transformation policies are a vital part of the structural reform policies currently underway in the NENA region.

The analysis of indicators of hunger, food insecurity and malnutrition highlight that conflict and rural transformation are critical factors relevant to hunger, food security and undernutrition, and thus for the attainment of SDG 2 in the NENA region. Countries currently in conflict contribute most to the current upward trend in hunger in the NENA region, and they have higher levels of hunger, food insecurity and worse undernutrition indicators than the non-conflict countries. Countries with low levels of rural transformation were shown to have higher levels of food insecurity, and worse levels of undernutrition than those with high levels of rural transformation.

While the SDG 2 indicator of food security in the NENA region points towards the importance of rural transformation in addressing food insecurity, actual food security policies in the region seem stuck in the past. Consumer subsidies and agrifood and trade policies seem like a relic of a previous period when the predominant nutritional issues of the developing world related to widespread undernutrition and international wheat markets were far thinner and dominated by a few countries, including the United States, Canada, Australia and the European Union.

Today, growing incomes and the liberalization of agricultural policies around the world have changed these circumstances quite dramatically. Undernutrition is no longer the problem it was in the 1970s. FAO estimated the prevalence of undernourishment in developing countries in 1970 at about 35 percent (Roser and Ritchie, 2018). At this time stunting levels in Egypt and Tunisia were 3 to 5 times their level of today (WHO GLOBAL HEALTH, 2018). By contrast, in 2015, the prevalence of undernourishment in developing countries was estimated at 13 percent (Roser and Ritchie, 2018),

a third of what it was in 1970, and much closer to the prevalence in developed countries of under 5 percent[15]. Instead of undernourishment, the most prominent nutrition problems of both developed and developing countries are now overweight and obesity. Moreover, two thirds of the obese population are in developing countries (Friedman, 2014).

International wheat exports are also far more numerous and much less concentrated than they once were. If in 1970 wheat exports accounted for only 16 percent of world production, in 2015 they accounted for 23 percent (FAO FAOSTAT, 2018). Furthermore, the emergence of new wheat exporters, most notably in the Black Sea region, but also in South America, has diversified the sources of wheat available to importers around the world. Whereas in the 1970s there was a realistic fear that wheat exports from the US could be embargoed as a political response to the Arab oil embargo, today such embargoes are no longer a realistic concern. The challenges to agriculture today are much more about following the trend of the rest of the world to liberalize agricultural markets, allowing the development of production and exports according to the comparative advantages of the region in fruits and vegetables, which depends crucially on meeting international food safety and quality standards.

In analysing the policies covered in Part II, it is important to evaluate whether their considerable costs are justified by the efficacy and the efficiency with which these policies address issues of food security in the region. While this decision needs to be taken by each government, consumer subsidies and cereal promotion policies may need to be re-assessed in light of the current challenges in food security or agriculture. The NENA region is no longer in need of a "cheap" source of calories to fend off undernutrition. On the contrary, the relatively high obesity levels in the region demand a greater focus on the quality and variety of foods, as well as on their nutritional content. Building a high value, export oriented agriculture in the twenty first century, of which the NENA region is capable, requires a re-evaluation of resource allocation in agriculture in line with comparative advantage.

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[15] FAO does not publish long-run time series for estimates of undernourishment, because the methodology has changed over time and estimates of food security in 1970 from FAO (2006) or FAO (2010) are not comparable with those currently listed in FAOSTAT for 2014–16. Roser and Ritchie (2018) have developed their own estimates of undernourishment for 1970 and 2015, based on FAO figures, noting that the estimates should be utilized with caution.

Part III of this publication analysed the high unemployment caused by high rates of labour force growth and anaemic economic growth in the NENA region. While there is a fundamental need for structural reform in order to reinvigorate growth and generate employment in the region, the costs of development have fallen disproportionately on rural areas which suffer from lower productivity and higher levels of poverty and service deprivation than non-rural areas. Rural transformation policies seek to close this rural-urban gap, by explicitly including rural areas into structural reform policies regarding the rest of the economy. Experiences of other countries suggest that policies to raise agricultural productivity and connect rural areas with urban manufacturing through better infrastructure, health, education and other rural services can make rural areas more attractive for business, thus increasing the overall growth of the economy.

Rural transformation begins with supporting farmers to produce according to the comparative advantage of the region. Key policy changes to support this goal are: 1) redirecting support policies towards encouraging farmers to produce, market and export water efficient crops such as fruits and vegetables; 2) lower agricultural import tariffs that favour the creation of a more competitive and export-oriented agriculture that attracts investments; 3) introducing metering for agricultural water use, promoting the adoption of water-saving technologies and considering water pricing to encourage water efficiency; and 4) focusing the role of the government in the provision of public goods for enabling modern agriculture and food production, including roads, terminal markets and storage facilities, as well as enforcing standards and regulations for food quality, processing and safety.

Farm policy in support of production according to comparative advantage is one element of rural transformation policies. A second pillar of rural transformation focuses on territorial development. A key element for the success of farm policy is its placement within a wider territorial development approach that offers a balanced mix of infrastructure development and policy interventions within and between the rural and urban areas. Territorial development policies also include governance mechanisms to coordinate sectoral policies and reduce biased impacts between different sectors and between rural and urban areas. This approach requires consultation between central and local governments and business within and across sectors to ensure that public money is well spent on public good infrastructure (roads, railways, terminal markets storage, food safety regulation, and laboratories) with the aim of improving rural-urban connectivity, providing export support and creating rural employment. Finally, regional and community-level improvements in rural services, such as electricity, health, sanitation, water facilities and other basic infrastructure, are at the core of the territorial development and can make rural areas inhabitable and connected, attracting private investment and having economic multiplier effects.

While policies for rural transformation may seem ambitious, they are not unusual. Many developing and developed countries have been pursuing these policies successfully for many years (Tsakok, 2013), as they constitute a list of best policies for reducing the rural-urban development gap in terms of productivity, poverty and services observed in most economies during growth. As such, they constitute a concrete set of policy framework that can guide rural policies and strategies for the realization of the 2030 Agenda.

APPENDIX

Measuring Transformation

This publication concerns structural and rural transformation. Structural transformation is the reallocation of economic activities away from the primary sectors (agriculture and natural resources) to industry and services. Rural transformation is a more complex process that includes a shift from mainly traditional farming to commercial, highly diversified production systems, as well as the emergence of livelihood and income-generating opportunities in the rural non-farm sector, the reduction of rural poverty and improved access to services and infrastructure in rural areas. Box 1 discusses these two transformations in more detail.

There are no widely-established indicators for either structural or rural transformation, and the processes involved in transformation are so complex that any index will be incomplete. Unlike some approaches that focus on the institutional and policy "prerequisites" that are believed to affect transformation (Boettiger, *et al.,* 2017), the indices presented here focus on outcome measures—changes that are believed to characterize a transforming or transformed economy. Second, transformation is measured not by how fast indicators change, but to what extent transformation has occurred. In other words, the degree of transformation is measured not with rates of growth but with absolute values. Third, different approaches are employed to measure structural and rural transformation, because, in the opinion of the authors, they measure quite different phenomena.

Structural transformation

For structural transformation, a simple average of three widely available indicators of sectoral change are used—the share of non-agricultural employment (ILO, 2018), the share of non-agricultural sectors in GDP (UNCTAD, 2018) and the urban share of population (UNCTAD, 2018) (column 4, Table 25). The correlation coefficient between the index of structural transformation in Table 25 and GDP per capita in 2015 measured in purchasing power parity terms (in 2011 international dollars) is 0.64, indicating that GDP per capita increases as countries undergo structural transformation (World Bank, 2018d). However, there is no one-to-one mapping of structural transformation with GDP per capita, indicating that there is much more to economic prosperity than industrialization.

TABLE 25
Index of structural transformation, average, 2010–2016 (N=81)

	Non-agricultural employment as % of total	Urban population as a % of total	Non-agriculture value added as a % of total	Index of Structural Transformation* (mean of columns 1, 2 and 3)
	(1)	(2)	(3)	(4)
Jordan	96.3	83.2	96.6	92.1
Mexico	86.5	78.7	96.7	87.3
Palestine	89.5	74.8	94.7	86.3
Dominican Republic	86.0	77.0	94.2	85.7
South Africa	95.0	63.8	97.6	85.4
Colombia	83.1	75.9	93.5	84.1
Montenegro	93.8	63.7	90.4	82.6
Algeria	85.9	69.5	90.2	81.8
Iraq	79.1	69.3	95.4	81.3
Peru	72.1	77.9	92.5	80.8
Tunisia	84.5	66.5	90.7	80.6
Gabon	57.9	86.6	96.0	80.2
El Salvador	80.2	65.8	88.7	78.2
Jamaica	81.5	54.4	93.4	76.4
Maldives	89.5	43.3	94.0	75.6
Ecuador	73.0	63.3	90.3	75.6
Kazakhstan	77.1	53.4	95.1	75.2
Mongolia	68.9	70.3	86.3	75.2
China	77.9	53.1	90.5	73.8
Syrian Arab Republic	82.3	56.9	79.5	72.9
Bosnia and Herzegovina	81.2	39.5	92.4	71.1
Azerbaijan	62.8	54.1	94.2	70.4
Namibia	72.3	44.7	92.2	69.7
Lesotho	88.1	26.3	94.3	69.6
Nicaragua	68.5	58.2	81.0	69.2
Honduras	66.9	53.5	87.0	69.1
Armenia	63.5	63.0	80.4	69.0
Guatemala	67.1	50.7	88.9	68.9
Morocco	61.3	59.2	86.0	68.8
Gambia	70.2	58.3	76.5	68.3
Egypt	72.5	43.1	87.9	67.8
Indonesia	64.8	52.2	86.2	67.7
Moldova, Republic of	70.2	44.9	85.8	67.0

	Non-agricultural employment as % of total	Urban population as a % of total	Non-agriculture value added as a % of total	Index of Structural Transformation* (mean of columns 1, 2 and 3)
Thailand	62.9	47.9	89.4	66.7
Haiti	55.7	56.1	81.4	64.4
Albania	56.2	55.3	78.1	63.2
Yemen	70.5	33.5	85.4	63.1
Nigeria	64.7	46.1	78.3	63.0
Kyrgyzstan	70.2	35.5	82.7	62.8
Ghana	57.1	52.7	76.3	62.0
Angola	50.7	42.5	93.0	62.0
Timor-Leste	59.2	31.5	94.5	61.7
Côte d'Ivoire	50.3	52.7	75.7	59.6
Benin	57.4	43.1	75.9	58.8
Cameroon	36.4	53.2	85.0	58.2
Senegal	46.4	43.1	84.1	57.9
Bangladesh	54.8	32.8	83.3	56.9
Pakistan	57.6	37.9	75.1	56.9
Togo	60.7	39.0	69.6	56.4
India	53.2	32.0	81.7	55.7
Viet Nam	53.7	32.0	79.5	55.2
Bhutan	41.4	37.1	82.7	53.8
Mauritania	23.5	58.6	78.5	53.5
Kenya	61.7	24.8	70.9	52.5
Zimbabwe	33.1	32.7	88.2	51.3
South Sudan	39.4	18.6	95.6	51.2
Burkina Faso	58.3	28.2	65.8	50.7
Cambodia	64.3	20.3	66.6	50.4
Lao People's Democratic Republic	33.7	36.4	79.1	49.8
Sudan	47.7	33.6	67.7	49.7
Guinea	31.4	36.2	81.3	49.6
Tajikistan	46.5	26.7	75.1	49.4
Swaziland	31.7	21.4	89.9	47.6
Congo, Democratic Republic of the	19.6	41.5	78.9	46.7
Afghanistan	37.9	25.9	73.9	45.9
Mali	37.5	38.4	61.7	45.9
Liberia	55.1	48.9	29.3	44.4
Mozambique	25.0	31.7	73.6	43.4
Comoros	44.7	28.1	57.1	43.3

	Non-agricultural employment as % of total	Urban population as a % of total	Non-agriculture value added as a % of total	Index of Structural Transformation* (mean of columns 1, 2 and 3)
Madagascar	27.4	33.8	68.6	43.3
Tanzania	30.5	30.2	68.3	43.0
Sierra Leone	39.2	39.2	45.7	41.4
Rwanda	27.1	26.9	69.0	41.1
Uganda	30.0	15.5	73.0	39.5
Guinea-Bissau	16.0	47.7	54.6	39.5
Central African Republic	14.1	39.5	63.1	38.9
Nepal	26.4	17.9	65.7	36.7
Chad	13.6	22.3	71.1	35.7
Malawi	15.1	16.0	71.2	34.1
Ethiopia	27.1	18.6	56.3	34.0
Niger	23.3	18.2	59.7	33.8
Burundi	8.7	11.5	60.6	26.9

Note: *Higher value indicates higher level of transformation.

Sources: Column (1) is based on ILO, 2018; columns (2) and (3) based on UNCTAD, 2018.

Rural transformation

As noted in the introduction to this section, rural transformation in this publication is understood as more than simply rising agricultural labour productivity, the approach used in IFAD (2016). We follow FAO (2017b) and ACET (2014) in posing the question of what changes are believed to characterize a transforming or transformed economy. Certainly, rising agricultural labour productivity is one of them. However, rural transformation is here understood to include the emergence of livelihood and income-generating opportunities in the rural non-farm sector, leading to the reduction of rural poverty, and improved access to services and infrastructure in rural areas. Improvements in access to services and infrastructure reflect the approach of FAO (2017b) that improvements in public goods are part of an inclusive and sustainable rural transformation.

To construct the indicator of rural transformation, IFAD (2016) is followed in using agricultural labour productivity, measured as agricultural value added per worker (US dollars at current prices), for the period 2010–15. Two further indicators that engender expected outcomes of rural transformation are added to this basic indicator of rural transformation —the portion of non-poor rural residents according to indicators of multidimensional and income poverty. For all three sub-indices, a higher value represents more rural transformation. By adding these two further sub-indices an index of "inclusive rural transformation" is created that involves the reduction of rural income poverty and improvements in rural services. Table 26 shows the data series and sources used to construct the index.

TABLE 26
Data used to construct the index of rural transformation

Sub-index		Data series	Source
Agricultural labour productivity [1/2]	1	Annual value added (VA) of agriculture, hunting, forestry, fishing, US Dollars at current prices in millions	UNCTAD
	2	Agriculture: Employment by economic activity -- ILO modelled estimates, Nov. 2017	ILO
Non-poor income poverty headcount in rural areas [100–3]	3	Rural poverty headcount ratio at national poverty lines (% of rural population)	World Bank, 2018d
Non-poor multidimensional poverty headcount in rural areas [100–4]	4	Multidimensional poverty headcount index (MPI) (rural) (% of rural population)	Alkire, S. and Robles, G. 2017

Normalization

Following ACET (2014), the index of agricultural transformation is an equally-weighted average of normalized versions of the three sub-indices in Table 26. Each sub-indicator for each country is normalized to produce an index ranging from 0 to 100 according to the following procedure:

$$NCS = ([RCS - Min(RCS)]/[Max(RCS) - Min(RCS)]) * 100 \quad (1)$$

where NCS is the normalized country score (for a given sub-indicator), RCS is the raw country score (that is, the raw data for each sub-indicator for the country), Min (RCS) is the minimum raw country score among the group of countries (for each sub-indicator), Max (RCS) is the maximum raw country score among the group of countries (for each sub-indicator) and where

NCS = 0 when RCS = Min (RCS)

NCS = 100 when RCS = Max (RCS).

The index of rural transformation is calculated for 81 developing and transition countries for which data is available for the three measures. This includes 11 countries from the NENA region (Table 27).

TABLE 27
Index of rural transformation, 2010–2015 (N=81)

	Normalized values (range, 0–100)			Index of rural transformation**
	Agricultural value added per worker, 2010–2015	100-rural multidimensional poverty headcount*	100-rural income poverty headcount*	
	(1)	(2)	(3)	(4)
Montenegro	100	100	92	97
Jordan	93	99	84	92
Algeria	68	98	98	88
Maldives	70	96	87	84
Tunisia	44	98	100	81
Kazakhstan	26	100	98	75
China	32	96	95	74
Albania	23	99	85	69
Palestine, State of	27	100	81	69
Thailand	13	99	87	66
Jamaica	18	99	74	63
Syrian Arab Republic	33	97	60	63
Armenia	21	100	68	63
Egypt	26	98	65	63
Moldova, Republic of	7	100	81	63

	Normalized values (range, 0–100)			Index of rural transformation**
	Agricultural value added per worker, 2010–2015	100-rural multidimensional poverty headcount*	100-rural income poverty headcount*	
Indonesia	14	86	87	62
Viet Nam	6	95	81	61
Ecuador	23	96	62	60
Mongolia	21	86	72	60
Morocco	14	79	86	60
El Salvador	26	92	59	59
Iraq	18	88	67	57
Kyrgyzstan	6	100	64	56
Colombia	22	91	56	56
Bhutan	7	76	84	56
Dominican Republic	28	93	43	55
Bosnia and Herzegovina	26	100	35	54
Tajikistan	5	90	62	52
Azerbaijan	9	95	53	52
Mexico	25	98	30	51
Peru	13	83	49	48
India	7	63	73	48
Lao People's Democratic Republic	5	67	70	47
Nepal	2	65	71	46
Comoros	21	68	46	45
Namibia	18	57	59	45
Nicaragua	12	78	44	44
Gabon	13	69	51	44
Bangladesh	4	65	62	44
Ghana	6	65	59	43
Pakistan	11	55	61	43
South Africa	35	90	0	42
Kenya	15	63	45	41
Cameroon	3	41	79	41
Yemen	12	55	56	41
Honduras	10	82	27	40
Cambodia	8	75	36	40
Uganda	2	39	77	39
Tanzania, United Republic of	3	48	64	38

	Normalized values (range, 0–100)			
	Agricultural value added per worker, 2010–2015	100–rural multidimensional poverty headcount*	100-rural income poverty headcount*	Index of rural transformation**
Swaziland	8	88	17	38
Lesotho	6	73	31	37
Afghanistan	3	48	58	36
Sudan	25	47	35	36
Guatemala	16	76	14	35
Rwanda	2	57	46	35
Nigeria	25	38	41	35
Benin	4	42	57	34
Malawi	0	59	37	32
Timor-Leste	13	38	43	31
Ethiopia	3	15	68	28
Cote d'Ivoire	8	36	36	27
Mauritania	6	38	33	26
Zimbabwe	1	70	4	25
Senegal	3	35	36	25
Togo	3	47	22	24
Angola	10	27	35	24
Mali	5	21	44	23
Liberia	16	28	23	23
Haiti	3	49	15	22
Mozambique	2	28	36	22
Burkina Faso	8	7	47	21
Chad	3	9	41	18
Madagascar	1	41	11	18
Gambia	4	31	16	17
Sierra Leone	8	18	25	17
Burundi	0	28	22	17
South Sudan	0	12	38	17
Central African Republic	1	22	21	15
Congo, Democratic Republic of the	1	27	15	14
Guinea-Bissau	3	24	14	14
Guinea	2	12	27	14
Niger	1	0	38	13

Notes: *Average survey year, 2010 ** Equally- weighted index of normalized values.
Sources: Column (1) based on UNCTAD, 2018 and ILO, 2018; column (2) based on Alkire and Robles, 2017; Column (3) based on World Bank, 2018d; World Bank, 2008; Lopez-Acevedo and Saavedra Chanduvi, 2005; World Bank, et al., 2015; UNDP, 2013; UN, 2004; and El-Laithy, 2011.

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2018

Near East and North Africa
REGIONAL OVERVIEW OF FOOD SECURITY AND NUTRITION

RURAL TRANSFORMATION-KEY FOR SUSTAINABLE DEVELOPMENT IN THE NEAR EAST AND NORTH AFRICA

The Near East and North Africa Regional Overview of Food Security and Nutrition provides new evidence for monitoring trends in food security and nutrition within the framework of the 2030 Sustainable Development Agenda.

The in-depth analysis of progress made against Sustainable Development Goal 2 Target 2.1 (to end hunger and ensure access to food by all) and Target 2.2 (to end all forms of malnutrition), as well as the state of micronutrient deficiencies, is complemented by a review on rural transformation policies aimed at addressing food insecurity and nutrition issues.

Updated estimates shows that the food security situation on the region continues to worsen since 2011– 2013. For, the Near East and North Africa, 11% of the region's population – 52 million people – are undernourished.

The findings of the report showed that the failure to reduce hunger in the hunger is closely associated with the increase in conflict and violence in several parts of the region, as also highlighted in last year's edition. While the prevalence of undernourishment has risen from 23 to 26 percent in conflict countries since 2011–13, it has remained stable at about 5 percent in non-conflict countries.

This year's report goes further to explore the relationship between food insecurity, economic growth and rural transformation. It demonstrates that economic growth in the Near East and North Africa region has been slow compared to other regions, and suggests that rural transformation can improve growth rates and generate decent employment through strengthening rural-urban linkages, improving agricultural productivity, and expanding the rural non-farm economy.