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REGIONAL OVERVIEW OF FOOD SECURITY AND NUTRITION

BUILDING RESILIENCE FOR FOOD SECURITY AND NUTRITION IN TIMES OF CONFLICT AND CRISIS: A PERSPECTIVE FROM THE NEAR EAST AND NORTH AFRICA REGION

COVER PHOTOGRAPH

A woman harvesting wheat
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KEY MESSAGES

➔ Food security in the NENA region is fast deteriorating, driven by conflict and leading to a widening gap in well-being between conflict and non-conflict countries. The level of undernourishment in the conflict countries is now six times larger than that in non-conflict countries, and the level of severe food insecurity in the conflict countries is twice that in others. To get an understanding of the significance of the gap between the two subregions, the prevalence of undernourishment in the NENA conflict countries is similar to that in the Least Developed Countries (LDCs) of the world, while that in the non-conflict countries is under 5 percent, on the level of developed countries.

➔ The gap in food security has been widening since 2002–04, and has coincided with changes in the intensity of violence in the two subregions. Measures of the intensity of violence for the two subregions have been moving in opposite directions since 2003, after moving towards each other between 1990 and 2002.

➔ The growing gap in well-being in the region has affected indicators of child anthropometry for children aged 6 to 59 months. The conflict countries performed poorly in relation to non-conflict countries within each World Bank income class, including low-medium and high-medium income.

➔ Conflict causes great challenges for monitoring the SDGs. Measures of food insecurity and nutrition status used to assess SDG Targets 2.1 and 2.2 have inherent limitations that make them less reliable during conflict. UN agencies do gather and assess information on food security and nutrition status during conflict, but these data are not always complete and are difficult to compare with peacetime data. An initial consideration of Syrian malnutrition data collected during conflict gives cause to regard them with scepticism.

➔ The 'parting of the ways' extends to policies as well.Conflict countries have few resources to implement government policies designed to achieve SDG 2, since expenditures on dealing with violence and improving security tend to crowd out expenditures on other priorities. In the five states of the region in civil conflict, 21 to 67 percent of the countries' Gross Domestic Products were spent on perpetrating, containing, preventing and dealing with the consequences of violence.

➔ Policies to reduce food insecurity and malnutrition must go far beyond the nutrition and health sectors. A review of development indicators showed that the main regional policy drivers supporting the reduction of undernourishment and stunting in the region have been (1) poverty reduction, (2) economic growth, (3) improvements in maternal and childhood nutrition and public health, (4) increases in the food supply (for malnourishment only) and (5) less episodes of political violence.

➔ FAO and the UN System have taken a resilience-centred approach to development assistance in the region in order to prevent the repetition of the cycle of recurring conflict. A resilience-centred approach recognises that the crises in Yemen, the Sudan, Libya, the Syrian Arab Republic and Iraq are not only humanitarian and political but also developmental and that the development needs of the population should be addressed simultaneously with other needs. This is part of FAO's efforts towards building peace in the region. Sustaining peace is not only a post-conflict activity but should be a priority for assistance in countries before, during and after conflict.

➔ Responsibility for finding political solutions to conflict and ensuring that they are implemented falls to Member States. The 2030 Agenda adopted by the Member States in September 2015 provides a set of interrelated goals that both support sustainable development and sustain peace.

Farmers clearing a field after harvesting broccoli.

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FOREWORD

It has been nearly two years since the 193 Member States of the United Nations adopted the 2030 Agenda for Sustainable Development. This year, 2017, marks the first that the Food and Agriculture Organization of the United Nations (FAO), in partnership with the World Health Organization (WHO), the United Nations Children's Fund (UNICEF), the International Fund for Agricultural Development (IFAD), the World Food Programme (WFP) and the World Bank, has monitored progress against two targets from Sustainable Development Goal 2 (SDG 2) – ending hunger (SDG Target 2.1) and all forms of malnutrition (SDG Target 2.2) – as listed under SDG 2 in *the 2017 world report of State of Food Security and Nutrition.*

Building on this global effort, this year's *Regional overview of food security and nutrition for the Near East and North Africa* establishes a baseline against which to measure future progress towards reaching SDG 2 on ending hunger, food insecurity and malnutrition in the Near East and North Africa (NENA) by monitoring the latest indicators for the SDG targets on hunger and food insecurity (SDG Target 2.1) and malnutrition (SDG Target 2.2).

Beyond numbers, the report focuses on the fundamental factors that have driven improvements in food security and malnutrition: poverty reduction, economic growth, improvements in maternal and childhood nutrition and public health, increases in the quantity and quality of the food supply and cessation of violence.

Moreover, the report brings into sharp focus the issue of conflict, which is the major driver of food insecurity in the NENA region. Today, conflict has divided the region into two subregions. In the conflict countries, food insecurity and malnutrition are significantly higher than in countries not in conflict. For the conflict countries, realistic progress on SDG 2 using the traditional tools of policymaking will remain elusive, unless decisive steps towards peace and stability are taken. The costs of conflict can be seen in the measurements of food insecurity and malnutrition, in the menu of policies available to conflict countries and in an accounting of the direct costs of conflict.

This year's *Regional Overview* recounts how FAO and other UN assistance help in mitigating the costs of conflict and sustaining peace in the NENA region through activities aimed at preventing the outbreak, escalation, continuation and recurrence of conflict. Finally, the *Regional Overview* recalls the unique role of governments in the realisation of Agenda 2030 for sustaining peace in the region.

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INTRODUCTION

This year's *Regional Overview of Food Security and Nutrition in the Near East and North Africa* has an overarching theme of conflict and its effect on food security and nutrition in the region. Since 2000, conflict in the NENA region has caused a regional 'parting of the ways' to produce two subregions seemingly headed in opposite directions – the conflict countries (the Sudan, the Syrian Arab Republic, Yemen, Libya and Iraq), for which achieving SDG 2 remains elusive, and all others. The 'parting of the ways' can be seen in the status of food insecurity and malnutrition in the region, in the menu of policies available to countries and in the costs of conflict in the two subregions.

The *Regional Overview* is an annual monitor for targets related to SDG 2 in the NENA region. Part I of this study analyses the latest available indicators on food deprivation, food insecurity and malnutrition in the region. In all three areas – food deprivation, food insecurity and malnutrition – a 'parting of the ways' between conflict and non-conflict countries is evident. As far as available statistics allow us to judge, conflict countries of the region are doing worse than their counterparts not at war.

Part II of the *Regional Overview* focuses on the policy measures that have been and can be employed in the region to affect SDG Targets 2.1 and 2.2 using the relevant indicators. While the historical analysis focuses on all countries of the region for which we have data, the outlook for further implementation of such policies applies predominantly to the non-conflict countries. It is difficult to expect significant policy action to achieve SDG targets regarding food security and malnutrition from conflict states.

Part III of the publication turns to the issue of conflict in the region, particularly estimates of the cost of conflict and how FAO assistance is designed to build resilience against conflict and contribute to sustaining peace before, during and after conflict situations.

TABLE 1
SDG 2: end hunger, achieve food security and improved nutrition and promote sustainable agriculture

Targets		Indicators for Monitoring Targets	Additional Indicators Used in this Study
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 moderate or 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 wasting and overweight among children under 5 years old.	1. Iron deficiency anaemia among pregnant women. 2. Iron deficiency anaemia in children under 5 years old. 3. Vitamin A deficiency in children under 5 years old. 4. Prevalence of school-aged children with insufficient iodine intake.

PART 1

REGIONAL OVERVIEW OF FOOD SECURITY AND NUTRITION INDICATORS

Part I reviews the latest available indicators of hunger and food insecurity (SDG Target 2.1) as well as malnutrition (SDG Target 2.2). For hunger and food insecurity, we consider only (three-year average) baseline data points, which may be used in the future to monitor progress. Time series trends in hunger and their policy correlates are considered in Part II.

The latest indicators of hunger and food insecurity show a clear pattern in the region. Insofar as can be judged from available estimates, conflict countries are in a worse hunger, food insecurity and malnutrition situation than their counterparts in the region. Indeed, in a region comprising predominantly of developing middle-income countries, conflict in an unfortunate few has driven food security to levels of the Least Developed Countries (LDCs). Jordan, as a conflict-spillover country, also has a relatively high level of severe food insecurity (over 10 percent).

For the non-conflict, middle-income NENA countries, anthropometric measures of children under 5 years old exhibit levels similar to those in other middle-income countries in the world, with one exception: NENA lower-middle income (L-M Income) countries have a prevalence of overweight in children twice as high as L-M Income countries in the world. This is an indicator of a systemic problem in the diets and lifestyle (lack of physical activity) of young children in these countries. The NENA region overall may also be said to have moderate levels of micronutrient deficiencies. However, many of the L-M Income countries of the region have severe levels of anaemia and vitamin A deficiency.

Many of the high-income countries of the region have worse measures of childhood anthropometry than in other regions. Oman and Saudi Arabia had severe levels of childhood anaemia in 2011. Stunting in children under 5 years old in the only two countries with recent data (Oman and Kuwait) is considerably higher than the global average for high-income countries. Other high-income countries of the region show elevated levels of stunting, though the most recent data are over 10 years old. Overweight in children under 5 years old is at the same level as the global average for high-income countries.

Finally, Part I considers estimates of food insecurity and nutrition status obtained during conflict. Data that are highly reliable for measuring food insecurity and malnutrition during development are often fraught with problems during conflict situations. This section explains why such data are often missing or flawed, and considers estimates by UN agencies and others during emergency and protracted-crisis situations estimated according to the Integrated Phase Classification (IPC) and the Consolidated Approach for Reporting Indicators of Food Security (CARI). Though these data are not always complete and are difficult to compare with peacetime data, they are usually (though not always) in line with expectations about how they are likely to behave during conflict.

Measures of hunger and food insecurity under SDG Target 2.1

FAO monitors two indicators on hunger and food insecurity, the Prevalence of Undernourishment (PoU) and the Prevalence of Food Insecurity as measured through the Food Insecurity Experience Scale (FIES, moderate or severe). These two indicators differ fundamentally as measures of the food insecurity of the population, because they measure different phenomena. The PoU attempts to measure the portion of the population of a country facing absolute food deprivation, while food insecurity using the FIES has a wider scope, measuring the experience of food insecurity along a scale from mild to moderate to severe food insecurity. Box 1 explains the calculation method of the two indicators, highlighting some of the advantages and disadvantages of each.

BOX 1
Calculation of the two main FAO measures 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), measure different phenomena and are thus calculated quite differently. 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 a parameter accounting for inequality of food consumption, known as coefficient of variation (CV), and a skewness parameter (SK) accounting for asymmetry in the distribution of food consumption. The CV and SK are both derived from household survey data or estimated indirectly from other sources[1]. 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 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 a good indicator of hunger during periods when the income or consumption distribution is relatively constant. However, it is not a good indicator of hunger when sharp changes in the distribution of food occur, such as during times of conflict. This is because the inequality in food consumption parameters are derived from national household survey data, and during conflict such data are usually not available and may be unreliable if they are (Wanner *et al.*, 2014).

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 (Table 2). 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 (Figure 1).

The "severe food insecurity" indicator is quite similar in its concept to the PoU. Thus, we can expect that the prevalence of undernourishment and the severe food insecurity indicator will give similar results. The estimated prevalence of food insecurity based on moderate or severe forms of FIES is expected to be greater than the prevalence of undernourishment.

[1] DEC is derived as the DES 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.

TABLE 2
Questions in the food insecurity experience scale survey module for individuals (FIES SM-I) as fielded in the 2014, 2015 and 2016 GWP

Now I would like to ask you some questions about food. During the last 12 MONTHS, was there a time when … :		
Q	Questions	Label
(1)	… you were worried you would not have enough food to eat because of a lack of money or other resources?	(WORRIED)
(2)	… you were unable to eat healthy and nutritious food because of a lack of money or other resources?	(HEALTHY)
(3)	… you ate only a few kinds of foods because of a lack of money or other resources?	(FEW FOODS)
(4)	… you had to skip a meal because there was not enough money or other resources to get food?	(SKIPPED)
(5)	… you ate less than you thought you should because of a lack of money or other resources?	(ATE LESS)
(6)	… your household ran out of food because of a lack of money or other resources?	(RAN OUT)
(7)	… you were hungry but did not eat because there was not enough money or other resources for food?	(HUNGRY)
(8)	… you went without eating for a whole day because of a lack of money or other resources?	(WHOLE DAY)

Source: FAO, 2016.

FIGURE 1
Levels of food insecurity captured by the food insecurity experience scale survey module

Source: FAO, 2016.

Hunger and food insecurity in NENA countries, 2014 – 16

SDG Target 2.1

Table 3 shows estimates of undernourishment and food insecurity in the NENA countries, as well as in some global comparison regions or categories.The worst undernourishment and food insecurity situation in the region is clearly in the conflict countries[2]. Yemen, Iraq, Sudan, the Syrian Arab Republic and Libya were classified by the World Bank in 2015 as L-M Income or Upper-Middle Income (U-M Income) countries. However, their food security situation is comparable to the least developed countries in the world. Both the PoU and the FIES indicators are quite a bit higher in the conflict countries than in countries of any of the other categories.

[2] In the table, conflict countries are those in which there have been an average of two or more major episodes of civil or ethnic political violence (MEPV) per year from 2011 to 2015, according to the MEPV database of the Center for Systemic Peace, which lists episodes of international and domestic war and violence on an annual basis. The average for 2011–15 for Yemen, Iraq, the Sudan, Syria and Libya were 3, 4, 6, 6 and 2, respectively.

TABLE 3
Hunger and food insecurity in selected NENA subregions, 2014–16

	Weighted average prevalence of undernourishment (%)	Weighted average prevalence of severe food insecurity in the population (%)	Countries in the category*
NENA Countries			
All NENA	10.2	12.0	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
Conflict countries	27.2	19.0	Yemen, Iraq, Sudan, Syrian Arab Republic, Libya
Non-conflict countries	4.6	9.8	Algeria, Bahrain, Egypt, Iran (Islamic Republic of), Jordan, Kuwait, Lebanon, Mauritania, Morocco, Oman, Qatar, Saudi Arabia, United Arab Emirates, Tunisia, Palestine
Spillover countries	4.7	12.7	Lebanon, Jordan
L-M Income countries (WB)**	8.2	12.5	Egypt, Mauritania, Morocco, Tunisia, Sudan, Syrian Arab Republic, Yemen, Palestine
Mashreq	21.6	18.8	Lebanon, Jordan, Syrian Arab Republic, Iraq, Palestine
Maghreb	4.3	8.7	Algeria, Morocco, Mauritania, Tunisia, Libya
Gulf Cooperation Council (GCC) countries	4.5	9.4	Saudi Arabia, Kuwait, United Arab Emirates, Bahrain, Qatar, Oman
Global Comparison Regions or Categories			
Least Developed countries (LDCs)	24.4	22.8	
Developing Regions (MDG)	12.7	10.6	

Note: *For the prevalence of undernourishment in 2014–16 there is no data for Bahrain, Kuwait, Libya, Qatar, the Syrian Arab Republic and Palestine; for the prevalence of severe food insecurity in 2014-16 there is no data for Lebanon, Oman, Qatar and the Syrian Arab Republic. Therefore, the aggregates do not include these countries.

**According to World Bank, 2017c, based on 2015 data. Sources: FAO, 2017b; World Bank, 2017d.

Though the high level of food insecurity in the conflict countries accords with expectations, we should be careful in interpreting these data for the prevalence of undernourishment. Because of data limitations, the conflict country aggregate PoU excludes the Syrian Arab Republic and Libya, including only Iraq, the Sudan and Yemen. However, the level of the PoU in the conflict countries has been over three times the level in the rest of the NENA countries since 1999–2001, and has been rising gradually vis-à-vis the other countries in the region since 2003 (Table 4). This pattern in the evolution of the PoU in the conflict countries is consistent with it being partially driven by conflict.

The FIES indicator in Table 3 also supports the hypothesis that food insecurity in the region is driven partly by conflict, showing levels of severe food insecurity in the conflict countries twice as high as in the other countries in 2014–16. The gap between the conflict countries and others is not as large as measured by the PoU, but it is still quite a bit higher and includes Yemen, Iraq, Libya and the Sudan, though not the Syrian Arab Republic.

TABLE 4
Prevalence of undernourishment in NENA region, subregions and countries, 1999–2001 to 2014–16

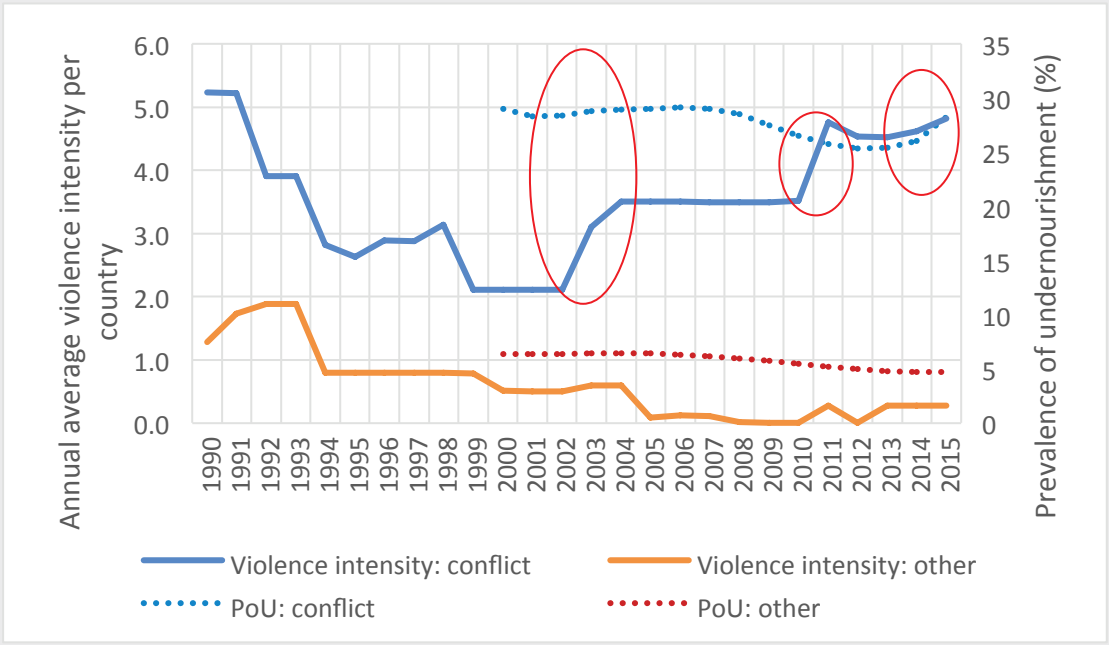
	1999 - 2001	2001 - 03	2003 - 05	2005 - 07	2007 - 09	2009 - 11	2011 - 13	2013 - 15	2014 - 16
All NENA	9.7	9.8	10.0	10.0	9.6	8.9	8.4	8.4	8.8
NENA Subregions									
Conflict countries	29.0	28.4	28.9	29.1	28.5	26.6	25.3	26.1	28.2
Non-conflict countries	6.3	6.4	6.5	6.3	6.0	5.5	5.0	4.7	4.7
Ratio: conflict: non-conflict	*4.6*	*4.4*	*4.5*	*4.6*	*4.8*	*4.9*	*5.1*	*5.5*	*6.0*
Spillover countries	8.1	5.2	3.6	3.4	3.7	3.7	3.7	4.2	4.2
Mashreq	24.9	23.1	23.5	25.0	25.2	23.1	22.0	22.8	23.7
Maghreb	8.4	7.9	7.4	7.1	6.5	5.8	4.9	4.4	4.3
Gulf Cooperation Council (GCC)	6.7	7.5	8.4	8.0	7.7	6.8	5.6	4.9	4.6
Countries									
Algeria	10.7	9.7	9.0	8.4	7.5	6.3	5.0	4.6	4.6
Bahrain									
Egypt	5.3	5.2	5.5	5.1	4.6	4.5	4.4	4.4	4.5
Iran (Islamic Republic of)	4.9	5.7	5.9	6.4	6.4	5.8	5.6	5.4	5.5
Iraq	28.3	26.6	27.4	29.3	29.6	27.2	25.9	26.7	27.8
Jordan	8.1	5.2	3.6	3.4	3.7	3.7	3.7	4.2	4.2
Kuwait									
Lebanon			3.2	3.7	3.9	4.2	4.8	5.3	5.4
Libya									
Mauritania	11.7	11.5	12.2	11.6	9.4	8.3	7.2	5.7	5.3
Morocco	6.8	6.4	5.8	5.7	5.5	5.3	4.6	4.1	3.5
Oman	11.8	11.5	10.9	9.0	6.7	5.4	5.2	5.7	6.2
Qatar									
Saudi Arabia	6.2	7.1	8.1	7.9	7.8	6.9	5.6	4.8	4.4
Sudan							25.9	25.7	25.6
Syrian Arab Republic									
Tunisia	4.9	5.6	5.6	5.5	5.2	4.8	4.5	4.5	5.0
United Arab Emirates			3.4	5.1	6.1	6.0	5.1	4.0	3.8
Yemen	29.9	30.7	30.9	28.9	27.1	25.7	24.6	25.2	28.8
Palestine									

Note: The all-NENA and subregional aggregates are computed using country data available in 1999–2001, to ensure that each series follows the same countries from 1999–2001 to 2014–16. For the PoU in 1999–2001 there is no data for Bahrain, Kuwait, Lebanon, Libya, Qatar, the Sudan, the Syrian Arab Republic, United Arab Emirates and Palestine The PoU aggregates in Table 4 therefore differ slightly from those in Table 3, where the aggregates are computed from the country data available in 2014–16. Sources: FAO, 2017b; UNSD, 2017.

Figure 2 illustrates the 'parting of the ways' in the NENA region between the conflict and non-conflict countries that has taken place since 2003. Since that year, the intensity of violence in the five conflict countries has risen in three steps – in 2003, 2011 and 2014 – while the intensity of violence in the other countries has witnessed a continuous decline. The three inflection points in violence are highlighted in Figure 2 to facilitate the comparison between the rise in violence and the PoU.

In 2003, the rise in violence in the conflict countries coincided with an increase in the PoU. After five years during which the PoU remained high, it began to fall in the five conflict countries in 2008. After 2011, however, a rise in violence slowed and then halted the positive movement of the PoU, and after 2013 the PoU began to rise again.

FIGURE 2
The 'parting of the ways' between the conflict and Non-conflict countries in the NENA region, 1990–2015



Sources: Center for Systemic Peace, 2017.

The next category of countries in Table 3 are the spillover countries (Lebanon and Jordan). According to the UN High Commission on Refugees (UNHCR, 2017), as of 30 April 2017 there were 5.05 million registered refugees from the Syrian conflict in surrounding NENA countries (Table 5). Though most refugees have been registered in Turkey, in the NENA region, Lebanon and Jordan have absorbed the most refugees. Moreover, the so-called burden of refugees in Jordan and Lebanon, estimated by the ratio of Syrian refugees to the pre-conflict population, exceeds that in all other neighbouring countries by a wide margin. In Table 3, these countries are designated as "spillover" countries.

The extraordinary challenge of hosting so many refugees in spillover countries – in Lebanon, nearly a quarter of its pre-conflict population – may account for the large disparity between the PoU and the prevalence of severe food insecurity in the population. Evidently, the FIES indicator is picking up hunger that the PoU is not capable of registering. Food insecurity (evidenced by the FIES indicator) in Lebanon and Jordan, two U-M Income countries, is as high as the average in all L-M Income countries of the region[3]. Moreover, the prevalence of undernourishment in these countries rose sharply after 2011 (Table 4).

[3] The World Bank (2017c) classifies NENA countries as L-M Income countries, U-M Income countries and high-income countries in 2015. There are no low-income countries in the region. Both Lebanon and Jordan are classified as U-M Income countries.

TABLE 5
Registered Syrian refugees in the NENA region and Turkey

Country	Registered Syrian refugees	Ratio: Registered Syrian refugees to pre-conflict population (2010)	Date
Turkey	2 992 567	4.3	30 July 2017
Lebanon	1 011 366	23.1	30 June 2017
Jordan	659 246	10.1	3 July 2017
Iraq	236 772	0.8	30 June 2017
Egypt	120 154	0.1	30 April 2017
North Africa	30 104	0.1	30 April 2017
In addition: total Syrian asylum applications in Europe	884 461	0.1	April 2011 – May 2017

Source: UNHCR, 2017; FAO, 2017b.

Turning to the geographical categories and their levels of food insecurity, the higher level of conflict in the Mashreq countries is most likely responsible for their higher level of food insecurity compared to Maghreb countries. Though the Mashreq contains more U-M Income countries than the Maghreb, levels of food insecurity there are considerably higher. Finally, the high-income countries of the region in the GCC have low levels of hunger and food insecurity. With little conflict and high incomes, this is to be expected.

Child malnutrition in NENA countries

SDG Target 2.2

SDG Target 2.2 aims to end all forms of malnutrition by 2030. Proper nutrition is important in everyone's life, but it is certainly most important for children, because malnutrition can have permanent deleterious effects on children's cognitive development and thus lifetime income. While undernourishment is a measure of caloric adequacy for a given population, adequate nutrition requires macro elements (carbohydrates, proteins and fat) as well as micro elements (vitamins and minerals).

This section focuses on anthropometric indicators of malnutrition that reflect acute and chronic malnutrition, as well as on micronutrient deficiencies in the NENA region for children. Table 6 shows estimates of anthropometric indicators of childhood development, and Table 8 shows micronutrient deficiencies for the NENA region for children in the crucial formative years of 6–59 months. Definitions of the indicators of Tables 6 and 8 can be found in Annex 1.

TABLE 6
Children's anthropometric status estimates for NENA countries

		Children, 0–5 years old, prevalence, latest year data			Survey year
	Country	**Stunting (%)**	**Wasting (%)**	**Overweight (%)**	
1	**Total NENA**	**18.9**	**7.8**	**8.8**	
2	**Global L-M Income countries*** **	**36.7**	**11.5***	**4.6**	**2010**
3	**NENA L-M Income countries*** **	**26.0**	**9.8**	**10.9**	
4	Yemen	46.5	16.3	2.0	2013
5	Mauritania	27.9	14.8	1.3	2015
6	Syrian Arab Republic	27.5	11.5	17.9	2009
7	Sudan	38.2	16.3	3.0	2014
8	Morocco	14.9	2.3	10.7	2010/11
9	Egypt	22.3	9.5	15.7	2014
10	Tunisia	10.1	2.8	14.3	2011/12
11	Palestine	7.4	1.2	8.2	2014
12	**Global U-M Income countries*** **	**9.9**	**2.1***	**6.8**	**2010**
13	**NENA U-M Income countries*** **	**11.8**	**4.7**	**6.8**	
14	Algeria	11.7	4.1	12.4	2012/13
15	Iraq	22.6	7.4	11.8	2011
16	Jordan	7.8	2.4	4.7	2012
17	Iran (Islamic Republic of)	6.8	4.0	0	2010/11
18	Libya	21.0	6.5	22.4	2007
19	Lebanon	7.3	1.1	16.7**	2012/13
20	**Global High-Income countries*** **	**2.8**	**0.7***	**5.8**	**2010**
21	**NENA High-Income countries*** **	**9.7**	**9.9**	**5.9**	
22	Oman	14.1	7.5	4.4	2014
23	Saudi Arabia	9.3	11.8	6.1	2004/05
24	Bahrain	13.6	6.6		1995
25	Kuwait	4.9	3.1	6.0	2015
26	United Arab Emirates				
27	Qatar	11.6	2.1	10.4	1995

*2015; **2004; ***Country income classification from World Bank, 2017c. Source: UNICEF-WHO-WB, 2017.

The latest information on the anthropometric status of children under 5 years old arranged by country income level is shown in Table 6, using the latest (2017) World Bank country income categories. Consider first the L-M Income countries in Table 6 in the NENA region with their comparators throughout the world. In the NENA L-M Income countries, stunting is about 30 percent less than in other L-M Income countries, while wasting is about the same and the prevalence of overweight in NENA is more than double that in other L-M Income countries.

Only in the conflict countries of Yemen and the Sudan are children less than 5 years old more likely to be stunted than in countries of a similar income category in other regions. The public health significance of the levels of stunting found in these two countries is high or very high, according to WHO (Table 7). Stunting is usually a result of accumulated deficiencies in caloric and protein consumption over time, and both Yemen and the Sudan have had very high levels of undernourishment for many years, considerably predating the conflicts there.

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

Indicator	Prevalence cut-off values for public health significance	
Underweight	<10	Low
	10-19	Medium
	20-29	High
	>=30	Very high
Stunting	<20	Low
	20-29	Medium
	30-39	High
	>=40	Very high
Wasting	<5	Acceptable
	5-9	Poor
	10-14	Serious
	>=15	Critical
Overweight	Not yet published by WHO	

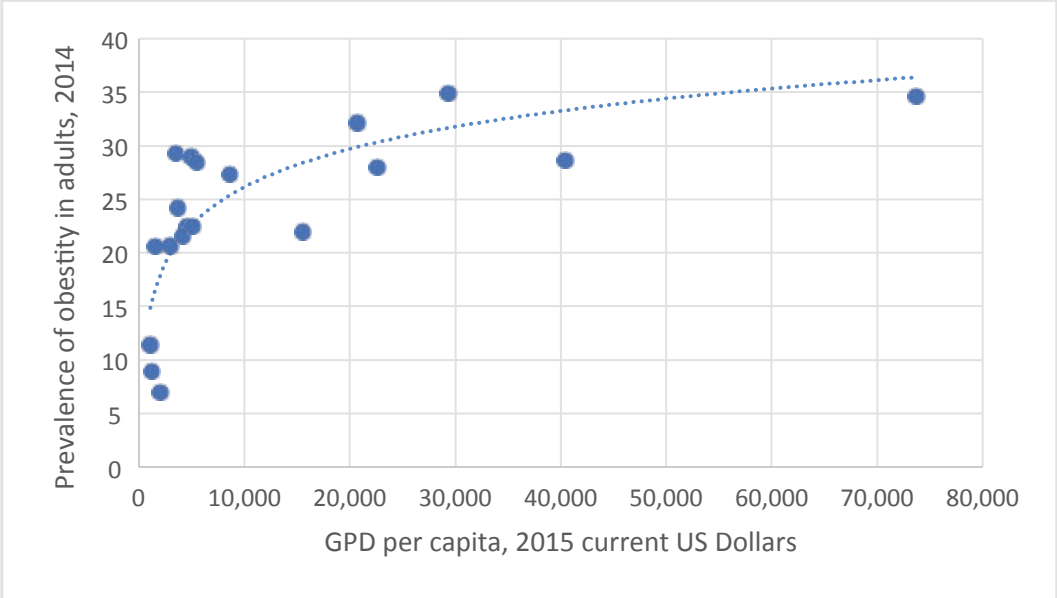
Source: WHO, 2010.

The percentage of NENA region children under 5 years old who are overweight exceeds the level in other L-M Income countries by a wide margin (Table 6). Though this is a widely shared trait in NENA L-M Income countries, it is not shared by NENA U-M Income countries. Certainly, childhood overweight is a widespread phenomenon throughout the world, but there appear to be region-specific reasons for higher than expected child overweight, specifically in the NENA L-M Income countries. Using data from the 2010–11 Egypt Household Income, Expenditure and Consumption Survey (HIECS), Ecker ***et al.*** (2016) found that Egypt's large food subsidy system created incentives for the consumption of calorie-overladen and unbalanced diets by providing calorie-rich foods (***baladi*** bread and flour, as well as other energy-dense, nutrient-poor foods) at very low and constant prices and with quotas much above dietary recommendations. Though food and fuel subsidies have been cut back since 2010,[4] Verme and Araar (2017) note that they are still widespread in the region.

The correlation between the child overweight figures in Table 6 and adult obesity is 0.46, indicating that childhood overweight is an imperfect but reasonable predictor of obesity. GDP per capita is a better predictor of the prevalence of adult obesity. The correlation coefficient between GDP per capita and the prevalence of obesity in adults in the region in 2014/15 was 0.59. Figure 3 illustrates that the functional relationship between GDP per capita and the prevalence of obesity is logarithmic: At lower levels of income, small increases in per capita income can elicit sizeable increases in the prevalence of obesity. However, as incomes increase, the marginal increases in obesity rates become smaller and smaller.

[4] Egypt in 2013/14, the Sudan in 2012/13, Tunisia in 2012–14, Jordan in 2012, Morocco in 2013–14 and Yemen in 2010–14.

FIGURE 3
GDP per capita and the prevalence of obesity in NENA countries, 2014/15



Sources: UNSD, 2017, for GDP per capita; WHO, 2017a, for obesity estimates.

Turning to U-M Income countries in Table 6, we find that stunting and wasting in the NENA countries are on average higher than their comparators in the rest of the world. As in the L-M Income countries, it is the conflict countries that stand out in stunting: Iraq and Libya. The Libya survey is from 2007 (before the conflict) and the Iraq survey from 2011 (during the conflict). Wasting in NENA U-M Income countries is double the global average of middle-income countries. The public health significance of the wasting levels in Iraq and Libya is classified as "poor", according to WHO (Table 7). Among the U-M Income countries in NENA with high rates of child overweight, Libya stands out, though the latest data available is from 2007.

Perhaps the most striking data in Table 6 are those for stunting and wasting in the high-income countries of the NENA region, compared to the global average of high-income countries. Unfortunately, except for Oman and Kuwait, the estimates of stunting and wasting in the GCC countries are at least 12 years old. Nevertheless, the stunting and wasting levels, even in countries with recent estimates, are considerably higher than in other high-income countries.

Turning to Table 8, the NENA region overall may be said to have moderate levels of anaemia and vitamin A deficiency. This can be seen by comparing the total NENA levels to the information in Table 9 on the public health significance of these population-level micronutrient deficiencies. This general picture, however, obscures the fact that many of the poorer countries of the region have severe levels of anaemia in children under 5 years old. Yemen, Mauritania, the Sudan and Egypt all registered severe levels of anaemia in pre-school-aged children in 2011. Somewhat more surprising is that both Oman and Saudi Arabia appear to have had severe levels of anaemia in 2011 as well. Vitamin A deficiency levels for latest year data between 1995 and 2004 were also severe in several of the poorer countries of the region, including Yemen, Mauritania, the Sudan and Morocco, as well as Iraq.

TABLE 8
Children's and pregnant women's micronutrient deficiency estimates for NENA countries

	Country	Children, 0–5 years old, prevalence (%)		Median urinary iodine concentrations of school-aged children, latest year, 2007–15	Prevalence of anaemia among women of reproductive age (15–49), 2016
		Anaemia, 2011	Vitamin A deficiency, latest year, 1995–2005		
1	**Total NENA**	**39.7**	**15.3**	**107**	**34.4**
2	**Global L-M Income countries (2010)**	**54.3**	**ND**	**ND**	**43.1**
3	**NENA L-M Income countries**	**46**	**21**	**116**	**35.6**
4	Yemen	59.3	27.0	122	69.6
5	Mauritania	70.7	47.7	179	37.2
6	Syrian Arab Republic	36.7	12.1		33.6
7	Sudan	58.7	27.8	66	30.7
8	Morocco	35.5	40.4	69*	36.9
9	Egypt	45.4	11.9	170	28.5
10	Tunisia	29.5	14.6	220	31.2
11	Palestine				29.4
12	**Global U-M Income countries (2010)**	**25.3**	**ND**	**ND**	**ND**
13	**NENA U-M Income countries**	**33**	**11**	**82**	**31.7**
14	Algeria	32.0	15.7	27*	35.7
15	Iraq	35.9	29.8		29.1
16	Jordan	31.2	15.1	203	34.7
17	Iran (Islamic Republic of)	32.5	0.5		30.5
18	Libya	30.3	8.0		32.5
19	Lebanon	24.2	11.0	66	31.2
20	**Global High-Income countries (2010)**	**14.3**	**ND**	**ND**	**ND**
21	**NENA High-Income countries**	**36**	**3**	**154**	**37.8**
22	Oman	40.7	5.5	191	38.2
23	Saudi Arabia	39.1	3.6	133	42.9
24	Bahrain	31.8		247	42
25	Kuwait	26.4		130	23.8
26	United Arab Emirates	29.1		162	27.8
27	Qatar	25.7		341	27.7

Sources: anaemia in children, 0–5 years old, and pregnant women from WHO (2015); vitamin A deficiency in children 0–5 years old from WHO (2009); iodine concentration in school-aged children from Gizak *et al.* (2017), cited in Iodine Global Network (2016). *Data before 2000.

TABLE 9
Classification of the public health significance of vitamin A deficiency and anaemia

Vitamin A deficiency: children 6 –71 months of age				
Indicator	Mild		Moderate	Severe
Prevalence of vitamin A deficiency (serum retinol concentration <0.70 µmol/l)	2 – 9%		10 –19%	20% or more
Anaemia: children, 0–5 years, or women of reproductive age, 15–49 years				
Indicator	Normal	Mild	Moderate	Severe
Prevalence of anaemia (%) (blood haemoglobin concentration<110 g/L)	0 – 4.9	5 –19.9	20 –39.9	40% or more

Source: WHO, 2011; WHO, 1996; WHO-UNICEF-UNU, 2001.

There has been dramatic progress in reducing the number of countries with iodine deficiency in the past two decades. Between 1990 and 2014, the number of countries in the world with iodine deficiency fell from 110 to 25[5]. The NENA region has been a part of this progress. Surveys from the 1990s showed mild or moderate levels of iodine deficiencies in many NENA countries (WHO, 2004).

However, the latest surveys of urinary iodine concentrations of school-aged children show that iodine intake in school-aged children (Table 10) is adequate, except for the Sudan, Lebanon, Algeria and Morocco. Moreover, the latter two are based on old surveys and are therefore subject to some doubt.

TABLE 10
Median urinary iodine concentrations (µg/L) (UIC) of school-aged children (SAC)

	Iodine Status in School-Aged Children, from latest year survey, 2007–15		
	Insufficient	Adequate	Excessive
Median urinary iodine concentrations (µg/L) in school-aged children	0–99	100–299	>300

Source: Gizak *et al.*, 2017, cited in Iodine Global Network (2016).

Estimates of food insecurity and nutrition status during conflict

The data in Tables 3, 6 and 8 are reliable measures of food insecurity and malnutrition during development. However, during conflict situations these indicators are often flawed (Box 2). This is one reason why in Table 3 there is no prevalence of undernourishment data for the Sudan, Libya, the Syrian Arab Republic and Palestine and no prevalence of severe food insecurity data for Lebanon and the Syrian Arab Republic. An alternative source of information on food security and nutrition status during conflict is UN agency estimates according to two main food security assessment methodologies, the Integrated Phase Classification (IPC) and the Consolidated Approach for Reporting Indicators of Food Security (CARI). These data are usually not very complete and are difficult to compare with peacetime data. But they do provide up to date estimates of food insecurity and malnutrition in protracted conflict situations.

[5] See Iodine Global Network (https://www.youtube.com/watch?v=TAWv9TbMMVQ).

BOX 2

Limitations of measures of food insecurity and nutrition status in conflict countries

Conflict exacerbates food insecurity and can lead to food deprivation. So it is reasonable to ask how good the SDG Targets 2.1 and 2.2 indicators are at reflecting the effects of conflict on food deprivation and food insecurity. Conflict has two main effects that should be measured by indicators of food deprivation and food insecurity. First, conflict has distributional effects on the physical distribution of food. People living in cities under siege, for example, may suffer from an acute food shortage, while in another area of the country people may live much as they did before conflict. Just as Amartya Sen (1981) found that famines take place predominantly due to the unequal distribution of food (underpinned by unequal "entitlements"), so conflict causes food deprivation through altering the distribution of food. The distributional effects of conflict are the most serious and most difficult to capture. Second, conflicts may diminish the average availability of food. Conflicts cause capital destruction, disruption of production and diversion of resources, all of which result in falling income. However, since people prioritise food, its income elasticity is low. Thus, it is quite possible that during conflict the average or total food availability falls very little if at all.

The PoU is not a reliable indicator of the effects of conflict. The main reason is that it does not capture the effects of conflict that may come through changes in the distribution of food. The PoU uses coefficients of variation and skewness, usually derived from expenditure surveys, to estimate the unequal distribution of food. Because expenditure surveys are carried out only every few years, the coefficient of variation is updated only every few years. This is fine during peacetime, because such coefficients do not change rapidly. However, conflict (particularly civil conflict) changes the way food is allocated, by altering the distribution of income and the physical distribution of food. Employment (and thus income) in conflict zones may decrease and food may not reach people living in these areas. The PoU will never be able to capture the changing distribution of food during conflict.

The PoU will, however, capture a second possible effect of conflict, which is changes in the average Dietary Energy Consumption (DEC), caused by the fall in incomes that accompanies conflict.

If the DEC decreases, for example, the PoU will increase, indicating greater food deprivation. However, just as Sen (1981) found with famines, dramatic falls in income do not necessarily cause any fall in the average availability of food. The conflict in Yemen, for example, has led to a 50 percent decrease in GDP per capita (in constant local currency units) between 2010 and 2015. However, over the same period, the average supply of calories per person in the country rose by nearly 2 percent.

Estimates of Prevalence of Food Insecurity according to the Food Insecurity Experience Scale (FIES) seem much more likely to be affected by the presence of a conflict because they are based on a survey (the Gallup World Poll) that is conducted even in countries in conflict. However, the severe FIES indicator will accurately reflect the effects of conflict only if the survey it is based on is properly representative of the entire population during conflict, accurately capturing the inequality effects. Conflict is likely to cause the severe-moderate food insecurity FIES indicator to be elevated, as rapidly falling incomes tend to increase the anxiety of procuring food and also to cause the population to reduce and substitute meals (Figure 1).

What about survey-based indicators of child anthropometric status (stunting, wasting or overweight) or malnutrition (anaemia and deficiencies of vitamin A or iodine)? As these are indicators of accumulated deprivation, poverty and/or limited income, they may in fact reflect the effects of past conflict. Again, though, these indicators accurately reflect the effects of conflict only if the survey is properly representative of the entire population, accurately capturing the inequality effects.

In conclusion, while the PoU probably does not reflect the effects of conflict very well, the other indicators covered above are at least capable of registering changes in food security and nutrition status due to conflict. But such indicators should always be interpreted with caution, and their limitations should be kept in mind. FAO recognises the limitations of the PoU measure, and has stopped publishing PoU statistics on Libya, the Sudan and the Syrian Arab Republic precisely because they do not seem to be in line with other food insecurity evidence.

UN agencies have nearly agreed on a unified set of technical standards by which to assess food insecurity and undernutrition in conflict and protracted crisis situations. UN agencies and others adhere to two main food security assessment methodologies, the IPC and the CARI. While many organizations, including FAO, Save the Children, Oxfam, CARE, Action Against Hunger (ACF), World Food Program (WFP) and others, use the IPC, only WFP utilises the CARI system as well. The IPC has standardised methodologies for assessing acute and chronic food insecurity, as well as acute malnutrition. The IPC methodology assesses the food security situation in the country according to a phase classification (Table 11). Areas or groups of households in a country classified as Phase III or higher are referred to as food insecure. Areas or groups of households in a country in Phase II are referred to as "at risk" of falling into food insecurity.

TABLE 11
Integrated phase classification (IPC) for acute food insecurity

Phase	Description
Phase I Minimal	80%+ of households (HH) are able to meet essential food and non-food needs without engaging in atypical, unsustainable strategies to access food and income, including any reliance on humanitarian assistance.
Phase II Stressed	Even with any humanitarian assistance, 20%+ of HH have minimally adequate food consumption but are unable to afford some essential non-food expenditures without engaging in irreversible coping strategies.
Phase III Crisis	Even with any humanitarian assistance, 20%+ of HH: · have food consumption gaps with high or above usual acute malnutrition; OR · are marginally able to meet minimum food needs only with accelerated depletion of livelihood assets that will lead to food consumption gaps.
Phase IV Emergency	Even with any humanitarian assistance, 20%+ of HH: · have large food consumption gaps resulting in very high acute malnutrition and excess mortality; OR · have extreme loss of livelihood assets that will lead to large food consumption gaps in the short term.
Phase V Famine	Even with any humanitarian assistance, 20%+ of HH have an extreme lack of food and/or other basic needs, even with full employment of coping strategies. Starvation, death and destitution are evident.

Source: IPC Global Partners, 2012.

Though there are differences in methodology, the CARI is designed to be compatible with the IPC system, employing a four-state approach to assess food insecurity ranging from "food secure" to "marginally food secure", from "moderately food insecure" to "severely food insecure" (WFP VAM, 2015). These states correspond to Phase I, Phase II, Phase III and Phase IV/Phase V of the IPC system. Not all assessments of food insecurity and nutrition status adhere to either the IPC or CARI standards. As we will see, presently this can present problems as to the accuracy of the estimates.

Tables 12, 13 and 14 present estimates of food insecurity and child malnutrition made during conflict. Despite the incompleteness of the data, these tables still allow a number of conclusions. First, Yemen in 2017 is clearly in the worst food insecurity and malnutrition state of all the countries in conflict in the NENA region, followed by the Syrian Arab Republic and the Sudan. Nearly a quarter of the population of Yemen suffers from severe food insecurity and 36 percent from moderate food insecurity (IPC Global Partners, 2017). Wasting in children under 5 years old was over 10 percent in 2014, which is classified as "serious" by WHO (Table 7). By 2016, 11 percent of children under 5 years old suffered from severe wasting, which likely indicates a critical public health situation. However, the latest available joint WFP-FAO-UNICEF Emergency Food Security and Nutrition Assessment (EFSNA) from 8 February 2017 indicates that the wasting situation for children under 5 years old is not quite as dire. Out of 20 states surveyed, four had wasting rates over 15 percent (critical), another seven had wasting rates between 10 and 15 percent (serious) and the rest had rates between 5 and 10 percent (poor) (WFP-FAO-UNICEF, 2017). The evidence and standards used by agencies in assessing food insecurity and malnutrition in Yemen adhere to IPC standards. Thus, they can be relied on to reflect the food security situation with a high level of confidence at that time (late 2016).

The Syrian Arab Republic also shows a relatively high level of food insecurity, with nearly 40 percent of the population suffering from food insecurity, while levels in the Sudan, Iraq and Libya are not as high. The Sudan and Iraq have much more serious malnutrition problems for children under 5 years old than food security problems. The Sudan shows "high" levels of stunting and "critical" levels of wasting for children under 5 years old. In Iraq, stunting levels are classified as "low", while wasting levels are "poor".

TABLE 12
Estimates of food insecurity in countries in conflict, NENA region, 2010 –17

Country	Yemen		Sudan	Syrian Arab Republic	Libya	Iraq	
	IPC	PoU(*)				Residents	IDPs
2010		25.7					
2011		25.0					
2012		24.6					
2013		24.6					
2014	40	25.2	4				
2015	48	28.8	4	34			
2016	51/65		12	36	24	3	6.6
2017	60		8	38			

(*) For PoU, the data are three-year averages for a period centred on the reported year.

Sources: Yemen: PoU data from FAO, 2017b. 2014–17 from FSIN, 2017, based on IPC reports. The alternative figure (65%) in 2016 is from WFP-FAO-UNICEF, 2017; the Sudan: IPC Global Partners, 2015a, 2015b, 2016a, 2016b, 2017; the Syrian Arab Republic: 2015, 2016 figures from FSIN, 2017; 2017 figure is from HCTP Syrian Arab Republic, 2017; Libya: from WFP, 2016; Iraq: Iraq CSO *et al.*, 2012.

A second conclusion from Table 12 is that food insecurity measured according to the prevalence of undernourishment and the IPC classification is quite different. This can be seen in the case of Yemen, where the PoU is quite a bit lower than the contemporaneous IPC estimates in 2014 and 2015. This indicates that measurements using the two different methodologies should not be equated.

TABLE 13
Estimates of child malnutrition in Yemen and the Syrian Arab Republic, 2009–17

Country	Yemen			Syrian Arab Republic		
	Stunting	Wasting	Severe wasting	Stunting	Wasting	Severe wasting
2009				27.5	11.5	5.5
2011	46.6	13.3	3.4			
2012						
2013	46.5	16.3	5.2			
2014		>10	3.9			
2015			11.3			
2016			11.2	2.9(f); 12.7(m)	4.1	
2017					3.8	

Sources: Yemen: Wasting and severe wasting: FSIN, 2017, based on IPC reports, and OCHA, Yemen, 2016, except for 2013, which is from UNICEF-WHO-WB, 2016. Stunting from UNICEF-WHO-WB, 2016; the Syrian Arab Republic: the Syrian Arab Republic 2009 stunting from UNICEF-WHO-WB, 2016. Other Syrian Arab Republic figures are from FSIN, 2017, except for the stunting figure in 2016 and the 2017 wasting figure, which are from HCTP, the Syrian Arab Republic, 2017.

TABLE 14
Estimates of child malnutrition in the Sudan and Iraq, 2010–17

Country	Sudan			Iraq			
				Stunting		Wasting	
	Stunting	Wasting	Severe wasting	Residents	IDPs	Residents	IDPs
2009	34.1	15.3	4				
2011				17.3		6.5	
2012							
2013							
2014	38.2	16.3	4.5				
2015							
2016		2 –18	0 – 3.5	16.6	19.2	7.5	5.5
2017		14 – 25	7 – 10				

Sources: the Sudan: Stunting and wasting for 2010 and 2014 from UNICEF-WHO-WB, 2016; other wasting and severe wasting from IPC Global Partners. The Sudan: 2016b and IPC Global Partners. The Sudan: 2017; Iraq: 2011 CSO *et al.,* 2012. 2016 figures from WFP, 2016.

Lastly, despite the conflict, the stunting and wasting statistics from the Syrian Arab Republic are remarkably low compared with the pre-war year situation of 2009. It does not seem possible that stunting and wasting in the Syrian Arab Republic could actually decrease during conflict. According to the IPC Technical Manual 2.0 (IPC Global Partners, 2012) wasting levels of 10–30 percent are consistent with Phase III and Phase IV food insecurity. However, the figures in the Syrian Arab Republic indicate wasting levels of less than 5 percent, which is Phase I acute malnutrition (acceptable).

Such low levels of wasting, indicating a fall in global acute malnutrition during conflict, seem inconsistent with the levels of food insecurity in the Syrian Arab Republic. Thus, these figures seem to warrant scepticism.

PART 2

REGIONAL POLICY DRIVERS TO SUPPORT ACHIEVING SDG 2 TARGETS

While Part I of the *Regional Overview* presented a static view of the state of food insecurity and malnutrition in the NENA region, Part II focuses on how food insecurity and malnutrition have changed over the past two decades and which policy-related indicators have been correlated with those changes. While government policies correlated with improvements in SDG 2 indicators have the potential to benefit all countries of the region, realistically, the conflict countries have few resources to implement them, since expenditures on violence and security tend to crowd out expenditures on other priorities[6]. Thus, Part II pertains mostly to the non-conflict countries.

The NENA countries have in place a wide array of strategies, programmes and guidelines on most aspects of nutrition policy, many of them highly relevant to the SDG Targets. The scope of nutrition policies and programmes listed in the WHO Global Database on the Implementation of Nutrition Action (GINA) can be seen in Table 15 (WHO, 2017a). It is difficult, however, to gauge how effective these policies and programmes have been, because there have been few studies on the implementation of these policies and their results.

Part II of this study is therefore based not on policies and programmes on paper but on experiences in the reduction of undernourishment and stunting. The past two decades have witnessed much progress in the reduction of undernourishment and stunting in the NENA countries. In Part II, several factors correlated with changes in the indicators for SDG Targets 2.1 and 2.2 are analysed. While this correlation analysis does not claim to be exhaustive, and should not be interpreted as an investigation of causation, it serves to identify topics of focus. Policies are then suggested that may affect these factors to understand how SDG 2 can be achieved, with the understanding that progress in these areas is likely to come only in the non-conflict countries.

The results of this analysis are not entirely obvious. Reduction of the prevalence of undernourishment in the region was most closely correlated with increases in the food supply (domestic production and imports). Reduction of stunting was most closely correlated with reductions in poverty, increases in GDP per capita, increases in the protein content of the food supply and decreases in the fertility rate. Overall, the analysis indicates that the main policy drivers supporting the reduction of undernourishment and stunting in the region are (1) poverty reduction, (2) economic growth, (3) improvements in maternal and childhood nutrition and public health, (4) increases in the quantity and quality of the food supply and (5) a cessation of violence in the region. Thus, according to this analysis, policies to improve undernourishment and stunting in the region must go far beyond the nutrition and health sectors to focus on women's education, food supply, security and economic growth.

[6] The Institute for Economics and Peace (IEP) estimated that costs of violence in 2016 ranged from 9 percent of GDP in Lebanon to 67 percent in the Syrian Arab Republic. The mean costs of violence as a portion of GDP in the five NENA conflict countries in 2016 was 47 percent (IEP, 2017).

TABLE 15
Nutrition policies and programmes in NENA countries (WHO, 2017a)

Country	Food fortification, salt iodisation programmes	Food supplementation programmes	Maternal, infant and young child nutrition programmes (breastfeeding, supplementation for pregnancy and young children)	Endorse international code of marketing for breastmilk substitutes	Maternity leave protection labour law	Nutrition education programmes	Food based dietary guidelines promoted	School based nutrition programmes	Nutrition related health policies	Obesity and diet related NCDs policy and programmes	National strategy for nutrition
Algeria		X			X						
Bahrain	X	X	X	X	X			X		X	X
Egypt	X				X						X
Iran (Islamic Republic of)	X	X	X		X	X	X	X		X	X
Iraq	X	X	X	X	X		X	X	X	X	X
Jordan			X		X						X
Kuwait	X	X	X	X		X		X		X	X
Lebanon	X	X	X	X	X		X	X		X	X
Libya					X						
Mauritania	X	X	X		X			X	X	X	X
Morocco	X				X						X
Oman		X	X	X			X	X		X	X
Qatar			X		X	X	X			X	X
Saudi Arabia					X						
Sudan	X	X	X		X				X		X
Syrian Arab Republic		X			X						X
Tunisia	X	X	X	X	X	X		X	X	X	X
United Arab Emirates					X						
Yemen	X	X	X		X				X		X

Previous progress towards SDG Targets 2.1 and 2.2: reduction of undernourishment and stunting in NENA countries

SDG Targets 2.1 and 2.2 focus on hunger, food insecurity and malnutrition. The prevalence of undernourishment is the only indicator that can be used to follow progress in ending hunger and food insecurity (SDG Target 2.1), since there is no time series available for tracking food insecurity using the Food Insecurity Experience Scale (FIES). Of the monitoring indicators for SDG Target 2.2, stunting is an indicator of chronic malnutrition, while wasting signifies a recent period of acute malnutrition. For understanding the effects of development on nutrition outcomes, stunting is the preferred indicator (Heady, 2012; Martorell, 2008).

Many NENA countries have had great success in the reduction of undernourishment and stunting over the past 15–20 years. This progress can be seen in Table 16, which shows the annual percent reductions between 1999–2001 and 2014–16 for undernourishment and between approximately 1992 and 2010 for stunting. Actual data on the prevalence of stunting differ by country, due to different survey years. Table 16 shows the annual rate of change, the earliest and latest years for which stunting data is available and the prevalence of stunting in those years.

The average annual rate of change is not the only success indicator for either undernourishment or stunting. The prevalence of undernourishment in Iraq and Iran (Islamic Republic of) rose to peaks in the mid-2000s, but fell thereafter. So, despite the lack of progress shown in Table 16 for these countries between 1999–2001 and 2014–16, both countries experienced years of deterioration and improvement during this time. Moreover, the United Arab Emirates, which showed an increase in undernourishment between the two end dates, has one of the lowest rates of undernourishment in the region, on the level of developed countries. Kuwait, whose stunting rate for 0–5 year olds increased between 1996 and 2014, can hardly be said to have a negative record either, since it has the lowest stunting rate in the region. Nevertheless, the policies that are likely to support the achievement of SDG Targets 2.1 and 2.2 may perhaps be understood by analysing how annual rates of undernourishment and stunting reduction are correlated with other key indicators.

TABLE 16
Reduction of the prevalence of undernourishment and stunting in children, 0–5 years, in the NENA region

	Prevalence of Undernourishment			Stunting, 0–5 years			
	Annual change (%)	1999 – 2001	2014 – 16	Annual change (%)	Prevalence		Years
					Earliest year	Latest year	
Iran (Islamic Republic of)	0.8	4.9	5.5	-7.67	24.4	6.8	1995–2011
Saudi Arabia	-2.3	6.2	4.4	-7.30	21.4	9.3	1994–2005
Jordan	-4.3	8.1	4.2	-4.30	20.5	7.8	1990–2012
Morocco	-4.3	6.8	3.5	-3.44	34.5	14.9	1987–2011
Tunisia	0.1	4.9	5	-2.49	18.5	10.1	1988–2012
Mauritania	-5.1	11.7	5.3	-2.48	40.2	27.9	1988–2015
Oman	-4.2	11.8	6.2	-2.32	24.2	14.1	1991–2014
Sudan	-0.4	25.9*	25.6	-2.23	38.3	35.0	2006–2010
Egypt	-1.1	5.3	4.5	-1.61	34.0	22.3	1988–2014
Algeria	-5.5	10.7	4.6	-1.46	16.9	11.7	1987–2012
Syrian Arab Republic				-1.11	32.9	27.5	1993–2009
Iraq	-0.1	28.3	27.8	-0.99	27.6	22.6	1991–2011
Yemen	-0.2	29.9	28.8	-0.52	52.4	46.5	1991–2014
Lebanon	5.6	2.8**	5.4	-0.52	17.2	16.5	1996–2004
Bahrain				-0.36	13.9	13.6	1989–1995
Libya				-0.04	21.1	21.0	1995–2007
Kuwait				0.83	5.0	4.9	1996–2015
United Arab Emirates	2.9	2.4**	3.8				
Palestine				-1.98	10.6	7.4	1996–2014
Unweighted average				-2.22	25.2	17.5	1992–2010

Notes: **2002–04, *2011–13. Countries are ordered according to their rate of stunting reduction.

Sources: UNICEF-WHO-WB, 2017, and FAO 2017b.

Correlates of stunting and undernourishment reduction in the NENA region

Table 17 shows the indicators with the highest levels of correlation with reductions in undernourishment and stunting in the NENA region, along with the correlation coefficients for these indicators. The annual rates of change for each of these (and many more) correlates were compared with the annual rate of change for undernourishment and stunting for the 19 countries in the NENA region over the periods noted in Table 16. It is clear from this table that there are many correlates, and no single factor can be said to be immensely superior to others. Nevertheless, the data of Table 17 point to a few main factors, many of which have been highlighted in previous studies.

TABLE 17
Correlates of stunting and undernourishment reduction in NENA countries

Correlate area	Correlate	Type of indicator	Correlation with changes in prevalence of (%)	
			PoU	Stunting
Poverty	Poverty headcount ratio at USD 1.90 a day (2011 PPP) (% of population)	%/yr change		0.60
GDP per capita	GDP per capita, constant local currency units	%/yr change	-0.33	-0.48
	GDP per capita, constant prices, PPP, International dollars	%/yr change	-0.36	
Food supply	Food supply: calories, kcal/caput/day	%/yr change	-0.75	
	Food supply: protein, g./caput/day	%/yr change	-0.70	-0.40
Maternal and childhood nutrition and public health	Prevalence of anaemia among pregnant women	%/yr change	0.55	0.36
	Fertility rate, total	%/yr change		0.36
	Infants exclusively breastfed for the first six months	%/yr change	-0.29	-0.25
	DTP3 immunisation coverage among 1 year olds	%/yr change	-0.31	
	Population using improved sanitation facilities	%/yr change	-0.43	
Conflict	Conflict: indicator of MEPV, per year	Average*	0.11	0.15

Note: *The coefficients for conflict list the correlation between the average intensity of conflict (both civil and interstate) over the observation period and the average rate of change in the prevalence of undernourishment or stunting.

The factors in Table 17 fall into five categories – poverty reduction, per capita income growth, maternal and childhood nutrition and public health, food supply and conflict. Table 17 has no claim to an exhaustive analysis of factors correlated with the reduction of undernourishment and stunting. In fact, food fortification was not even considered as a factor, because the extent and quality of time series data in the NENA region on micronutrient deficiencies for children did not allow an analysis of how changes in micronutrient deficiencies are correlated with stunting reduction. Box 3 analyses programmes in micronutrient fortification and supplementation in the region.

The following sections discuss possible policies in four of the five areas highlighted in Table 17, leaving conflict for Part III of this *Regional Overview*. It is indeed striking to note in Table 17 the wide range of policies and programmes suggested for the reduction of child stunting and undernourishment. The wide range of factors correlated with stunting reduction is consistent with the hypothesis of Deolalikar (2008, cited in Headey, 2013) that

> "interventions outside the nutrition sector – indeed, even outside the health sector – can have profound effects on reducing child malnutrition. Indeed, it might be argued that, in the medium to long run,

> non-nutritional interventions, such as improving agricultural productivity, expanding female schooling, and bringing piped water and electricity to rural areas, might have larger effects on the reduction of child malnutrition than nutritional supplementation or fortification programmes".

Furthermore, in a 2008 *Lancet* series on Maternal and Child Undernutrition, Bhutta *et al.* (2008) noted that interventions designed to improve nutrition and prevent related disease (such as food fortification, supplementation, salt iodization, promotion of breastfeeding, counselling on complementary feeding, deworming, conditional cash transfer programmes with nutrition education and maternal nutrition) could reduce stunting at 36 months by 36 percent. This implies that non-nutrition -based interventions, such as poverty reduction, economic growth, better education and healthcare, women's empowerment and others, have great potential in reducing stunting. In other words, achievement of SDG Target 2.2 on stunting reduction will not be achieved without attention to the underlying factors behind poor nutrition, some of which are listed in Table 17.

BOX 3
Addressing micronutrient deficiencies in the NENA region

Programmes for micronutrient fortification and supplementation have been shown to have significant effects on childhood malnutrition in many countries. In 2008, the Copenhagen Consensus Center (2008), a think tank that researches the most cost-effective solutions to today's global challenges, published its recommendations for the most cost-efficient ways for addressing malnutrition in the world. At the top of these recommendations were micronutrient supplementation (vitamin A, zinc) and fortification (iron), salt iodisation, bio-fortification, school nutrition programmes and community-based nutrition promotion.

The Food Fortification Initiative (2017) reports that, except for Lebanon and the Syrian Arab Republic, all countries in the NENA region have fortification legislation in place that mandates or allows wheat fortification as part of efforts to improve the nutrition status of their populations. For example, Egypt formulated a 10 year "Food and Nutrition Policy and Strategy 17–2007" which contains targeted nutritional programmes containing vitamin A and iron supplements for children and pregnant women (Devereux, 2015). Jordan has two national micronutrient fortification programmes: a national salt-iodisation programme initiated in 1995 and a wheat flour fortification programme initiated in 2002. The wheat flour fortification programme was expanded to include more nutrients in 2006 and again in 2010 (Al Rifai *et al.,* 2015). The Sudan's first National Nutrition Strategy, under the auspices of the Ministry of Health since 2013, has two objectives: decrease the prevalence of iron, iodine, vitamin A and zinc micronutrient deficiencies, and enhance the intake of fortified foods. Similarly, Yemen's 2008 National Strategy for Nutrition strives to improve health conditions by 2020 with interventions that address undernutrition, as well as anaemia, and deficiencies in vitamin A, iodine and zinc, as well as the incidence of rickets (caused by vitamin D deficiency) and household food insecurity.

Because of the spotty coverage of national monitoring, the success of these interventions is difficult to judge. Analyses of fortification practices in the region have shown that the quality of fortified foods is often low (Hwalla *et al.,* 2017). In other words, despite fortification legislation, practices vary, and there is a clear need to monitor both implementation and outcomes. In fact, a 2016 workshop of nutrition experts organized to discuss the prevalence of micronutrient deficiencies and to consider the success of current interventions noted that "there was an urgent need for countries in the Middle East to update their national data so as to better inform policy and programme development" (Hwalla *et al.,* 2017). Nevertheless, there is some evidence that fortification efforts may be succeeding. The prevalence of anaemia in the NENA region shifted from a severe to moderate public health problem between 1992 and 2014 (WHO, 2015, cited in Hwalla *et al.,* 2017). Moreover, a 2015 study on Jordan found that the public health problem of childhood anaemia declined from severe in 2007 to moderate in 2009 after the implementation of wheat flour fortification with multiple micronutrients (Al Rifai *et al.,* 2015).

Unlike fortification, dietary supplementation is a tool for targeting specific groups to address micronutrient inadequacies. Supplements are used to support maternal and child health during pregnancy and for postnatal care. They are also a cost effective and widely used means to safeguard the nutrition status of vulnerable populations during conflict. Table 15 indicates that food supplementation is widely practiced in the NENA region. However, information on the effectiveness of government food supplementation programmes is scarce. Egypt maintains a vitamin A supplementation programme for children over 9 months of age. However, compliance with this programme is poor: less than half of the target group in the 9–11 months and 18–27 months age ranges actually receive the supplement (Hwalla, 2016).

The multiplicity of conflicts, internally displaced persons and migrants within the NENA region implies that much of the nutrition-supplementation work in the region is carried out by international organizations in complex emergencies. WFP supports community-based, nutrition-integrated platforms to address acute malnutrition among vulnerable groups, namely children aged 6–23 months, as well as pregnant and lactating women. Interventions include supplying micronutrient powder for household food supplementation, daily cooked meals fortified with micronutrient powders for schools, internally displaced person (IDP) camps and highly food insecure areas. WFP also provides innovative nutrition-sensitive food aid in conflict areas, where by the distributed general food basket is diversified with fresh food vouchers in some areas of the Syrian Arab Republic. Furthermore, WFP works with partners to integrate health-care services for displaced pregnant and lactating women in conflict areas (Devereux, 2015).

Poverty reduction and social protection policies

Poverty reduction is the single most important factor correlated with the reduction of stunting in Table 17. This suggests that programmes specifically targeting the poorest population may help to reduce stunting. Governments in the NENA region expend massive sums on generalized consumer subsidies for energy and food, and relatively little on social protection programmes benefiting the poor and marginalised. Though both types of programmes can potentially play a role in reducing poverty, general consumer subsidies as applied in the region are too blunt and inefficient an instrument to tackle poverty. They are extremely costly, largely regressive (with the largest benefits accorded to the non-poor) and are thus of dubious effectiveness and efficiency as social protection measures to reduce poverty.

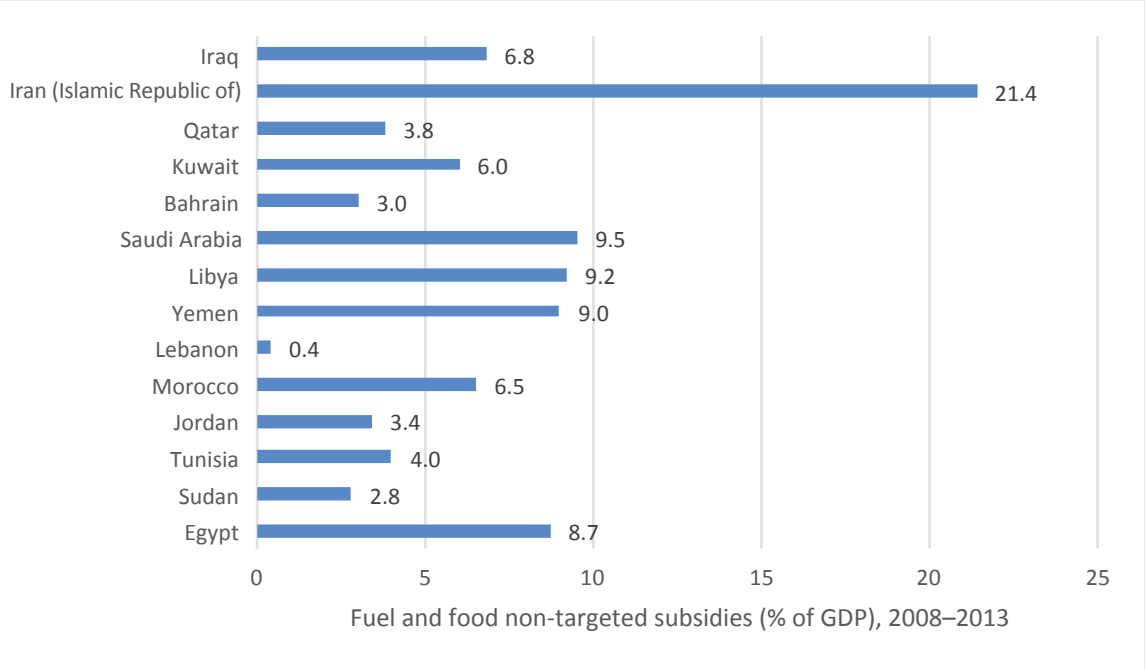
Government expenditures for universal energy and food subsidies have been estimated at 5.7 percent of GDP in the region in 2011 (Silva *et al.,* 2012). Expenditures on non-subsidy programmes are a small fraction of this, with a correspondingly lesser impact on poverty. For instance, in 2011, for every USD 1 delivered as social assistance to the poor in NENA, USD 158 was spent on universal subsidies in Yemen and USD 194 was spent on ration cards in Egypt (Silva *et al.,* 2012).

Although there is a common trend to reduce expenditures on universal subsidies, what remains is still helpful in addressing poverty because of the massive sums applied. Universal subsidies have reduced poverty by 6–30 percent in four countries (Jordan, Egypt, Iraq and Yemen), while the poverty reduction range with targeted social assistance policies has been on the order of 3–8 percent by 2011 (Silva *et al.,* 2012).

Though the original reason for their introduction in many countries was to protect the population from economic shocks, generalized energy and food subsidies have long outlived their utility as protection from price shocks. Because fuel and food subsidies are allocated according to consumption, their distribution is heavily skewed towards those who consume more. In Yemen, for example, the richest 20 percent of the population received 40 percent of fuel subsidies, while in Jordan and Egypt the highest expenditure quintile received 45 and 60 percent (World Bank, 2014b). Universal subsidies also present a substantial fiscal burden for governments of the region (Figure 4), ranging from less than 1–21 percent of GDP between 2008 and 2013. For many countries, the scaling back of such subsidies could substantially contribute to bringing their budgets back into balance. Finally, the World Bank (2014b) argues that energy subsidies themselves create development challenges for NENA countries by creating incentive barriers to fuel efficiency, thus impeding growth, and by favouring energy-intensive, capital-intensive industries, thus biasing production towards larger, older and less employment-generating firms.

Governments in the region should enhance the role of social protection in protecting vulnerable populations. This can be achieved with substantially less budget outlays by transitioning from general subsidies that disproportionately benefit the rich to a system of social assistance catering to the poor. Social assistance programmes must have adequate coverage and offer benefits of a sufficient size to make a dent in poverty. However, such a transition from general subsidies to a social protection system with broad coverage of the poor is strewn with pitfalls. First, the removal of such subsidies has the potential to harm some of the poor, who spend a higher portion of income on food and fuel than others (Kandeel, 2013). However, Verme and Araar (2017) have shown (in a series of modelled scenario analyses) that for many NENA countries the removal of generalised subsidies could be managed while minimising harm to the poor. Finally, the political risks of subsidy removal must be taken into consideration as well (Verme and Araar, 2017).

FIGURE 4
Universal fuel and food subsidies in NENA countries (% of GDP)



Sources: Latest year data from Sdralevich *et al.,* 2014; Calo, 2016; Verme and Araar, 2017.

Despite difficulties, since 2010 many countries in the region have implemented major reforms of their subsidy programmes (Table 18). The initial trigger for reforms was in most cases the increased budget deficits in the wake of the Arab Spring uprisings. Subsidy reforms were often executed by new regimes with less attachment to them politically.

TABLE 18
Comparison of subsidy reforms in NENA countries, 2010–14

	Morocco	Tunisia	Egypt	Jordan	Yemen	Iran (Islamic Republic of)
Initial trigger	Budget deficit	Budget deficit	Budget deficit, regime change	Budget deficit, IFI pressure	Budget deficit, IFI pressure	Budget deficit, international sanctions
Reforms 2010					Prices of petrol, diesel and kerosene increased by 30%, LPG prices by 100%	Major increases in food and energy prices
Reform 2012 –14	Price increases and then indexation for petroleum products; prices increased for electricity, water, gas and diesel	Petrol, diesel and electricity prices increased; price indexation for petrol	Price increases for petrol, electricity, natural gas and diesel, for households and (2014) for commercial use	Petrol price increase; cash programme introduced; fuel indexation; electric prices increased	Energy price increases, then full subsidy removal, with partial reversal	Minor adjustments to 2010 reform
Reform pace	Gradual	Gradual	Gradual/radical	Radical	Gradual/radical	Radical
Compensation?	No	Yes (poor)	No	Yes (quasi-universal)	No	Yes (quasi-universal)
Upshot	Subsidies remain for only LPG, flour and sugar; subsidy removal had no poverty effects	Partial reform; price controls remain on energy products; LPG and food subsidies remain	Partial reform; price controls remain on energy products; LPG and food subsidies remain	Cash transfers prevented social protest; no success in bringing electricity subsidies under control	Attempt in 2014 to remove subsidies caused public protests, contributing to political instability	Large price increases, but no removal of price controls; subsidies return by 2013

Source: Adapted from Verme, P., Araar, A. 2017.

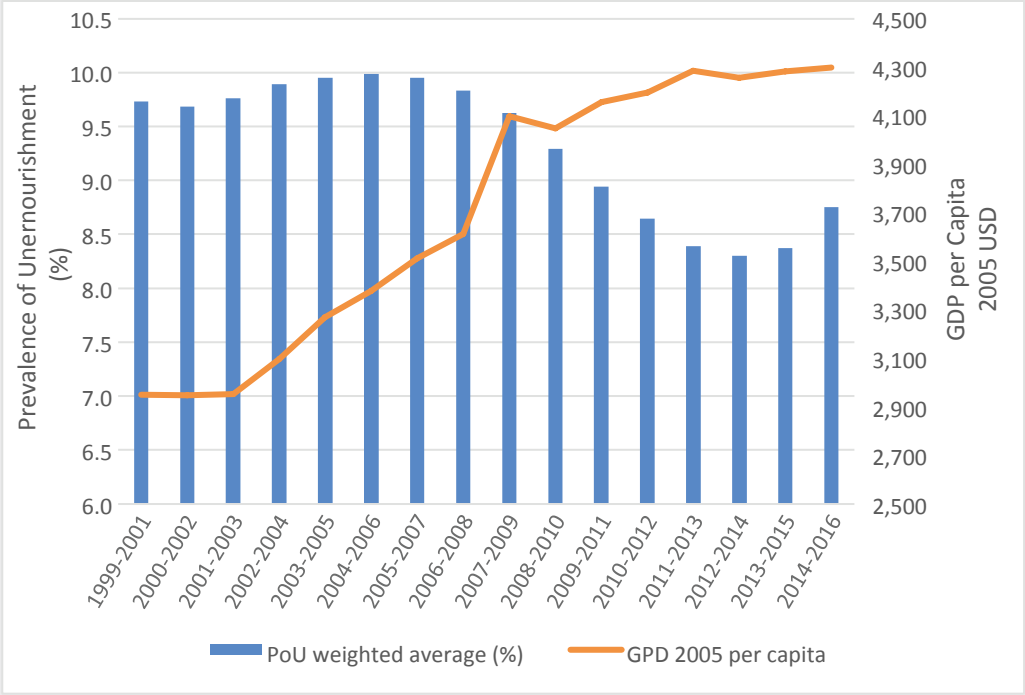
The essence of reforms in most countries was an increase in prices for energy products, including petrol, natural gas, electricity and LPG. In some cases, prices were increased gradually (Morocco and Tunisia), in others in one fell swoop (Iran (Islamic Republic of)), and in Egypt and Yemen reform was begun gradually, but then turned radical. Staple food prices were also increased, but since the bulk of subsidies in these countries go towards energy products, they remained the focus of most reforms. Radical reforms were accompanied by universal cash compensation in Iran (Islamic Republic of) and Jordan. Tunisia introduced compensation only for the poorest and most vulnerable.

While curtailing government expenditures on universal subsidies has been discussed for years (World Bank, 2014b), this was the first region-wide attempt at universal subsidy reform in the region. Table 18 illustrates that the results have been mixed. Universal food and fuel subsidies have been reduced in their level and scope, but they have yet to be fully replaced with a system of social assistance with extensive coverage of the poor. It may be unreasonable to expect such an outcome so soon, given the political and economic difficulties of removing general consumer subsidies and the complexities of setting up new systems to administer pro-poor social assistance. In Morocco, the reforms eliminated nearly all subsidies, but for most countries prices on energy products and basic foods are still controlled, though at a higher level, and thus their fiscal impact is diminished. Partial success is still a significant achievement, because any reduction in non-targeted subsidies frees up fiscal space for a more serious consideration of more cost-efficient social protection programmes in the future.

Economic growth policies

Growth in per capita income is the second most highly correlated factor with reductions in stunting in Table 17[7]. Certainly, the wealth of other correlates in Table 17 suggests that "growth is not enough". However, many researchers have found that economic growth, particularly when it is pro-poor, is an important factor correlated with stunting reduction (Heady, 2013; Biadgilign *et al.*, 2016). Moreover, public health, public education and social protection all require expanding government budgets for social spending, and this is most likely with economic expansion.

FIGURE 5
Prevalence of undernourishment and GDP per capita (in 2005 USD) in NENA countries, 1999–2001 to 2014–16



Note: GDP per capita data refers to the midpoint of each three-year average. Source: FAO, 2017b, and UNSD, 2017.

[7] The relationship between economic growth and nutrition outcomes has been a subject of controversy in the literature. Biadgilign *et al.* (2016) found a strong correlation between the prevalence of early childhood undernutrition outcomes and real per capita income (PCI) in Ethiopia between 2000 and 2010. Heady (2013) pointed to a range of correlates of child malnutrition improvement in a study of 198 countries and Indian states. He found that economic growth is a strong predictor of nutritional performance, as is growth in food production, although only in more food-insecure countries. However, other studies have found little or no relationship between per capita income growth and nutritional outcomes. Vollmer *et al.* (2014) found a quantitatively very small to null association between increases in per-head GDP and reductions in early childhood undernutrition in 36 low-income and middle-income countries. Subramanian *et al.* (2015) found that economic growth had little to no impact on child underweight in Indian states between 1992 and 2005.

The NENA region experienced almost a decade of consistently high growth of GDP per capita of over 4 percent (2000–08), which led to a decline in poverty rates and improvements in undernourishment (World Bank, 2015; Devarajan and Mottaghi, 2014) (Figure 5). However, since 2008 there has been a slowdown in growth in the region, which worsened after 2010 and further after 2013 (Table 19). Lower growth can impact child malnutrition through the reduction of government expenditures on programmes supporting vaccination coverage and improved water infrastructure as well as on maternal and infant healthcare. Thus, a reduction in economic growth and accompanying government expenditures on health and infrastructure services may slow progress in the reduction of stunting in the region.

The current slowdown in economic growth in NENA can be traced back to a series of economic difficulties, beginning with the food price crisis of 2008, followed by the worldwide financial crisis of 2009, which were followed by a series of popular uprisings that spread through Arab countries starting in late 2010 and a sharp decline in oil prices after 2013 (Khan, 2014; World Bank, 2015). Violence in the Arab Spring countries caused a decline of tourism and investment flows, and GDP growth fell in oil exporters due to a sharp decline in oil prices after 2013. The growth slowdown has turned trade and current account balances negative, even in GCC countries, while leading to increased inflation in oil importers.

TABLE 19
GDP per capita, annual growth rates in NENA countries, 2000–15

	2000 – 08	2008 –10	2010 –13	2013 –15
NENA region	4.19	0.71	0.80	0.49
Conflict countries	3.29	2.43	-2.13	-1.32
Spillover countries	2.71	3.45	-2.32	-1.60
L-M Income countries (WB)	2.69	2.84	-1.28	-0.16
Mashreq	1.76	3.38	1.77	-2.14
Maghreb	3.68	1.37	-2.24	0.14
GCC	1.03	-3.08	2.43	0.82

Source: UNSD, 2017.

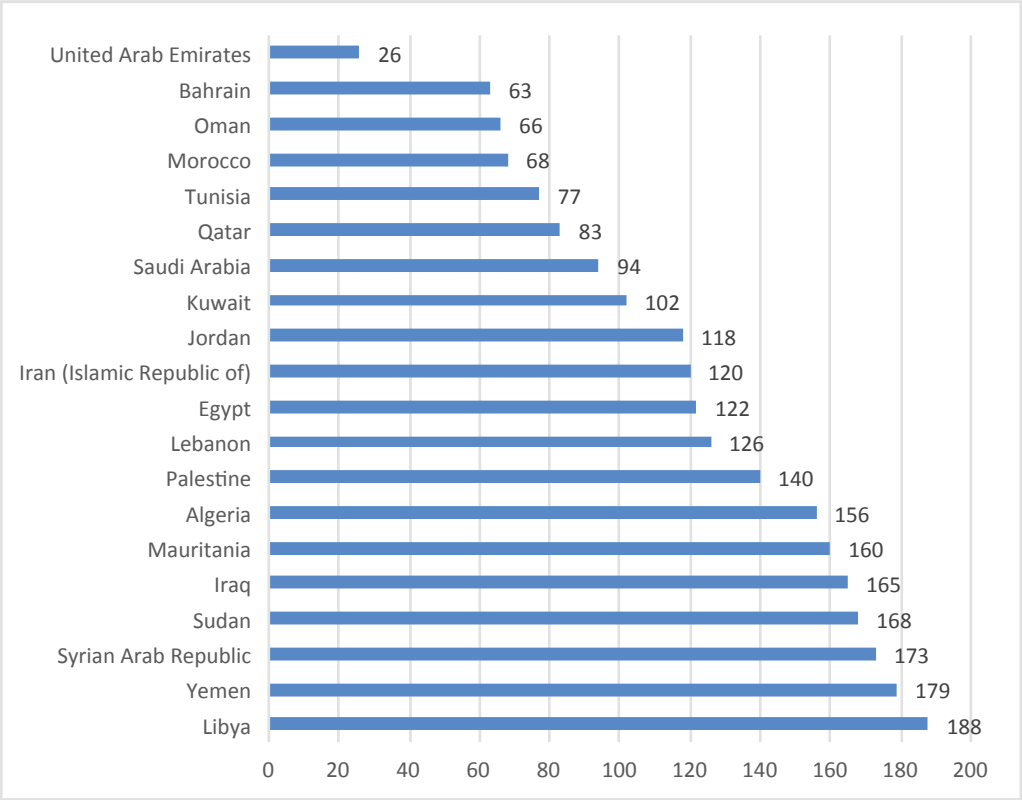
Several NENA countries undertook short-term fiscal stimulus aimed at reducing social tensions, combined with reform to arrest the decline in their economic growth. However, these efforts often exacerbated short-term economic problems while failing to address the underlying structural weaknesses of the NENA economies, which include large public sectors, a poor environment for private business, regressive and inefficient subsidies and inadequate social safety nets (World Bank, 2014b).

Egypt exemplifies many of the difficulties faced by the Arab Spring countries. Its initial efforts at stimulating growth were through public investment and public-sector wage increases. In 2013 and 2014, the Government of Egypt channelled USD 8.7 billion in foreign aid (from Saudi Arabia, Kuwait and the United Arab Emirates) and savings towards public investment and public-sector wage increases. This programme was intended to lift growth and reduce the fiscal deficit by the end of June 2014, and was incorporated into Egypt's 2022 vision that targets medium-term sustainable inclusive growth via investing in human capital, especially education, as well as training, healthcare and technology, with foreseen growth of 5–7 percent. Yet real GDP growth lingered at around 2 percent, curbed by much lower than planned domestic and foreign investment.The expansionary fiscal policy, which included soaring expenditures on fuel and food subsidies (reaching 9 percent of GDP or 30 percent of government expenditures) and rising domestic debt, led to a record fiscal deficit of 13.7 percent of GDP in 2013 (World Bank, 2014a).

Foreign aid from the Gulf countries in 2014, valued at 4.8 percent of Egypt's GDP, provided fiscal support, but reforms planned for 2015 aimed at limiting energy subsidies, containing the growth of civil servants' wage bill. The introduction of new taxes (including a value-added tax (VAT)) and fuel-price increases were postponed to 2016 and then only partially applied. Key interest rates were raised to control inflation and prevent further currency depreciation. However, the parallel exchange rate surged and liquidity soared due to uninterrupted credit flow to the government. Support from GCC countries came to a halt after 2014 (World Bank, 2014a).

The Egyptian government then turned to the International Monetary Fund (IMF), signing a three-year Extended-Fund Facility in mid-November 2016. The purpose of the loan was to provide support for the Egyptian government's reform programme, which included liberalisation of the exchange rate, the devaluation of the Egyptian pound, reductions in energy and food subsidies, the introduction of a VAT and increases in taxes and government-regulated prices for fuels and electricity. According to the programme, as the budget deficit shrinks, investor confidence is expected to grow and domestic and foreign investment is projected to increase. Increased investment by the private sector is then expected to stimulate further growth (Hadid, 2016).

FIGURE 6
World Bank doing business ranking (1–190), NENA countries, 2016



Source: World Bank, 2017b.

The Egyptian reforms clearly illustrate the difficulties of economic transformation in the NENA countries. In one sense, the fiscal reforms of the past few years have been successful in addressing some of the policy distortions, such as fuel and food subsidies and artificial exchange rates. On the other hand, they have yet to deal robustly with some of the underlying structural weaknesses of NENA economies, such as a poor business environment (Figure 6). Two-thirds of NENA economies are in the bottom half of the World Bank Doing Business Index ranking, and only one country (the United Arab Emirates) has a business environment comparable to OECD countries.

Notwithstanding the difficulties, reform is not impossible in the region. The GCC economies as well as Morocco and Tunisia have consistently shown the best business environment in the region since 2010. Moreover, Morocco and Mauritania significantly improved their business environment between 2010 and 2017 (World Bank, 2017a: DTF scores from 2010 to 2017).

Among the Arab Spring countries, Morocco has stood out for its ability to maintain growth and narrow current account and fiscal imbalances, while steadily improving the business climate and exports since 2011 (Table 20). While growth can be partly attributed to the fall in oil prices, the Moroccan government has also embarked on a sustained programme of fiscal tightening and revenue enhancements since 2013, leading to continuous declines in the fiscal deficit. As part of fiscal tightening, subsidies were brought down from 6.5 percent of GDP in 2012 to 3.5 percent in 2014 and 1.4 percent in 2015. The government cut subsidies for gasoline and fuel oil in 2014 and eliminated subsidies for diesel in January 2015 (though subsidies for butane remain). Moreover, sugar subsidies are also slated for elimination as well (Oxford Business Group, 2017).

TABLE 20
Moroccan economic indicators, 2010–17

	2010	2011	2012	2013	2014	2015	2016	2017*
GDP growth (%)	3.8	5.2	3.0	4.5	2.6	4.51	1.5	4.4
Current account balance (% of GDP)	-4.4	-7.6	-9.3	-7.6	-5.7	-2.2	-3.9	-2.6
Fiscal balance (% of GDP)				-5.2	-4.9	-4.4	-3.5	-3.0
Inflation (%)	8	9.1	10.5	12.6	13.1	14.8	16.6	18.0
Change in World Bank ' doing business' distance to frontier score from previous year (%)**		-0.96	5.55	-0.87	2.48	-0.26	2.51	2.55

*IMF forecasts. **Negative value indicates an improvement. Sources: IMF, 2017; World Bank, 2017a.

Beyond fiscal policies, Morocco has focused on developing trade with its largest trading and investment partner, the European Union. The European Union - Morocco Association Agreement established a free-trade agreement between the two regions in 2000. The Free Trade Area (FTA) established the following (European Commission, 2017):

- tariff-free trade of industrial products, and selective liberalisation of trade in agricultural, agro-food and fisheries products;
- rules and disciplines on non-tariff-based trade measures;
- a general right to establish businesses and provide services in the other territory;
- current payments and capital movements; and
- common rules on competition and intellectual property.

The European Union and Moroccan Government further developed their FTA with an agreement on trade in agricultural, agro-food and fisheries products and a protocol establishing a bilateral dispute settlement mechanism, both of which entered into force in 2012 (European Commission, 2017). Moroccan exports to the European Union have been growing steadily since 2009 and in 2016 were dominated by machinery and transport equipment (40 percent), manufactured articles (23 percent) and food and live animals (21 percent) (European Commission, Directorate General for Trade, 2017). Machinery exports included automobiles, aeronautics and electronics. The Moroccan fiscal reforms and attention to business environment and trade policies illustrate the kind of policy improvements that can ensure continued growth in GDP, ensuring growing incomes for the population.

Maternal and childhood nutrition and public health policies

Along with food fortification and supplementation (Box 3), maternal and childhood nutrition and public health initiatives are the policies most commonly associated with efforts at reducing child undernutrition and improving childhood health. Table 17 illustrates that such interventions are correlated with improvements in childhood stunting and undernourishment. Stunting is a result of delayed growth in infants and young children, due to inadequate or poor-quality dietary intakes and infectious disease, which reduce appetite, increase metabolic requirements and nutrient loss (Caulfield *et al.*, 2006). Table 17 highlights many policies and programmes that are correlated with stunting reduction, such as feeding healthy children optimal diets, maternal literacy and education, immunisation coverage and better water and sanitary conditions. This is not an exhaustive list of interventions with a proven record of stunting and undernourishment reduction. However, it gives an idea of the breadth of interventions that are important in achieving SDG Targets 2.1 and 2.2 – from infant feeding to girls' education and public health to water quality.

Breastfeeding

WHO and UNICEF recommend early initiation of breastfeeding within one hour of birth, exclusive breastfeeding for the first six months of life, with continued breastfeeding up to 2 years of age or beyond, accompanied by solid foods (WHO, 2016). Table 17 showed an inverse relationship between changes in the portion of infants exclusively breastfed for the first six months and reductions in stunting rates for children under 5 years old. Thus, stunting rates have fallen more sharply for those countries where breastfeeding rates have increased.

The correlations in Table 17 are supported by research on the beneficial effects of breastfeeding on infant well-being (Box 4). Despite WHO recommendations based on this scientific evidence, breastfeeding rates are low throughout the developing world. World Bank data from 2012 show exclusive breastfeeding rates for the first six months of an infant's life of 31.1 percent for the Arab countries, 32.7 percent for the Middle East and North Africa region, 30.5 percent for East Asia and the Pacific, 35.1 percent in Latin America and the Caribbean and 40 percent in sub-Saharan Africa (World Bank, 2017d). The NENA region, therefore, is not alone in having low rates of exclusive breastfeeding for the first six months of life.

The reasons for low rates of breastfeeding in the NENA region are like those in other countries. Though far less healthy for the child, breast-milk substitutes are more convenient, and workplaces, hospitals, families and societies often do not provide a supportive environment for breastfeeding. Studies on breast feeding from the NENA region (Abuidhail *et al.*, 2014; Hamade *et al.*, 2014) mention further factors, such as a desire to shorten the period between pregnancies; returning to work and the accompanying embarrassment of breastfeeding; health problems of both the mother and infant; the husband discouraging breastfeeding; lack of nurseries at the workplace and difficulties in taking time off for breastfeeding at work. Hamade *et al.* (2014) also note that the attitude of the mother, often formed in childhood, is critical for the decision of whether and for how long to breastfeed.

BOX 4
Benefits of breastfeeding

- Based on meta-analyses on the associations between breastfeeding and outcomes in children and mothers, children who are breastfed for longer periods have both lower morbidity and mortality from infections compared to those who are breastfed for shorter periods of time or not breastfed.
- Breastfeeding has been associated with higher performance in intelligence tests in children and adolescents based on observational studies that controlled for several confounding factors including home stimulation.
- Some evidence suggests that breastfeeding may protect against overweight and diabetes later in life.
- Breastfeeding can benefit mothers as well by preventing breast cancer, improving birth spacing and reducing the risk of diabetes and ovarian cancer.
- Human breastmilk can act as a personalised medicine. A mother's breastmilk transfers components of her own microbiome and immunity protection, and also provides certain prebiotics to support growth of beneficial bacteria.

Victora *et al.*, 2016.

To overcome the barriers to breastfeeding, studies from Jordan (Abuidhail ***et al.***, 2014) and Lebanon and the Syrian Arab Republic (Hamade ***et al.***, 2014) recommend prenatal education and counselling, as well as professional lactation support to build breastfeeding skills and provision of peer lay support (mother to mother). Rollins ***et al.*** (2016) note that these types of interventions at the levels of health systems and services, family and community, and workplace and employment have been shown to be effective in raising the rate of exclusive breastfeeding.

NENA countries have implemented policies to increase the rate of exclusive breastfeeding in an effort to improve infant nutrition and health. Most countries of the region have maternal, infant and young child nutrition programmes, which include breastfeeding promotion (Table 15). Many countries in the region have endorsed the International Code of Marketing for Breast-Milk Substitutes,[8] and nearly all countries in the region have integrated maternity leave protection into their labour laws. Finally, the United Arab Emirates has passed a law requiring mothers to breastfeed their children until they are 2 years old (Graham-Harrison, 2014). However, countries in the NENA region could do more by promoting breastfeeding -friendly conditions at work, making access to prenatal andpostnatal counselling easier for mothers, disseminating information on the benefits of breastfeeding through community institutions and endorsing the International Code of Marketing for Breast-Milk Substitutes.

[8] Baby formula companies were severely criticised for the way they advertised and promoted their products in the 1970s, which to critics seemed to present the formula vs. breast milk issue as a "lifestyle choice", despite scientific evidence to the contrary. In response to these concerns, in 1981 the World Health Assembly adopted an International Code of Marketing of Breast-Milk Substitutes which calls for healthcare workers to provide clear information on the benefits of breastfeeding to mothers and an end to the practice of promoting breast milk substitutes to the public and to healthcare workers (Chung, 2016).

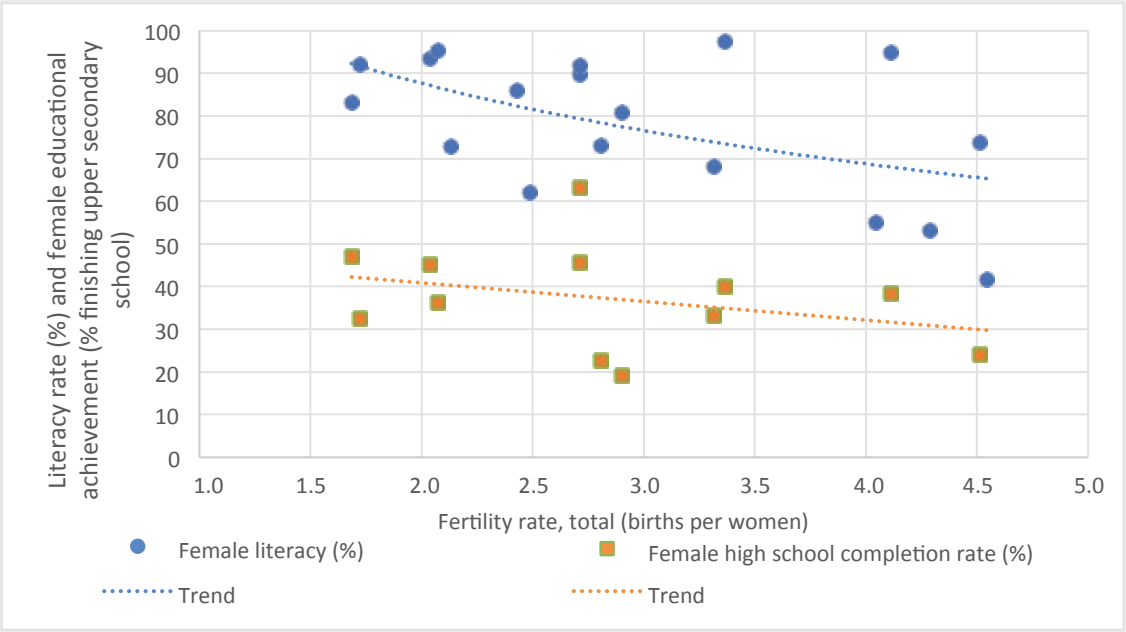
Fertility rate

Table 17 also showed a positive relationship between changes in the total fertility rate in the NENA countries and that of stunting rates for children under 5 years old. In those countries where fertility rates have declined in the region more sharply, stunting rates have fallen more sharply as well.

The total fertility rate is defined as the number of children who would be born per woman if she were to pass through the childbearing years bearing children according to a current schedule of age-specific fertility rates. Fertility rates in the NENA region have been falling steadily at a rate of about 2.5 percent per year over the past 25 years, along with stunting rates. The fall in fertility rates is part of the demographic transition from a high death rate / high birth rate regime to lower death rates and lower birth rates, and is typically associated with improved economic and health conditions as well as an increase in women's status and education and access to contraception.

In the NENA region, falling fertility rates are correlated with increases in women's literacy and education levels (Figure 7). Thus, Table 17 provides evidence consistent with the hypothesis that improving women's education can improve child nutrition outcomes through reductions in the fertility rate. A plausible connection between stunting reduction and the fertility rate is not difficult to imagine. The less children born to each mother, the more care and resources each of the offspring can receive.

FIGURE 7
Fertility rate correlates: female literacy and completion of high school in NENA countries, 2007–15



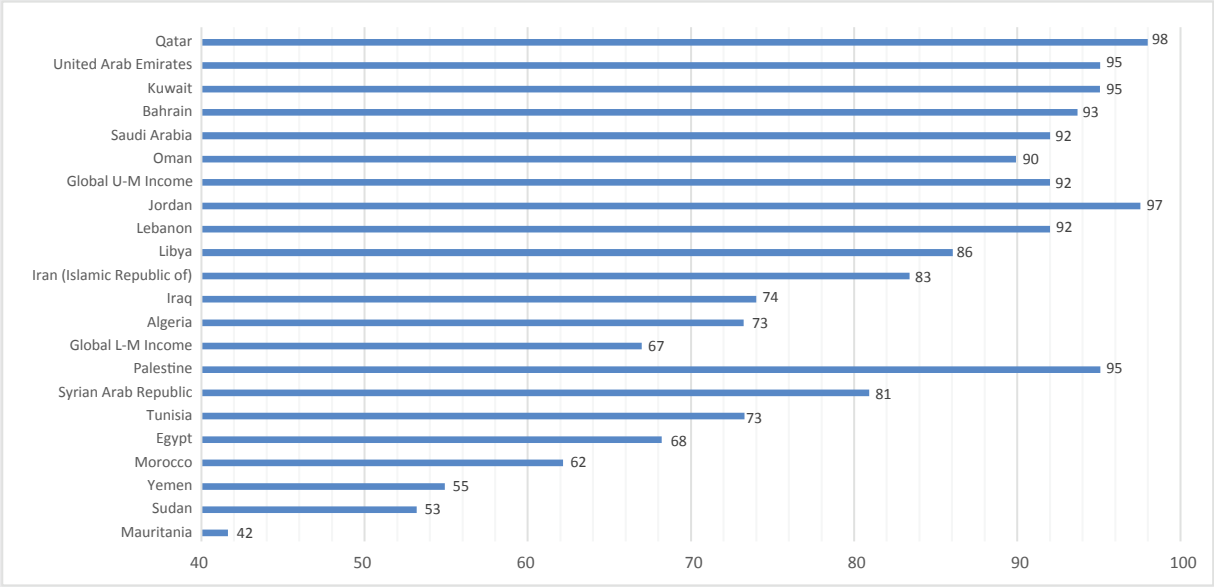
Source: World Bank, 2017d.

Female literacy rates in many NENA countries lag behind those in the rest of the world, and the literacy rates of women are far below those of men for most countries, save the high-income GCC countries. The horizontal bar graph in Figure 8 shows the literacy rates in 2015 of all adult females 15 years old and above in the NENA countries, as well as in all L-M Income and U-M Income countries. The data labels at the end of the bars show the ratio of female to male literacy rates in each country. For example, in Yemen 55 percent of females were literate in 2015, while the corresponding figure in Mauritania was 42 percent. Moreover, female literacy rates in these two countries were only two-third of those of males.

According to the current World Bank classification, the average female literacy rate for all L-M Income countries was 67 percent, while the ratio of female to male rates was 0.83. With the exceptions of Yemen, Mauritania, the Sudan and Morocco, NENA L-M Income countries had female literacy rates equal to or higher than the global L-M Income average, with similar or better female to male ratios. The picture is quite a bit different for U-M Income countries in the NENA region. Except for the two Levant countries (Lebanon and Jordan), none of the U-M Income countries of the region have female literacy rates like the world average, and female to male literacy ratios are similarly lagging. Only the high-income GCC states have nearly equal female and male literacy rates as well as high literacy rates overall.

Figure 8 indicates that, except for the high-income GCC countries, progress in female literacy is needed in all NENA countries. However, it is the very poorest and the U-M Income countries (save the Levant countries) that lag behind their comparators in the rest of the world, e.g. Libya, Iran (Islamic Republic of), Iraq and Algeria.

FIGURE 8
Female literacy rates and ratio of female to male literacy in NENA countries, 2015



Source: World Bank, 2017d.

Early childhood public health

Public health improvements, represented by the percentage of DTP3 immunisation coverage among 1 year olds and the portion of the population using improved sanitation facilities, are moderately correlated with the reduction of undernourishment in Table 17. Undernutrition is believed to result from poor infant nutrition, repeated infections, maternal health and nutrition, water quality and related factors. Thus, full immunisation mitigates one of the risk factors. In addition, live attenuated vaccines, such as Bacillus Calmette-Guérin (BCG), measles and diphtheria pertussis-tetanus (DPT), have beneficial effects reaching beyond the specific target pathogen.

If administered early, they increase immune response and protect against unrelated pathogens. Berendsen *et al.* (2016) found that early administration of vaccinations diminished the probability of stunting in sub-Saharan African countries between 1998 and 2014 that included vaccinations and height-for-age measurement. Anekwe and Kumar (2012) found that full immunisation under India's childhood vaccination programme increased both height for age and weight for age among children less than 4 years old. Full vaccination of children led to a 22–25 percent reduction in the height-for-age deficit and a 15 percent reduction in the weight-for-age deficit of the average child.

TABLE 21
Immunisation coverage for children in NENA countries, 2015

	Immunisation of children, % coverage in 2015 for						Coverage Change
	TB	DTP	Hep B, 3 doses	Hem Inf B, 3 doses	Measles, 2 doses	Polio, 3 doses	2010=100 (average for 6 types)
	12 mos.	12–23 mos.	12 mos.	12–23 mos.	12–23 mos.	12 mos.	
L-M Income (global)	**84**	**81**	**81**	**65**	**79**	**82**	111
Yemen	47	69	69	69	67	63	91
Mauritania	85	73	73	73	70	67	113
Syrian Arab Republic	66	41	41	41	53	50	57
Sudan	88	93	93	93	87	93	108
Morocco	99	99	99	99	99	99	100
Egypt	96	93	93	93	92	93	97
Tunisia	97	98	98	98	98	98	121
U-M Income (global)	**97**	**94**	**94**	**nd**	**95**	**95**	99
Algeria	99	95	95	95	95	95	100
Iran (Islamic Republic of)	99	98	98	98	98	98	100
Iraq	95	58	56	58	57	63	97
Jordan	98	99	99	99	94	99	101
Libya	99	94	94	94	93	94	96
Lebanon	81	81	81	79	75		100
High Income (global)	**nd**	**nd**	**nd**	**nd**	**nd**	**nd**	
Bahrain	..	98	98	98	99	98	99
Kuwait	99	99	99	99	93	99	100
Oman	99	99	99	99	99	99	100
Qatar	97	99	99	99	99	99	101
Saudi Arabia	98	98	98	98	98	97	100
United Arab Emirates	96	94	94	94	94	94	100

Note: TB=tuberculosis; DTP=diphtheria/pertussis/tetanus; Hep B=hepatitis B; Hem inf B=Hemophilus influenza B.
Source: WHO, 2017b.

The NENA region is populated by many countries with high rates of immunisation coverage and a few countries with lower than expected coverage for their income class (Table 21). Among L-M Income countries, Yemen, Mauritania and the Syrian Arab Republic have lower coverage than the world average. Among U-M Income countries, Iraq and Lebanon have lower coverage than their counterparts in the rest of the world. Though the level of vaccination coverage in these five countries is relatively low, the situation in the Syrian Arab Republic, Iraq and Yemen is perhaps more worrisome, because, in addition to low levels of vaccination coverage, they show a contraction in coverage in the past five years. Conversely, Mauritania has shown remarkable improvements in vaccination coverage in the past five years.

Improved sanitation facilities are part of the larger area of interventions of water, sanitation and health (WASH). Water and sanitation improvements affect undernutrition through biological (diarrhoea, soil-transmitted helminth infections and a subclinical condition of the gut, environmental enteric dysfunction) and socio-economic mechanisms (cost of bottled water and time spent gathering from a distant well) (Cumming and Cairncross, 2016). Poor water and sanitation has been associated with increased risk of infections in children, which cause sickness, dehydration, reduced appetite, increased metabolic requirements and nutrient loss. In a study of 25 483 children aged 6–72 months from rural parts of the Sudan, Merchant *et al.* (2003) found that children stunted at the beginning of their 18-month study had a 17 percent greater chance of reversing stunting if they came from households with both improved water and sanitation facilities, compared to children from households without either. Merchant *et al.* (2003) adjusted their results to compensate for confounding factors, such as the age of the child, the mother's literacy, family wealth and other issues in order to isolate the effects of water and sanitation facilities.

TABLE 22
Population using improved water and sanitation facilities in NENA countries, 1990, 2000 and 2015 (%)

	Population using improved drinking-water sources (%)			Population using improved sanitation facilities (%)		
Country	1990	2000	2015	1990	2000	2015
L-M Income (global)	69.5	78.0	89.2	29.0	39.6	52.2
Yemen	66.3	59.9	54.9*	23.7	39.4	53.3*
Mauritania	29.1	42.0	57.9	15.6	23.7	40
Syrian Arab Republic	85.7	87.5	90.1	84.5	88.6	95.7
Sudan	67.4	62.0	55.5**	26.8	25.4	23.6**
Morocco	72.6	78.3	85.4	52.4	64	76.7
Egypt	93.4	95.9	99.4	73.4	84.3	94.7
Tunisia	82.5	89.9	97.7	72.6	81.9	91.6
U-M Income (global)	76.1	85.1	95.5	58.6	67.4	80.3
Algeria	91.5	89.5	83.6	80.3	83.6	87.6
Iran (Islamic Republic of)	92.2	94.1	96.2	71.4	78.9	90.0
Iraq	78.3	80.4	86.6	71.8*****	75.3	85.6
Jordan	96.3	96.8	96.9	97.3	97.8	98.6
Libya	71.2	71.2		96.5	96.5	96.6
Lebanon	83.3***	85.7	99.0		82.7	80.7
High Income (global)	nd	nd	nd	nd	nd	nd
Bahrain	94.9	98.9	100	99.0	99.1	99.2
Kuwait	99.0	99.0	99	100	100	100
Oman	78.8	84.0	93.4	81.8	89	96.7
Qatar	98.7***	99.1	100	99.9	99.4	98.0
Saudi Arabia	92.0	95.0	97.0	91.5	96.8	100
United Arab Emirates	99.7	99.7	99.6	97.4	97.4	97.6

*2012, **2014, ***1994, ****1992, *****1991. Source: World Bank, 2017d.

A comparison of NENA countries with those in other regions in the same World Bank income category shows that many countries of the region are underperforming versus their comparators in other regions on improved water access, while overperforming on sanitation (Table 22). Thus, access to improved drinking water seems to be the more critical issue in the region. Algeria, Iraq, Libya, the Sudan, Yemen, Mauritania and Morocco are ranked behind the world average in their income category for access to improved drinking water sources, while only Mauritania and the Sudan underperform on sanitation access.

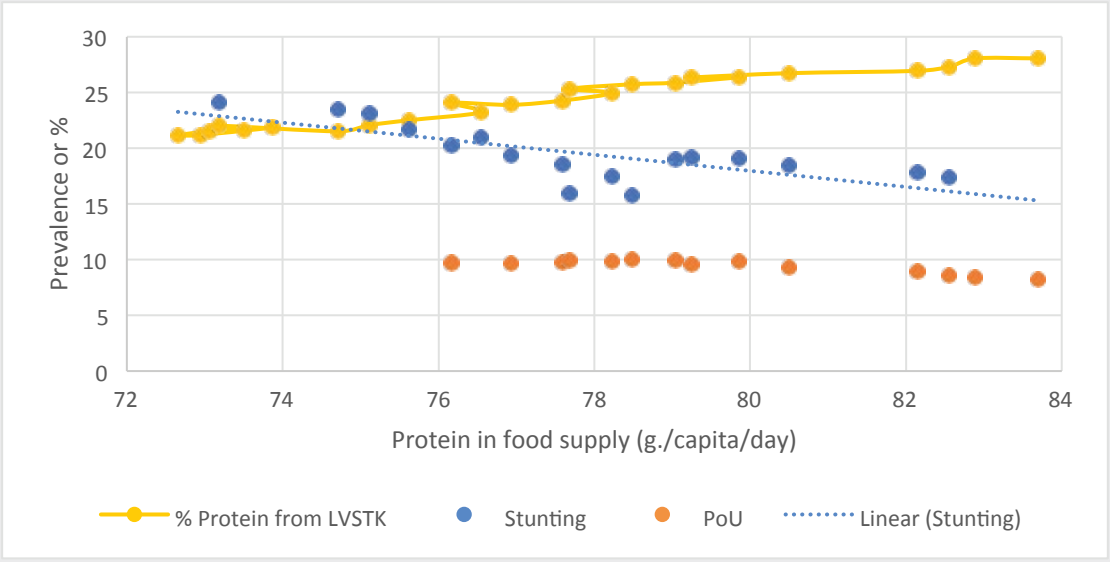
Food supply policies

Table 17 showed that increases in protein in the food supply are correlated with a reduction of both the PoU and stunting. Figure 9 shows how stunting, PoU and the calories per person vary as the quantity of protein in the food supply increases in NENA countries, based on average time-series values for the NENA region from 1990 to 2013.

The observed decrease in stunting that is correlated with increases in protein availability is particularly large. For every 10 percent increase in protein, stunting is reduced in the population by 7.2 percent. Figure 9 also shows the percentage of protein sourced from livestock products as protein increases in the food supply. An increase in the average availability of protein in the food supply per person per day is normally associated with an increase in livestock-sourced products, such as dairy, meat and offal, as per capita incomes increase.

The protein results are consistent with recent nutrition research showing that stunted children suffer from inadequate protein and amino acid intake (Semba *et al.*, 2016; Uauy *et al.*, 2016). Earlier research by Esfarjani *et al.* (2013) in first graders in Tehran found that households that consumed a "carbohydrate-protein pattern diet" tended to have lower stunting, compared to households that consumed a more traditional or mixed diet. The authors conclude that "adherence to dietary patterns high in protein (e.g. dairy, legumes, and meat products) and carbohydrates (e.g. fruits, sweets, and desserts) might be associated with reduced odds of being stunted among children" (Esfarjani *et al.*, 2013).

FIGURE 9
Protein in food supply, undernourishment and stunting, NENA countries, 1990–2013

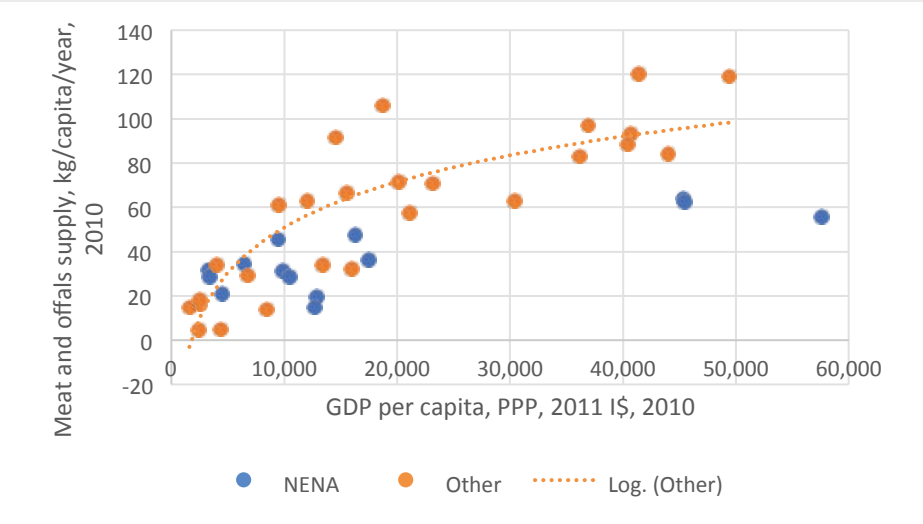


Sources: FAO, 2017b; UNICEF-WHO-World Bank, 2017.

The evidence presented here would seem to argue for the adoption of a higher protein diet in the NENA countries to reduce stunting and undernourishment. Some protein-rich foods are red meat, poultry, fish, eggs and dairy, quinoa and soy products. Meat and offal supply in the NENA countries is below average compared with other countries in the world with similar incomes per capita (Figure 10). This suggests that there is scope for higher meat consumption in the diet of NENA countries. Actual consumption of the type of protein will, of course, vary by country-specific preferences.

These surprising results on 'undersupply' of meat and offal are confirmed by figures on the nature of the diet. Compared to other regions, the average diet in the NENA region is currently highly vegetal. The portion of calories per capita derived from animal products for the region averaged only 13 percent from 2010–13, while for the entire world the portion of calories derived from animal products was 18 percent. The lower animal product consumption was despite the fact that NENA GDP per capita in this period was 24 percent higher in Purchasing Power Parity (PPP) terms than the world average, which would normally lead one to assume ***higher*** animal product consumption.

FIGURE 10
Meat and offal food supply and GDP per capita, 2010: NENA and other countries



Note: "Meat" includes beef, veal, mutton, goat meat and poultry. Source: FAO, 2017b; IMF, 2017.

A diet higher in protein or red meat has its own dangers, as shown in two recent studies based on surveys from the United States. In a cohort study based on a 1995 baseline study with 16 years of follow-up data, Etemadi ***et al.*** (2017) found an increased risk of mortality and death from nine different causes associated with red meat intake. The effects of red meat on human health may be due to ingredients such as heme iron, nitrates and nitrites. Almost all causes of death were inversely associated with white meat intake. In another cohort study with 18 years of follow-up data, Levine ***et al.*** (2014) found that respondents aged 50–65 reporting high animal protein intake had a 75 percent increase in overall mortality and a four-fold increase in cancer death risk. Conversely, in respondents over 65, high protein intake was associated with reduced cancer and overall mortality. Across all ages, high animal protein intake was associated with a five-fold increase in diabetes mortality.

The "undersupply" of meat and offal for their income illustrates some of the complex trends in the NENA countries. Though, on average, the populations of these countries may experience an "undersupply" of meat and protein for their income class (Figure 10). These countries' higher-income populations may have a diet more similar to the United States and may thus consume more meat than is healthy. A prudent strategy for increasing protein and meat consumption in the region is to focus on white meat production such as fish and poultry.

PART 3

THE COSTS OF CONFLICT AND BUILDING PEACE IN THE NENA REGION

Conflicts and protracted crises are some of the main drivers of food insecurity and malnutrition in the NENA region. Conflicts have long-lasting impacts on all dimensions of people's lives, on economic development and on social cohesion that often trap affected countries in long-term protracted crises, where food insecurity, poverty, erosion of collective institutions and instability go hand-in-hand and tend to feed on one another.

Part III of the *Regional Overview* looks more closely into options to build resilience to mitigate impacts of conflicts on food security and on how this could contribute to the broader peace-building and reconstruction process. It begins with a general description of the costs of conflict in the region, both direct and spillover costs. It then provides examples of FAO interventions for building resilience in the region that can contribute to preventing the outbreak, continuation, escalation and recurrence of violent conflict.

Conflict in the NENA countries

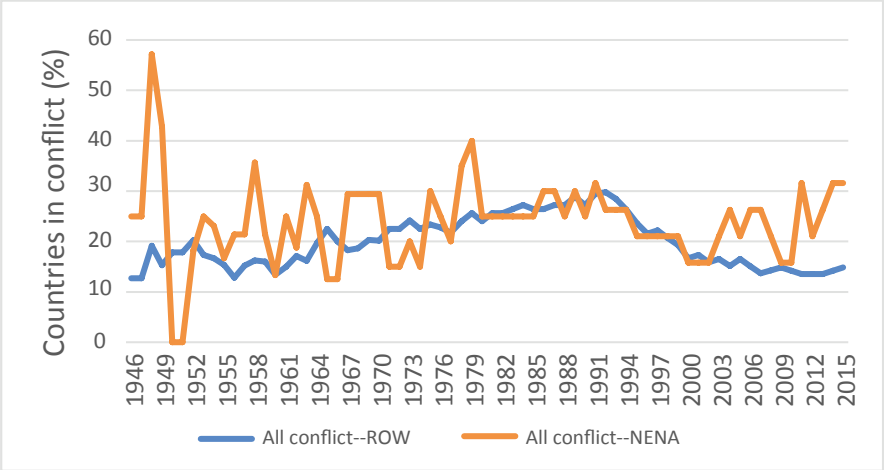
Even a thorough accounting of the direct costs of conflict does not convey the full costs of NENA conflict, which extend throughout the region and even the world. The world is facing the largest refugee crisis since World War II, due to conflicts in the NENA countries. Though the region itself is bearing the largest cost of supporting refugees (with Lebanon and Jordan at the forefront), Turkey, the European Union and other countries have also accepted large numbers of refugees from the conflict in the Syrian Arab Republic. Violence has spread from conflict countries to others in the region and even beyond, discouraging investment and tourism.

The growing spillover costs of conflict in the region have stimulated strategic thinking on how to mitigate them. The continuing spread of violence and the refugee crisis threaten growth and stability of not only the region but of much of the world. This has led the World Bank, the IMF and the UN to recognise the global public good nature of peace in the NENA region (Rother *et al.*, 2016; Devarajan, 2016; UN Peacebuilding Support Office, 2017). "Peacebuilding" or "sustaining peace" – defined as "activities aimed at preventing the outbreak, escalation, continuation and recurrence of conflict" – is now acknowledged by both UN and the Bretton Woods institutions as a shared responsibility that should be integrated into all assistance at all stages of engagement by the international community.

Despite sharing the worldwide general pattern in the decrease in the frequency of conflicts since the end of the Cold War, the NENA region has experienced conflicts more frequently than the rest of the world (ROW) during most of the post-WWII period (Figure 11)[9]. The current upsurge in the frequency (Figures 11 and 12) and intensity (Figure 13) of civil violence in the NENA region is unprecedented, with one-third of NENA countries affected in one way or another. This is particularly true after 2010, when the frequency of interstate conflict fell to nearly zero, supplanted completely by civil unrest and internal violence (Figures 11 and 12).

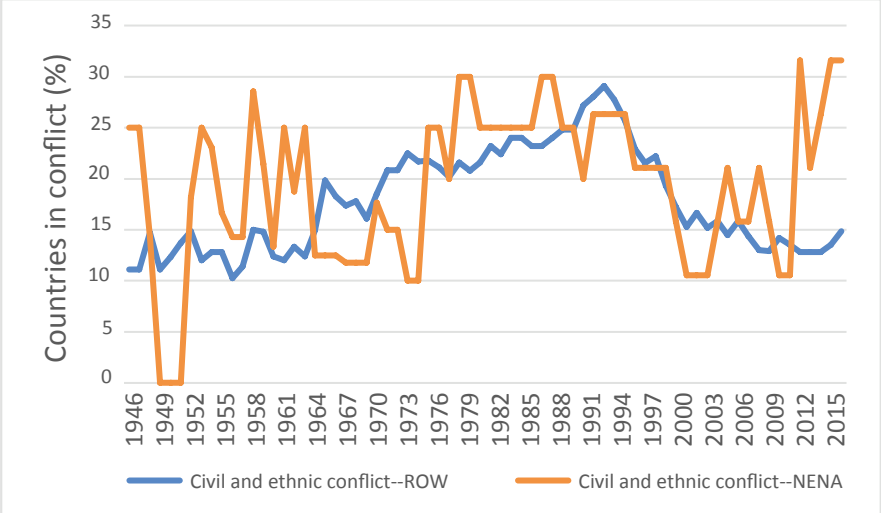
[9] The Center for Systemic Peace MEPV database (2017) contains two main time series that trace the severity of conflict since WWII: conflict between states (interstate conflict) and non-state (civil or ethnic) conflict. The all-conflict time series is the sum of the interstate and non-state conflict series.

FIGURE 11
Frequency of all conflict in NENA and ROW, 1946–2015



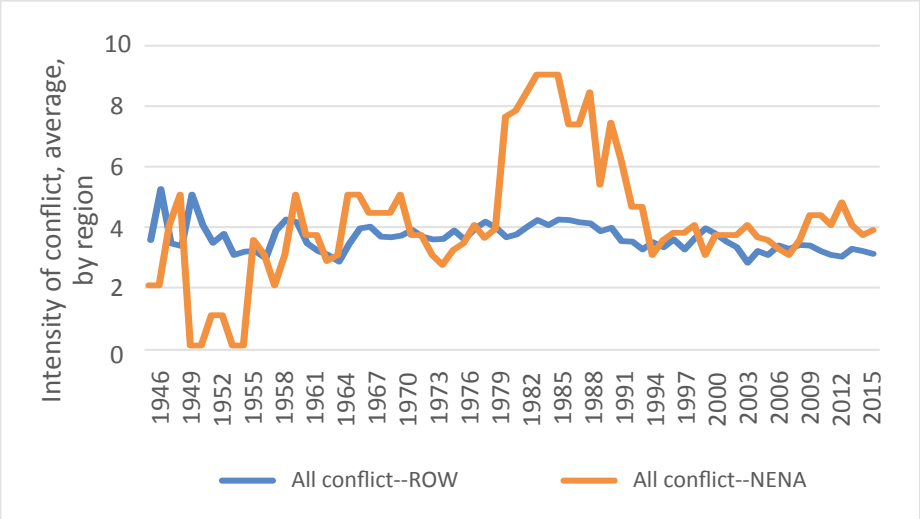
Source: Center for Systemic Peace, 2017.

FIGURE 12
Frequency of civil conflict in NENA and ROW, 1946–2015



Source: Center for Systemic Peace, 2017.

FIGURE 13
Average intensity of conflict, by region, 1946–2015



Source: Center for Systemic Peace, 2017.

The costs of conflict: humanitarian crises

Bare figures are not adequately able to illustrate the costs of the humanitarian disaster caused by conflict in the region. However, some of the costs of conflict – deaths, population displacement, the direct costs of violence, the deterioration of societal safety and security and the increase in state fragility – can be described in the figures in Tables 23 and 24 below.

TABLE 23
Battle-related and conflict-related deaths in selected NENA countries

	Battle-related deaths	Years	Conflict-related deaths*	Years	Conflict-related deaths as percent of 2010 population (%)
Iraq	50 527	2003–15	460 000	2003–11	1.5
Libya	2 527	2011–15	15 371	15.II.2011–29.XII.2016	0.2
Sudan	6 634	2010–15	26 467	2011–16	0.1
Syrian Arab Republic	169 602	2011–15	465 000	15.II.2011–13.III. 2017	2.3
Yemen	12 412	2011–15	10 000	2014–15	0.0

Sources: World Bank, 2017d (battle-related deaths); conflict-related deaths: Hagopian *et al.*, 2013 (Iraq); SOHR, 2017 (the Syrian Arab Republic); AP, 2017 (Yemen); ACLED, 2017 (Libya and the Sudan). *Conflict-related deaths include (in addition to battle deaths) deaths from war-related sickness, injury and violence off the battlefield.

Violence in five countries of the region has led to the largest number of displaced people since WWII, nearly 40 percent of this total originating from just five NENA countries. The number of displaced persons due to conflict in the NENA countries is staggering (Table 24). According to UNHCR, as of mid-2016, the total number of registered displaced persons in the world reached an all-time high of 67.6 million. Only five countries of the NENA region accounted for 37 percent of this total, nearly 25 million. Over 60 percent of the pre-war population of the Syrian Arab Republic has been internally displaced or has left the country as refugees, and over 10 percent of the populations of Iraq, Libya and Yemen have likewise been displaced. Within the region, Lebanon and Jordan have accepted the highest number of refugees, the overwhelming majority of them from the Syrian Arab Republic. In Lebanon, the number of refugees from the Syrian Arab Republic is particularly high, equal to nearly a quarter of the Lebanese pre-war population.

TABLE 24
Displaced persons in selected NENA countries, mid-year 2016

	Total displaced persons from the country	Internally displaced persons	Refugees originating from the country	Foreign refugees residing in country	Main source of foreign refugees	Total displaced persons as % of 2010 population	Total foreign refugees as % of 2010 population
Iraq	5 611 560	3 604 285	315 998	261 882	Syrian Arab Republic (88%)	18	1
Jordan	4 462		1 889	685 178	Syrian Arab Republic (95%)	0	11
Lebanon	13 190		4 709	1 012 954	Syrian Arab Republic (99%)	0	23
Libya	639 658	174 510	8 796	9 301	Palestine (58%)	10	0
Sudan	2 960 374	2 225 557	650 588	421 454	South Sudan (71%)	8	1
Syrian Arab Republic	12 643 046	6 325 978	5 524 333	19 797	Iraq (85%)	61	0
Yemen	3 033 400	2 025 060	18 396	269 763	Somalia (95%)	13	1
Egypt	32 905		19 742	213 500	Syrian Arab Republic (54%)	0	0.3

Source: UNHCR, 2017. Note: These figures include only displaced persons registered with UNHCR. They do not include refugees or IDPs not registered with UNHCR, nor do they include voluntary migrants.

Expenditures on violence in the five NENA conflict countries every year absorb more than the annual GDP of a medium-sized developed country. The Institute for Economics and Peace (IEP) has been estimating the global cost of violence each year since 2007. The "costs of violence" in a country are expenditures related to "containing, preventing and dealing with the consequences of violence". The calculations include 17 variables in three groups (security services and prevention-oriented costs, armed-conflict-related costs and the costs of interpersonal violence), reflecting both direct and indirect costs. Cost estimates are made in constant PPP international dollars to ensure comparability of estimates between countries. This is a relatively conservative estimate of the costs of violence.

According to the IEP, the NENA region bears the largest costs of violence in the world[10]. In the five states of the region in civil conflict, the costs of violence ranged from 21 to 67 percent of annual GDP in 2016. This means that 21 to 67 percent of the countries' GDPs were spent on perpetrating, containing, preventing and dealing with the consequences of violence, leaving less for other activities, such as nutrition, medical care, education and public services. These states are also some of the least safe and secure in the world, ranking last in the IEP societal safety and security index or near last out of 164 countries[11].

The Syrian Arab Republic and Iraq are ranked number one and two in the world on the cost of violence as a portion of GDP. Violence in the Syrian Arab Republic accounts for 67 percent of GDP, while in Iraq the figure is slightly lower at 58 percent. The Syrian Arab Republic, Iraq, Yemen and Libya are ranked in the top 10 percent of countries by cost of violence, while Saudi Arabia, the Sudan, Mauritania, Oman and Palestine are in the top 20 percent of countries worldwide. The costs of conflict in only five countries from the NENA region in 2016 (the Syrian Arab Republic, Iraq, Yemen, the Sudan and Libya) were larger than the annual GDP of Austria.

[10] See footnote 6. In 2017, NENA was also the least peaceful region in the world for the fifth consecutive year. Out of 163 countries reviewed, the Syrian Arab Republic ranked 163, Iraq 161, Yemen 159, Libya 157 and the Sudan 155 in the IEP Global Peace Index (IEP, 2017).

[11] The IEP societal safety and security index is a weighted average of indicators, each on a scale from 1 to 5. The index includes such indicators as the number of refugees and internally displaced people as a percentage of the population, the number of homicides per 100 000 people, qualitative estimates of the level of perceived criminality in society, political instability, the level of violent crime, the likelihood of violent demonstrations and others (IEP, 2017).

The figures on conflict-related deaths, displaced persons and on the costs of violence describe a series of humanitarian crises characterised by deteriorating physical infrastructure and government services, growing poverty and disease, food insecurity and dependence on humanitarian aid. Humanitarian Needs Assessments for the five countries in civil conflict indicate that 70 to 80 percent of the population of the Syrian Arab Republic and Yemen are in need of humanitarian assistance, while in Iraq, Libya and the Sudan 31, 20 and 12 percent of the population is in need, respectively. Fully half of the populations of the Syrian Arab Republic and Yemen need food assistance, while in Iraq, Libya and the Sudan the figures are 9, 6 and 9 percent, respectively (HCPT, 2016, the Sudan; HCPT, 2016, Iraq; HCPT, 2016, Libya; HCPT, 2017, the Syrian Arab Republic; HCPT, 2017, Yemen). Widespread poverty and water contamination by human waste, brought about by destruction of infrastructure from conflict, has allowed previously eradicated infectious diseases to return. Polio returned to the Syrian Arab Republic in October 2013, and 30 cases have been reported since then (WHO, 2017c). As of 28 August 2017, there have been 580 827 suspected cases of cholera in Yemen since 27 April 2017, with 2 028 deaths (WHO, 2017d).

Physical destruction and the enormous costs of war have severely degraded public services in the conflict countries, particularly for education and health systems, two main pillars of human development. In the Syrian Arab Republic, about one-third (1.75 million) of school-aged children are kept out of school, and one-third of schools have been damaged, destroyed or are used as collective shelters. In Yemen, about 2 million children are out of school, about 27 percent of the school-aged population. The healthcare system has also similarly regressed in all countries affected by conflicts in crises in the region.

Water and sanitation services have also been degraded by conflict, most severely in Yemen, where failing urban water and sanitation systems have contributed to a public health crisis with outbreaks of cholera, dengue and scabies in 2016. In Yemen, ensuring safe drinking water is the top priority for IDPs and the communities in which they live. Piped water systems in the Syrian Arab Republic have fared better, but up to 48 percent of respondents in a 2016 water, sanitation and hygiene (WASH) survey indicated that they now cover the majority of their water needs from other sources. Moreover, water is not inexpensive. In some areas, expenditures on water consume up to 20–25 percent of a family budget. In Iraq, up to 20 percent of the population requires WASH support in the form of emergency water supply and sanitation facilities. People in critical need are those in refugee and IDP camps, those living near these camps, people living in areas controlled by armed groups and people in conflict areas. According to a multi-sector needs assessment in June 2016, 54 percent of the Libyan population reported reduced access to clean water supplies. About half of the garbage in the country is improperly disposed, left in the street or burned. In eastern Libya, 63 percent of the population reported non-functioning sewer systems (HCPT, 2016, Iraq; HCPT, 2016, Libya; HCPT, 2017, the Syrian Arab Republic; HCPT, 2017, Yemen).

Building resilience for food security in conflict countries

The FAO resilience framework

The costs of conflict can create conditions prolonging conflict itself. Countries with higher costs of conflict have lower societal safety and security, lower levels of trust, higher levels of outmigration and higher state fragility. For these reasons, post-war conditions are often quite fragile, and 40 percent of conflict countries revert to conflict within a decade (FAO, 2017c). Preventing the repetition of the cycle of recurring conflict, accompanied by state fragility and low community trust, requires a resilience-centred approach to development assistance.

FAO defines resilience as the ability to prevent disasters and crises, and to anticipate, absorb, accommodate or recover from them in a timely, efficient and sustainable manner. This includes protecting, restoring and improving food and agricultural systems under threats that impact food and nutrition security, agriculture and/or food safety/public health (FAO, 2014).

A number of key factors can contribute to building resilience for food security and to mitigating impacts of shocks and stresses on households, communities and local institution (FAO, n.d.):

- income and access to food;
- assets such as land and livestock;
- social safety nets such as food assistance and social security;
- access to basic services such as water, healthcare, electricity, etc.;
- households' adaptive capacity, which is linked to education and diversity of income sources; and
- the stability of all these factors over time.

A resilience-centred approach to assistance recognises that the crises in Yemen, the Sudan, Libya, the Syrian Arab Republic and Iraq are not only humanitarian and political but also developmental, and the development needs of the population should be addressed simultaneously with other needs. Successes in the political and humanitarian spheres, if not accompanied by concrete improvements in state services and livelihoods, can create a dangerous gap whereby a lack of security, social services and deteriorating living conditions creates popular discontent that fuels further violence. The recognition of the dangers posed by a lack of progress in state services and livelihoods prompted the Government of Yemen to conclude a Mutual Accountability Framework (MAF) with its development partners at the Yemen Donor Conference in September 2012. The MAF called for attention to development goals, capacity building for state services, budget financing for the Social Welfare Fund, conditional cash transfers and improving the business climate. The MAF was to contribute towards the overarching goals set out by the Government of Yemen to restore political security and economic stability and enhance state building.

A resilience-centred approach to assistance in protracted conflict recognises that peacebuilding or "sustaining peace" should be built into assistance at all stages of conflict. According to *The State of Food Security and Nutrition in the World 2017* (FAO, 2017c), there is increasing recognition that sustaining peace is not only a post-conflict activity but should be a priority for assistance in countries before, during and after conflict. A variety of approaches are recognised through which support to livelihoods, food security and nutrition can help build resilience against conflict and contribute to sustaining peace before, during and after conflict situations. These methods build on four pillars for building resilience and reconstruction for sustaining peace: (1) livelihood support to promote (re-)engagement in productive economic activities, (2) community-based approaches to build social cohesion and trust, (3) institutional capacity building to improve governance and (4) rebuilding to address the long-term challenges of the region.

Livelihood support to promote (re-)engagement in productive economic activities

In Yemen, the Syrian Arab Republic, Iraq, the Sudan, Jordan and Lebanon, FAO supports a wide range of productive economic activities designed to increase the income and assets of vulnerable groups affected by conflicts while contributing to improving food security and nutrition.

Facilitating the social and economic integration of IDPs and refugees in Iraq, the Sudan, Jordan and Lebanon

In the Duhok and Erbil governorates of Iraq, FAO is supporting internally displaced persons and vulnerable host households to improve their livelihoods, nutrition and food security through vegetable production using greenhouses, backyard poultry, cottage industries and honey production. This project has strong focus on supporting the engagement of women in productive economic activities. In the eastern part of the Sudan, FAO is supporting refugees from Eritrea and Ethiopia and their host communities by strengthening the value chains of dairy, fodder and sheep fattening. In Darfur, FAO works with IDPs and host communities on water-harvesting projects used to produce improved seeds. In Yemen, FAO supports beekeeping and dairy value chains to improve livelihoods among conflict-affected communities while adding value to agriculture. In Jordan and Lebanon, FAO is working to improve the livelihoods and food security of vulnerable agriculture-based communities that are hosting refugees from the Syrian Arab Republic. By supporting these refugees and the communities into which they are integrating, FAO hopes to facilitate the social and economic inclusion and cohesion of the populations in these two host countries that are affected by the crisis in the Syrian Arab Republic.

Empowering war-affected female-headed households through agro-processing and marketing training

In the Syrian Arab Republic, ongoing conflict has led to an increase in the number of female-headed households as growing numbers of men become casualties, prisoners or combatants in the war. In the absence of men, women have had to assume additional responsibilities and heavier workloads. To help rural women support their families and improve household nutrition status, FAO is providing them with gender-sensitive capacity building for integrated homestead farming along with key production inputs. Trainings focus on agro-processing, produce marketing and nutrition-sensitive agriculture. The objective is to build resilience and enhance food and nutrition security by supporting and empowering crisis-affected women in the Syrian Arab Republic.

Enhancing smallholder livelihoods through training for high-value products

Another approach being implemented by FAO is value chain optimisation. Increased agricultural production alone is not a sufficient route out of poverty in the context of globalisation and increasing natural resource degradation. A focus on post-harvest activities, differentiated value-added products and increasing access to markets for commodities produced by low-income producers is a strategy aimed at supporting the improvement of smallholder livelihoods, despite the small size of their land plots. In Palestine, agriculture value chain development can be a source of economic growth and resilience by sustainably improving income and labour productivity in agribusiness. Pilot activities are being developed and implemented to develop the capacities of smallholder farmers and producer organisations in market-oriented crop diversification, use of modern production technologies, improved post-harvest and value-adding activities, application of quality and safety standards and accessing local and export markets.

Rebuilding war-damaged, communal infrastructure through cash for work for vulnerable populations

FAO's cash-based interventions in Iraq and Yemen have improved agriculture-related infrastructure and communal productive assets through offering cash for work related to cleaning of irrigation canals and rehabilitation of orchards while generating income for the most vulnerable groups affected by the conflict. In Iraq, for example, FAO is assisting families in the newly liberated governorates of Salah Al-Din, Kirkuk and Ninewa through a Cash for Work programme. The programme provides temporary employment for vulnerable women, men and youth in the rehabilitation and repair of damaged agriculture infrastructure such as water catchments, irrigation canals and river embankments. It strengthens resilience by concurrently responding to multiple needs: improved access to income and reduced dependence on food assistance, development of infrastructure and communal assets and rural income diversification.

Facilitated community-based approaches to build trust and support social cohesion

Facilitated community-based approaches have proved successful particularly when members of the communities are empowered to play a leading role in the programme.

Community-based trust building for women, youth and farmer community groups in the Syrian Arab Republic, the Sudan and Yemen

In the Syrian Arab Republic, FAO has supported women and youth groups in starting small-scale enterprises and businesses, while in the Sudan, FAO assists self-help groups of women, former combatants and homeless people in acquiring vocational skills to enhance their incomes. In Yemen, FAO is working to enhance rural resilience through combined activities at household and community levels with the aim of enhancing cereal and livestock value chains. In doing so, FAO supported the establishment of 85 Village Agriculture Producers' Groups that strengthen the role of producers themselves as focal points for the provision of extension services, farm inputs and veterinary services.

Peacebuilding through Voluntary Guidelines to settle land tenure disputes in the Sudan

Community cohesion is essential to creating and maintaining peace in conflicted-affected areas. It is especially important in areas like Darfur, the Sudan. Traditionally, land tenure in Darfur is based on production symbioses between farming and pastoral groups and shared access to land. Over time, social and economic changes have led to a shift in land use and control towards more exclusionary and competitive modalities. This tension has provided a bleak backdrop for the current political crisis in the area. To support peace-making efforts in Darfur, FAO has introduced training programmes for local community associations on the Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests (VGGT) as a first step in helping to re-establish community-based negotiation platforms. FAO is striving to reinstall peaceful negation structures to resolve land disputes though community-to-community dialogue as well as working with formal and government institutions to ensure sustainable land management in the Sudan.

Peacebuilding through water users' associations in Yemen

The potential for a conflict over water is perhaps at its most serious in the Near East, where water supplies are extremely limited, political tensions traditionally run high and water is just one of the issues that may divide countries and make cooperation difficult. Natural resource disputes are a chronic, debilitating reality for a great many Yemenis. Social violence over land and water in Yemen is a pervasive and self-perpetuating phenomenon that claims thousands of lives each year and severely inhibits social and economic development. While escalating political violence in Yemen is rapidly capturing international attention, more insidious land- and water-related social violence threatens to further weaken community cohesion and undermine stability. At the national level, collective land grievances are fuelling resentment in the south and calls for secession.

While mortality data is extremely limited, a recent internal Interior Ministry report estimated some 4 000 violent deaths annually due to water- and land-related disputes. These deaths are over and above the roughly 1 000 criminal homicides that are publicly reported. Elsewhere, conflict reduction specialists working for the Yemeni quasi-governmental Social Fund for Development (SFD) described an area in Sana'a governorate where land (and water) conflicts were resulting in around two armed violence deaths per week, despite efforts to curb violence through conflict-reduction training in the area. In addition to mortality and morbidity, violent land disputes – and associated revenge norms – result in potentially productive land remaining unused, the destruction of valuable crops and the delay or cancellation of new investments. Research on Yemen's coffee industry, for example, highlights the way that "multiple rights to the same piece of land" have served to limit investment and have even resulted in resource destruction such as tree cutting. Water disputes can lead to water supplies being impeded or even cut. Therefore, land and water conflicts are complex phenomena involving long-standing customs and are impacted by wide-ranging socio-economic and political changes. Some of the key dynamics affecting the likelihood and escalation of land and water conflicts include a widening "governance gap" between the state and customary regulation, collective responsibility and revenge norms, small arms proliferation and the existence of powerful vested interests.

The Sana'a Basin Project (SBP), implemented by FAO Yemen and funded by the Dutch Embassy in Yemen, engages communities and their leaders to manage water resources in the Sana'a Basin through the establishment of 38 Water User Associations (WUAs). Whereas in the past WUAs were controlled by tribal leaders, under the SBP, WUA board members are chosen by election according to specific criteria. Thirty percent of board members elected were women, who were empowered by the project stipulation that they agree in writing to any activities assigned to them. The participation of women as stakeholders has proven to be an effective way to build partnerships and cooperation among the community. The results of women's empowerment were described by the 30-year veteran head of the Sana'a Basin water authority:

> The project has created a community revolution in the attitude towards managing natural resources. For the first time, there is a significant positive perception shift among stakeholders towards natural resource conservation.

The women board members of the Al Malakh WUA also set an unprecedented example of conflict resolution over a water dispute between tribes in their region. A dam built in 2002 caused a major conflict over access to water between tribes living in the area. The conflict was ignited when a tribe was accused of consuming more water than its allocated share without consent from the other tribes. The conflict escalated into armed clashes with several casualties. As a result, in accordance with the tribal legal system, the dam was closed and nobody was allowed to utilise the water, resulting in the eventual evaporation of the water.

The women board members of the Al Malakh WUA advocated solutions to this conflict with other members of the WUA board and tribal leaders. The FAO Yemen SBP supported the women board members with cash for work to realise the proposal to build shallow wells to be connected to the dam through a pipeline. The newly dug wells do not belong to any of the tribes and are declared as part of the dam so nobody can claim ownership. The water from the dam now flows by gravity to these wells and in return the water in the shallow wells recharges the deep wells used for farming in the area. This agreement was documented and a Yemeni Tribal Decree was issued to enforce it. There are around 12 such dams in the Sana'a Basin alone. FAO proposes to extend the approach taken in one area to avoid future conflict in others.

Institutional capacity building and improving governance

Though there are no reliable data on the number of professionals and skilled labourers that have fled the conflict countries, reports suggest that these groups constitute a good portion of the non-refugee migrants. In the Syrian Arab Republic, for instance, non-refugee migrants were estimated at 1.17 million by the end of 2017 (SCPR, 2016). The professional brain drain, lack of resources, insecurity, fragmentation and other constraints have all weakened the capacity of public institutions, producers' organisations and other civil society groups involved in the agriculture sector.

Building capacity for sustainable food security information systems (FSISs) in Yemen

A critical casualty of conflict is often the information for decision making on humanitarian aid interventions and on policy matters. Conflict and population displacement disrupt the normal channels of government institutional information gathering such as household and business surveys, administrative registration and information collection. Weak and fragmented central and regional government institutions with limited capacity for strategic information gathering compound the difficulties of collection of timely and reliable information for targeted interventions and policies.

To address the continuing need for information to target government and partner agency interventions, FAO established a Food Security Information System (FSIS) in Yemen. The purpose of the FSIS programme was to develop a sustainable information gathering and analytical system to aid government and partner agency decision makers at all levels in targeting aid and creating policies. The structure of the FSIS includes a National Food Security Technical Secretariat (FSTS) with decentralised Governorate Focal Units (GFU) for the collection of information and capacity building at the governorate level.

Under the FSIS programme, FAO developed a comprehensive system for mapping and assessing stakeholder's capacity in gathering and analysing food security and nutrition information. The programme then developed a training programme to strengthen the technical capacity of government partners on food security and nutrition data collection, measurement, analysis and communication. Training workshops were conducted in food security related issues, analysis and report writing.

The FSIS programme made a notable impact in promoting a sense of ownership and responsibility on the part of government staff for programme activities and results. The programme provided technical and institutional support to the Ministry of Agriculture Statistics and Marketing departments for collecting, analysing and communicating seasonal agricultural data to be used for food security and nutrition analysis. It also provided support to the Central Statistical Organisation (CSO) to collect data related to commodity prices for the regular monthly issue of the Consumer Price Index (CPI), weekly market-price bulletins and periodic food-security updates. All these information products are widely used by government and partner agencies.

The FSIS programme played a leading role in the implementation of the Integrated Food Security Phase Classification (IPC) programme in Yemen, which also included capacity -building training, facilitated analysis and training in communication products. The IPC provides a set of standardised tools and procedures as a common language for the analysis and classification of the severity and magnitude of food insecurity and malnutrition. The IPC has been instrumental in providing information for humanitarian work and fund raising in Yemen.

FAO supports FSISs in Yemen and the Sudan as well as at the subregional level focusing on countries affected by the Syrian Arab Republic's crisis (the Syrian Arab Republic, Iraq, Lebanon and Jordan). The products of these projects provide critical inputs to early warning systems and inform evidence-based planning and decision making. Moreover, these projects have special focus on institutional capacity building of relevant government authorities and civil society actors.

Addressing the structural challenges to sustain peace, stability and reconstruction

Crises in the region are partially rooted in fragility factors, such as water scarcity, droughts and climate changes that can dramatically affect the prospect of economic growth and, at times of conflicts, contribute to fuelling the vicious poverty–instability circle. Post conflicts offer opportunities for building back better and to address the policy and governance distortions that have contributed to fragility and instability.

Rebuilding after conflict presents both difficulties as well as opportunities for addressing the long-term challenges of the region. Central to the task of rebuilding is the need to reduce the risk of relapse into violence.

Transparent governance, strengthening the social compact between institutions and communities and pro-active stakeholder consultation are keys to building sustainable institutions during rebuilding. FAO's work on WUAs and the Syrian Arab Republic agriculture damage assessment engender principles for sustaining peace while addressing the long-term challenges of the region.

Rebuilding water governance in the region for more sustainable water utilisation

The World Economic Forum's 2016 annual survey on perceived global risks identified water crises as the risk of highest concern over the next ten years (Sadoff *et al.,* 2017). For the conflict countries, violence combined with state fragility and weak institutions have contributed to a severe deterioration in water services. Armed conflict has damaged water infrastructure and diminished resources for already under-funded and poorly performing water utilities, leading to a fall in access to safe drinking water and sanitation (WHO, 2017c). For many countries of the region, annual freshwater withdrawals exceed total renewable water resources. The latest available figures indicate that Egypt, Yemen, Bahrain, Qatar, Libya, Saudi Arabia, the United Arab Emirates and Kuwait currently withdraw more groundwater each year than can sustainably be renewed (FAO, 2017a). For virtually all the countries of the NENA region, climate change is causing higher temperatures, more frequent heat waves, sea water intrusion into coastal aquifers as sea levels rise, lower and less reliable precipitation and more extreme weather events such as increased frequency and intensity of droughts and floods.

Rebuilding for peace and stability in the region will require that the many water scarcity challenges be addressed in the region. There is a strong need for institutional reform in the region to improve the efficiency and accountability of water governance, strengthen capacity for water regulation, adopt inclusive and participatory approaches (such as WUAs) and improve the investment planning process. An important step is to adopt the integrated river basin approach and to develop effective and transparent institutions for inter-sectoral water allocation, accounting for the distributional impacts allocations have on different socioeconomic groups. Integrated river basin management (IRBM) is the management and development of water, land and related resources across sectors within a given river basin to maximise the benefits derived from water resources while preserving ecosystems. The development of strong distributional institutions using the river-basin approach can strengthen the social compact between institutions and the communities they serve by addressing the inequities that perpetuate perceptions of exclusion and marginalisation.

Rebuilding a sustainable water-use system will require attention to groundwater governance through measures such as adapting water incentives to favour conservation and efficient use, decentralisation of groundwater resource management and training on the assessment and monitoring of groundwater resources to establish the basis for community self-regulation governance. These actions can be especially valuable in fragile and conflict-affected contexts where perceptions of insecurity can tend to aggravate the overuse of groundwater.

Rebuilding for transformational changes of the agriculture sector in the Syrian Arab Republic

Despite over six years of crisis in the Syrian Arab Republic, agriculture remains a key part of the economy. The sector still accounts for an estimated 26 percent of GDP and represents a critical safety net for the 6.7 million Syrians – including those internally displaced – who remain in rural areas.

However, agriculture and the livelihoods that depend on it have suffered massive losses. Today, food production is at a record low and around half the population remaining in the Syrian Arab Republic are unable to meet their daily food needs. In order to assess the long-term reconstruction needs of agriculture, the Food and Agriculture Organization of the United Nations (FAO) conducted the first comprehensive nationwide assessment on the cost of the war to the agriculture sector (FAO & CIHEAM Bari, 2017). The assessment interviewed more than 3 500 households and conducted focus group interviews in over 380 communities to establish the impact and get a clearer understanding of the type of support required for agricultural recovery.

The assessment revealed that USD 16 billion has been lost in terms of production, along with damaged and destroyed assets and infrastructure within the agriculture sector, which is equivalent to just under one-third of the Syrian Arab Republic's GDP in 2016. In terms of subsectors, crops registered the largest share (USD 7.2 billion in crops, including USD 2.4 billion in perennial crops), followed by livestock (USD 5.5 billion), infrastructure and assets (USD 3.2 billion) and fisheries (USD 80 million). The assessment also estimates that between USD 11 to 17 billion would be required to kick-start the recovery of the agriculture sector.

Though the crisis is not over, the conditions for investing in the recovery of the sector are present in many areas of the country. Therefore, FAO's programme in the Syrian Arab Republic intends to address the most pressing short-term emergency needs while contributing to medium-term resilience building and early recovery efforts, as well as long-term transformational changes of the agriculture sector. The programme focuses on evidence-based interventions designed and implemented in a conflict-sensitive manner with full consideration of the critical structural challenges, including climate change, water scarcity and other elements of natural resources' vulnerabilities (Box 5).

BOX 5

Core pillars of agricultural reconstruction in the Syrian Arab Republic

FAO learning suggests the following core pillars to be considered by stakeholders involved in the rebuilding of the Syrian Arab Republic's agriculture sector:

- Today's emergency interventions should contribute to recovery and long-term development of the sector.
- Improve the information systems for food security, natural resources and market and climate risks.
- Promote sustainable natural resource management for prevention, mitigation and adaptation to climate change risks.
- Strengthen agricultural institutions and services across farmers' groups across all sectors of agricultural production and associations.
- Reformulate agricultural policies, particularly to link them to the new challenges of the 2030 Agenda on Sustainable Development and to foster consistency with other trade, exchange and macroeconomic policies.
- Promote rural development, including diversification of agricultural production systems and creation of farm and non-farm jobs, as well as dynamic value chains.
- Foster the agricultural research, extension and innovation system.
- Strengthen international, regional and cross-border cooperation.
- Foster social, economic and environmental sustainability while accounting for agricultural systems' vulnerability to climate change, markets uncertainties, diseases and others.
- Build resilience in a way that anticipates, mitigates, absorbs and transforms uncontrollable events through appropriate policies and interventions that bridge the divide between short-term emergency interventions, medium-term recovery actions and long-term development ones.
- Proactively involve key stakeholders (farmers, community associations and governmental and non-governmental organisations).
- Promote equal opportunities to all parties and regions in an inclusive way that capitalises on their merits without compromising efficiency.
- Empower local institutions and make services closer and accessible to producers in a streamlined manner with clearly defined roles at all levels and a robust accountability framework.
- Take advantage of the diversity of the Syrian Arab Republic's agro-ecological zones.

Member States must do their part for sustaining peace by upholding the 2030 Agenda

While the concept of resilience is usually defined in relation to individuals, households and communities, "sustaining peace" is a shared responsibility of Member States, civil society and the UN system (UN Sustaining Peacebuilding Support Office, 2017). The concept of sustaining peace includes:

a) activities aimed at preventing the outbreak, continuation, escalation and recurrence of violent conflict;

b) political solutions to conflict, including political processes (inclusive dialogue, elections, reconciliation);

c) activities aimed at ensuring safety and security, including mine actions, demobilisation, reintegration and security-sector reforms;

d) rule of law and human rights, including access to justice, mechanisms for government accountability, promotion and protection of human rights, etc.;

e) social services, such as water and sanitation, health and education;

f) core government functions, such as transparent and accountable public administration and public financial management; and

g) economic revitalisation and livelihoods, including employment, infrastructure and livelihoods (UN Sustaining Peacebuilding Support Office, 2017).

While FAO resilience-centred development assistance can address some of these actions within the boundaries of its mandate (activities a, e and g) and encourage others (such as b, d and f), much of the responsibility for finding political solutions to conflict and ensuring that they are implemented falls to Member States.

The scope of activities designed to sustain peace cover much of the political agreement between Member States underpinning the 2030 Agenda for Sustainable Development. It would therefore be a mistake to equate sustaining peace exclusively with SDG 16 on promoting "peaceful and inclusive societies for sustainable development, provid[ing] access to justice for all and build[ing] effective, accountable and inclusive institutions at all levels". Several SDGs are directly related to sustaining peace through building peaceful, just and inclusive societies. SDG 4 on education, SDG 5 on gender equality, SDG 8 on decent work, SDG 10 on inequalities and SDG 11 on cities all refer to principles of justice and accountability that are integral to sustaining peaceful societies. The 2030 Agenda adopted by Member States in September 2015 provides a set of interrelated goals that both support sustainable development and sustain peace. While the SDGs are not legally binding, governments are expected to take ownership and take measurable actions towards their achievement.

CONCLUSION

Food security in the NENA region is fast deteriorating, driven by conflict and leading to a widening gap in well-being between conflict and non-conflict countries. The differences in living standards are particularly marked for the key statistical indicators for SDG Target 2.1 on hunger and food insecurity and Target 2.2 on malnutrition. The level of undernourishment in conflict countries is six times larger than in other countries, and stunting and wasting in children under 5 years old are significantly worse in the conflict countries, even when compensating for income levels. Moreover, the gap in well-being has been widening since 2003, coinciding with changes in the intensity of violence in the two country groups.

Conflicts have long-lasting impacts on the food security and nutrition of both affected and surrounding countries in the region. Not only is food security deteriorating in the conflict and spillover countries but the high costs of perpetrating, containing, preventing and dealing with the consequences of violence undermine their ability to mitigate the decline in living standards. The five states of the region that have witnessed civil conflict spent 21 to 67 percent of their country's GDP on violence. Populations have responded to the fall in living standards through outmigration, triggering the largest refugee crisis since WWII and raising the costs for sending and surrounding countries alike. Conflict thus threatens to have irreversible impacts on the capabilities, institutions and social cohesion of country populations, increasing the likelihood that affected countries will become trapped in repeated cycles of violence and protracted crises.

Policies aimed at (1) poverty reduction, (2) economic growth, (3) improvements in maternal and childhood nutrition and public health, (4) increases in the food supply and (5) a reduction in the frequency and intensity of political violence are often highly correlated with reductions in the prevalence of undernourishment and stunting. While countries such as Algeria, Oman, Morocco and Mauritania have made great progress in reducing undernourishment, and Iran (Islamic Republic of), Saudi Arabia, Jordan and Morocco have made progress in reducing stunting, the five conflict countries of the region have made little progress in reducing these two indicators over a 15-year period from 2000 to 2015. The menu of government policies found to be associated with reductions in the prevalence of undernourishment and stunting are simply unavailable to countries in conflict. As expenditures on violence crowd out other government spending, the likelihood of progress on SDG Targets 2.1 and 2.2 on reducing hunger and food insecurity and malnutrition becomes ever more remote.

Recognising that humanitarian solutions alone are insufficient to deal with the multiple consequences and the root causes of conflicts, the UN has embraced a comprehensive approach that brings together humanitarian and development interventions to support peacebuilding, defined as "activities aimed at preventing the outbreak, escalation, continuation and recurrence of conflict", as a shared responsibility that should be integrated into all assistance at all stages of engagement by the international community (UN Peacebuilding Support Office, 2017).

FAO and its partners contribute to this process through a resilience-centred approach in responding to the protracted crises in Yemen, the Sudan, Libya, the Syrian Arab Republic and Iraq. Resilience advocates simultaneously addressing the humanitarian and the political and developmental needs of the populations. FAO delivers assistance in the NENA region based on four pillars for building resilience and sustaining peace: (1) livelihood support to promote (re)engagement in productive economic activities, (2) community-based approaches to build social cohesion and trust, (3) institutional capacity building to improve governance and (4) rebuilding to address the long-term challenges of the region.

FAO's livelihood support to promote re-engagement in productive economic activities includes cash for work programmes in Iraq and Yemen to improve agriculture-related infrastructure (cleaning irrigation canals) and communal productive assets (rehabilitation of orchards), while generating income for vulnerable groups affected by the conflict. These interventions concurrently respond to multiple needs: improved access to income, reduced dependence on food assistance, development of infrastructure and communal assets and rural income diversification.

In the war's aftermath, there are often opportunities to build community institutions that better respond to people's needs, thus ensuring their resilience and ability to maintain peace. For example, in Yemen's Sana'a Basin, FAO has supported the establishment of 38 WUAs, with board members chosen by election according to specific criteria. The participation of women as board members has proven to be an effective way to build partnerships and cooperation among the community. The result has been that, for the first time, there is now a significant positive perception shift among stakeholders towards natural resource conservation.

Post-conflict situations offer the opportunity to build back better by addressing the long-run policy and governance distortions that have contributed to fragility and instability in the conflict countries. The keys to building sustainable institutions during rebuilding are transparent governance, strengthening the social compact between institutions and communities and pro-active stakeholder consultation.

While FAO and, more broadly, UN resilience-centred development assistance can address some of these issues and mitigate vulnerabilities, the responsibility for finding political solutions to conflict and ensuring they are implemented falls to Member States. The 2030 Agenda adopted by the Member States in September 2015 provides a set of interrelated goals that both support sustainable development and sustain peace. Enhanced regional and international cooperation towards development and peace in the region will be needed for the NENA region to achieve the SDG2 of eradicating hunger and malnutrition.

ANNEX 1.

Definitions of child anthropometric status and malnutrition indicators

Stunting refers to a reduced growth rate in human development. It is assessed by comparing a child's "height for age" value to the WHO Child Growth Standards median.
If a child's height is found to be two standard deviations or more below the age and sex-specific WHO Child Growth Standard median, the child is stunted. Stunting is due to accumulated deficiencies of calories and proteins over time, and it is associated with decreased cognition, worse school performance and lower lifetime income (El-Kogali and Krafft, 2015).

Wasting or thinness is assessed by comparing a child's "weight for height" value to the WHO Child Growth Standards median. If a child's weight is found to be two standard deviations or more below the age and sex-specific WHO Child Growth Standard median, the child is affected by wasting. Wasting indicates in most cases a recent and severe process of weight loss, which is often associated with acute starvation and/or severe disease.

Overweight in children describes a child with high weight-for-height. If a child's weight is found to be two standard deviations or more above the age and sex-specific WHO Child Growth Standard median, the child is overweight. On a population level, overweight can be considered an indicator of the prevalence of obesity.

The prevalence of anaemia in children 6–59 months and in pregnant women (15–49 years) is assessed through country representative surveys of the blood haemoglobin concentration in the two age categories. If the blood haemoglobin concentration registers <110 g/L, the child or woman is at least mildly anaemic. About 42 percent of anaemia in children under 5 years old and 50 percent of anaemia in pregnant women could be eliminated by iron supplements (WHO, 2015).

The prevalence of vitamin A deficiency country estimates in children 6–59 months are assessed through representative surveys of serum retinol levels in preschool-aged children in the period from 1995 to 2005. If the serum retinol level registers <0.70 µmol/l, the child has vitamin A deficiency (WHO, 2009).

Iodine status of school-aged children (SAC) (usually 6–12 years) is assessed through consideration of the *median* urinary iodine concentrations (µg/L) (UIC) in children in this age category. The figure given is the latest year data between 2007 and 2015. Since this indicator uses the median rather than a cut-off point, it does not show the prevalence. The iodine status (insufficient, adequate or excessive) is assessed directly from the median (Table 10) (Iodine Global Network, 2016).

ANNEX 2.

Abbreviations and Acronyms

AP	Associated Press
CARI	Consolidated Approach for Reporting Indicators of Food Security
CIVTOT	Civil Total Violence Score
CV	Coefficient of Variation
DEC	Dietary Energy Consumption
DES	Dietary Energy Supply
DESA	Dietary Energy Supply Adequacy
DTF	Distance to Frontier
EAP	East Asia and Pacific
ECA	Europe and Central Asia
ECD	Early Childhood Development
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FAO RNE	FAO Regional Office for the Near East and North Africa
FIES	Food Insecurity Experience Scale
FI, Mod+Sev	Moderate or Severe Food Insecurity using the Food Insecurity Experience Scale
FI, Sev	Severe Food Insecurity using the Food Insecurity Experience Scale
FSI	Food Security Indicator
FTA	Free Trade Agreement
GCC	Gulf Cooperation Council
GDP	Gross Domestic Product
GWP	Gallup World Poll
H-Income	High Income
HIECS	Egyptian Household Income and Consumption Survey
IDP	Internally Displaced Person
IFAD	International Fund for Agricultural Development
IMF	International Monetary Fund
IPC	Integrated Phase Classification (IPC)
L-M Income	Low Middle Income
LAC	Latin America and the Caribbean
LDC	Least Developed Country
LPG	Liquefied Petroleum Gas
MDER	Minimum Dietary Energy Requirement
MDG	Millennium Development Goal
MEPV	Major Episodes of Political Violence
NENA	Near East and North Africa
OLS	Ordinary Least Squares
PoU	Prevalence of Undernourishment
PPP	Purchasing Power Parity
SA	South Asia
SAC	School Aged Children
SCPR	Syrian Centre for Policy Research

SDG	Sustainable Development Goal
SK	Skewness
SNHR	Syrian Network for Human Rights
SOHR	Syrian Observatory for Human Rights
SSA	Sub-Saharan Africa
U-M Inome	Upper Middle Income
UIC	Urinary Iodine Concentration
UNHCR	UN High Commission on Refugees
UNICEF	United Nations Children's Fund
UNSD	UN Statistical Division
UNU	UN University
USD	United States Dollars
VAT	Value Added Tax
WB	World Bank
WDI	World Development Indicators
WEO	World Economic Outlook
WFP	World Food Programme
WHO	World Health Organization
WUA	Water Use Association

ANNEX 3.

Country and Territory Abbreviations

Following is a list of countries and territories 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
The Sudan	The Republic of Sudan
Syrian Arab Republic	The Syrian Arab Republic
Tunisia	The Republic of Tunisia
United Arab Emirates	The United Arab Emirates
Yemen	The Republic of Yemen
Palestine	Palestine

The Near East subregion includes Egypt, Iran (Islamic Republic of), Iraq, Jordan, Lebanon, the Sudan, the Syrian Arab Republic and Palestine.

The North Africa subregion includes Algeria, Libya, Mauritania, Morocco and Tunisia.

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

REFERENCES

Abuidhail, J., Modallal, H., Yousif, R. & Almesi, N. 2014. Exclusive breastfeeding (EBF) in Jordan: prevalence, duration, practices, and barriers. Midwifery, 30: 331–337. (also available at http://ac.els-cdn.com/S0266613813000314/1-s2.0-S0266613813000314-main.pdf?_tid=6ffeea5e-8d54-11e7-864b-00000aab0f26&acdnat=1504078125_6d9f9db4fec7fa8a79caa3d1d75ef56e).

Al Rifai, R., Nakamura, K. & K. Seino. 2015. Decline in the prevalence of anaemia among children of pre-school age after implementation of wheat flour fortification with multiple micronutrients in Jordan. Public Health Nutrition, 19(8): 1486–97 (also available at https://www.cambridge.org/core/services/aop-cambridge-core/content/view/CAB47CA00FC45B7D8BB4CD384D5189AC/S1368980015002785a.pdf/decline_in_the_prevalence_of_anaemia_among_children_of_preschool_age_after_implementation_of_wheat_flour_fortification_with_multiple_micronutrients_in_jordan.pdf).

Anekwe, T. & Kumar, S. 2012. The effect of a vaccination program on child anthropometry: evidence from India's Universal Immunization Program. Journal of Public Health 34(4): 489–97. (also available at https://academic.oup.com/jpubhealth/article-lookup/doi/10.1093/pubmed/fds032).

Armed Conflict Location and Event Data Project (ACLED). 2017. ACLED Version 7, Libya, the Sudan. [Cited 7 August 2017]. https://www.acleddata.com/data/acled-version-7-1997-2016/

Associated Press (AP). 2017. Top UN official: 10,000 civilians killed in Yemen conflict, 16 January 2017. (also available at https://apnews.com/43471432a8e949a7af6fc56928284d78/top-un-official-10000-civilians-killed-yemen-conflict).

Berendsen, M., Smits, J., Netea, M. & van der Ven, A. 2016. Non-specific effects of vaccines and stunting: timing may be essential. EBioMedicine, 8: 341–48 (also available at https://www.ncbi.nlm.nih.gov/pubmed/27428443).

Bhutta, Z., Ahmed, T., Black, R., Cousens, S., Dewey, K., Giugliani, E., Haider, B. et. al. 2008. What works? interventions for maternal and child undernutrition and survival. Lancet, 371: 417–40. (also available at http://www.thelancet.com/article/S0140-6736(07)61693-6/abstract).

Calo, M. 2016. Social protection and safety nets in the Middle East and North Africa. Presentation at the "Third International IPR-MENA Social Policy Conference", 5 December 2016, Bonn, German Development Institute (DIE) and University of Bath Institute for Policy Research (IPR). (also available at http://www.ids.ac.uk/publication/social-protection-and- safty-nets-in-the-middle-east -and -north-africa).

Caulfield, L., Richard, S., Rivera, J., Musgrove, P. & Black, R. 2006. Stunting, wasting, and micronutrient deficiency disorders. In Jamison, D., Breman, J., Measham, A., eds. Disease Control Priorities in Developing Countries, 2nd edition. Washington, DC, World Bank. (also available at https://www.ncbi.nlm.nih.gov/books/NBK11761/).

Center for Systemic Peace. 2017. Major Episodes of Political Violence (MEPV) Database. In: Center for Systemic Peace homepage. United States. Updated as at. [9 August 2017.] https://www.systemicpeace.org.

Central Statistical Organization (CSO). 2012. Iraq multiple indicator cluster survey 2011 preliminary report April 2012. Kurdistan Regional Statistics Office (KRSO), Ministry of Health, UNICEF. Kurdistan, Iraq. (also available at http://reliefweb.int/sites/reliefweb.int/files/resources/MICS4_Iraq_PreliminaryReport_Eng.pdf).

Chung, C. 2016. Why more mothers don't breastfeed their babies. News Deeply: Women and Girls, 8 July 2016. (https://www.newsdeeply.com/womenandgirls/articles/2016/07/08/why-more-mothers-dont-breastfeed-their-babies).

Copenhagen Consensus Center. 2008. Copenhagen Consensus 2008 – Results. Copenhagen, Denmark. (also available at http://www.copenhagenconsensus.com/sites/default/files/cc08_results_final_0.pdf).

Cumming, O. & Cairncross, S. 2016. Can water, sanitation and hygiene help eliminate stunting? Current evidence and policy implications. Maternal & Child Nutrition, 12 (Suppl. 1): 91–105. (also available at http://stopstunting.org/wp-content/uploads/2016/05/Maternal-Child-Nutrition_StotpStuntinginSouthAsia_Paper06.pdf).

de Benoist, B., Andersson, M., Egli, I., Takkouche, B. & Allen, H., eds. 2004. Iodine status worldwide: WHO global database on iodine deficiency. Geneva, WHO. 8 pp. (also available at http://www.who.int/vmnis/iodine/status/en/).

Deolalikar, A. 2008. Malnutrition & Hunger. Copenhagen Consensus 2008 Perspective Paper, Copenhagen Consensus 2008, 10 May 2008, Copenhagen, Copenhagen Consensus Center. (also available at http://www.copenhagenconsensus.com/sites/default/files/pp_malnutrion_and_hunger-_deolalikar_0.pdf).

Devarajan, S. & Mottaghi, L. 2014. Predictions, perceptions and economic reality – challenges of seven Middle East and North Africa countries described in 14 charts. Middle East and North Africa Quarterly Economic Brief, Issue 3, July 2014: 10.1596 (DOI). [5 November 2017]. http://documents.worldbank.org/curated/en/373331468052751480/pdf/898440REVISED00ue030JULY020140FINAL.pdf.

Devarajan, S. 2016. An exposition of the new strategy, 'promoting peace and stability in the Middle East and North Africa'. World Bank Working Paper. Washington, DC, World Bank. http://documents.worldbank.org/curated/en/399261468195847505/pdf/102936-WP-MENA-Strategy-Final-Dec-2015-Box394845B-PUBLIC-ENGLISH.pdf.

Devereux, S. 2015. Social protection and safety nets in the Middle East and North Africa. IDS Research Report, Vol. 2015(80). Brighton, UK, Institute of Development Studies, and WFP, Cairo, Egypt. (also available at http://www.ids.ac.uk/publication/social-protection-and-safety-nets-in-the-middle-east-and-north-africa).

Ecker, O., Al-Riffai, P., Breisinger, C. & El-Batraway, R. 2016. Nutrition and economic development: exploring Egypt's exceptionalism and the role of food subsidies. Washington, DC, International Food Policy Reasearch Institute (IFPRI). (also available at http://www.ifpri.org/publication/nutrition-and-economic-development-exploring-egypts-exceptionalism-and-role-food-0).

El-Kogali, S. & Krafft, C. 2015. Expanding opportunities for the next generation: early childhood development in the Middle East and North Africa. Washington, DC, World Bank. (also available at https://openknowledge.worldbank.org/bitstream/handle/10986/21287/9781464803239.pdf;sequence=1).

Esfarjani, F., Roustaee, R., Mohammadi-Nasrabadi, F. & Esmaillzadeh, A. 2013. Major dietary patterns in relation to stunting among children in Tehran, Iran. Journal of Health, Population and Nutrition, June (31)2: 202–10. (also available at https://www.ncbi.nlm.nih.gov/pubmed/23930338).

Etemadi, A., Sinha, R., Ward, M., Graubard, B., Inoue-Choi, M., Dawsey, S., & Abnet, C. 2017. Mortality from different causes associated with meat, heme iron, nitrates, and nitrites in the NIH-AARP Diet and Health Study: population based cohort study. BMJ, 357(j1957). (also available at http://www.bmj.com/content/bmj/357/bmj.j1957.full.pdf).

European Commission. 2017. Trade policy, countries and regions: Morocco. European Commission [online]. Brussels, Belgium. [Cited 5 November 2017]. http://ec.europa.eu/trade/policy/countries-and-regions/countries/morocco/

European Commission. 2017. European Union, trade in goods with Morocco. European Commission, Directorate General for Trade. Brussels, Belgium. (also available at http://trade.ec.europa.eu/doclib/docs/2006/september/tradoc_113421.pdf).

FAO. n.d. Measuring resilience: a concept note on the resilience tool. Concept note for food security information for decision-making. Rome, FAO. (also available at http://www.fao.org/docrep/013/al920e/al920e00.pdf).

FAO. 2013. The state of food insecurity in the world 2013: the multiple dimensions of food security. Rome, FAO. 56 pp. (also available at http://www.fao.org/docrep/018/i3434e/i3434e.pdf).

FAO. 2014. Nutrition and resilience. Strengthening the links between resilience and nutrition in food and agriculture. A discussion paper. Rome, FAO. 55 pp. (also available at http://www.fao.org/3/a-i3777e.pdf).

FAO. 2017a. Aquastat Database. In: FAO [online]. Rome. [Cited 23 August 2017]. http://www.fao.org/nr/water/aquastat/main/index.stm

FAO. 2017b. FAOSTAT Database. In: FAO [online]. Rome. [Cited 23 August 2017]. http://www.fao.org/faostat/en/#data

FAO. 2017c. The state of food security and nutrition in the world 2017: building resilience for peace and food security. Rome, FAO. 132 pp. (also available at http://www.fao.org/3/a-I7695e.pdf).

FAO & CIHEAM Bari. 2017. Suggestions for agricultural interventions in Syria: a policy paper. Draft for internal consultations. Cairo, FAO. 40 pp.

FAO, WFP & UNICEF. 2017. Yemen emergency food security and nutrition assessment (EFSNA) – 2016: preliminary results for public release. Rome, FAO-WFP-UNICEF. 28 pp. (also available at http://fscluster.org/yemen/document/yemen-emergency-food-security-and-0).

Food Fortification Initiative. 2017. Regional activity: the Middle East. In: Food Fortification Initiative [online]. Atlanta, GA, United States. http://www.ffinetwork.org/regional_activity/middle_east.php

Food Security Information Network (FSIN). 2017. Global Report on Food Crises 2017. Rome, FSIN. 145 pp. (also available at http://www.fao.org/3/a-br323e.pdf).

Gizak, M., Gorstein, J. & Andersson, M. 2017. Epidemiology of iodine deficiency. In Pearce, E. (ed). Iodine Deficiency Disorders and Their Elimination, pp. 29–43. Chennai, Springer.

Graham-Harrison, E. 2014. UAE law requires mothers to breastfeed for first two years. The Guardian, 7 February 2014. (also available at https://www.theguardian.com/world/2014/feb/07/uae-law-mothers-breastfeed-first-two-years).

Hadid, D. 2016. Painful Steps Help Egypt Secure $12 Billion I.M.F. Loan. The New York Times, 11 November 2016. (also available at https://www.nytimes.com/2016/11/12/world/middleeast/egypt-gets-final-imf-approval-for-12-billion-loan.html?_r=1).

Hagopian A., Flaxman A.D., Takaro T.K., Esa Al Shatari, S.A., Rajaratnam, J., Becker, S. et al. 2013. Mortality in Iraq associated with the 2003–2011 war and occupation: findings from a national cluster sample survey by the university collaborative Iraq mortality study. PLoS Med 10(10): e1001533 [online]. [Cited 5 November 2017.] https://doi.org/10.1371/journal.pmed.1001533.

Hamade, H., Naja, F., Keyrouz, S., Hwalla, N., Karam, J., Rustom, L. & Nasreddine, L. 2014. Breastfeeding knowledge, attitude, perceived behavior, and intention among female undergraduate university students in the Middle East: the case of Lebanon and Syria. Food and Nutrition Bulletin, (35)2: 179–90. (also available at https://www.ncbi.nlm.nih.gov/pubmed/25076765).

Headey, D. 2013. Developmental drivers of nutritional change: a cross-country analysis. World Development, 42: 76–88. (also available at http://www.sciencedirect.com/science/article/pii/S0305750X1200191X#MMCvFirst).

Humanitarian Country Team and Partners (HCTP). 2016a. Humanitarian needs overview 2017: Sudan. UN OCHA, Sudan. 28 pp. (also available at https://reliefweb.int/sites/reliefweb.int/files/resources/Sudan_2017_Humanitarian_Needs_Overview.pdf).

Humanitarian Country Team and Partners (HCTP). 2016b. Humanitarian needs overview 2017: Libya. UN OCHA, Libya. 27 pp. (also available at https://reliefweb.int/sites/reliefweb.int/files/resources/2017_libya_humanitarian_needs_overview_november_2016.pdf).

Humanitarian Country Team and Partners (HCTP). 2016c. Humanitarian needs overview 2017: Yemen. UN OCHA, Yemen. 53 pp. (also available at https://reliefweb.int/sites/reliefweb.int/files/resources/YEMEN%202017%20HNO_Final.pdf).

Humanitarian Country Team and Partners (HCTP). 2017a. Humanitarian needs overview 2017: Iraq. UN OCHA, Iraq. 36 pp. (also available at https://reliefweb.int/sites/reliefweb.int/files/resources/irq_2017_hno.pdf).

Humanitarian Country Team and Partners (HCTP). 2017b. Humanitarian needs overview 2017: Syria. UN OCHA, Syrian Arab Republic. 60 pp. (also available at https://reliefweb.int/sites/reliefweb.int/files/resources/2017_Syria_hno_161205.pdf).

Hwalla, N. El Labban, S. & R. Bahn. 2016. Nutrition security is an integral component of food security. Frontiers in Life Science, 9(3) 167–72. (also available at http://dx.doi.org/10.1080/21553769.2016.1209133).

Hwalla, N., Al Dhaheri, A.S., Radwan, H., Alfawaz, H.A., Fouda, M.A., Al-Daghri, N.M., Zaghloul, S. & Blumberg, J.B. 2017. The prevalence of micronutrient deficiencies and inadequacies in the Middle East and approaches to interventions. Nutrients, 9: 229. (also available at http://www.mdpi.com/2072-6643/9/3/229).

Ianchovichina, E., Mottaghi, L. & Devarajan, S. 2015. Inequality, uprisings, and conflict in the Arab World. Middle East and North Africa Economic Monitor, (October), World Bank, Washington, DC. Doi: 10.1596/978-1-4648-0735-0 [online]. (also available at: https://openknowledge.worldbank.org/bitstream/handle/10986/22711/9781464807350.pdf;sequence=4).

Institute for Economics and Peace (IEP). 2017. Global peace index 2017. Sydney, IEP. 140 pp. (Also available at http://visionofhumanity.org/app/uploads/2017/06/GPI-2017-Report-1.pdf).

International Monetary Fund (IMF). 2017. World Economic Outlook Database. In: IMF [online]. Washington, DC. [Cited April 2017]. http://www.imf.org/external/pubs/ft/weo/2017/01/weodata/index.aspx).

Iodine Global Network (IGN). 2016. Global scorecard of iodine nutrition (SAC and PW) 2016. [Updated 13 December 2016]. IGN, Zurich. 4 pp. (also available at http://www.ign.org/cm_data/Scorecard_2016_SAC_PW.pdf).

IPC Global Partners. 2012. Integrated food security phase classification technical manual version 2.0.: evidence and standards for better food security decisions. Rome, FAO. 138 pp. (also available at http://www.ipcinfo.org/fileadmin/user_upload/ipcinfo/docs/IPC-Manual-2-Interactive.pdf).

IPC Global Partners (Republic of Sudan). 2015a. Acute food insecurity situation overview, July to August 2015. Rome, FAO. 5 pp. (also available at http://www.ipcinfo.org/fileadmin/user_upload/ipcinfo/-docs/1_IPC_Sudan_AcuteFI_Situation_2015JulyAug_Projection.pdf).

IPC Global Partners (Republic of Sudan). 2015b. Acute food insecurity situation overview, May to June 2015. Rome, FAO. 6 pp. (also available at http://www.ipcinfo.org/fileadmin/user_upload/ipcinfo/docs/IPC%20Acute%20Analysis%20May-June%202015.pdf).

IPC Global Partners (Republic of Sudan). 2016a. Acute food insecurity situation overview, April to July 2016. Rome, FAO. 6 pp. (also available at http://www.ipcinfo.org/fileadmin/user_upload/ipcinfo/docs/IPC_Sudan_Current_AcuteFI_Situation_April_July%202016.pdf).

IPC Global Partners (Republic of Sudan). 2016b. Acute malnutrition analysis, December 2016. Rome, FAO. 4 pp. (also available at http://www.ipcinfo.org/-fileadmin/user_upload/ipcinfo/docs/IPC_Sudan_Acute_Malnutrition_Dec2016.pdf).

IPC Global Partners (Republic of Sudan). 2017. Acute food insecurity situation overview, January to March 2017. Rome, FAO. 6 pp. (also available at http://www.ipcinfo.org/fileadmin/user_upload/ipcinfo/docs/IPC_Sudan_Projected_AcuteFI_Jan-March2017.pdf).

IPC Global Partners (Republic of Yemen). 2013. Acute food insecurity situation overview, December 2013 to February 2014. Rome, FAO. 3 pp. (also available at http://www.ipcinfo.org/fileadmin/user_upload/ipcinfo/docs/Yemen%20IPC%20Analysis%20Report%20Dec2013.pdf).

IPC Global Partners (Republic of Yemen). 2014. Acute food insecurity situation overview, September 2014 to February 2015. Rome, FAO. 6 pp. (also available at http://www.ipcinfo.org/fileadmin/user_upload/ipcinfo/docs/IPC%20Analysis_Yemen_Nov%202014.pdf).

IPC Global Partners (Republic of Yemen). 2015. Indicative acute food insecurity situation overview, June to August 2015. Rome, FAO, 6 pp. (also available at http://www.ipcinfo.org/fileadmin/user_upload/ipcinfo/docs/Yemen_IPC_Indicative_Acute_Analysis_June_2015l.pdf).

IPC Global Partners (Republic of Yemen). 2016. Acute food insecurity situation overview, June to September 2016. Rome, FAO. 7 pp. (also available at https://reliefweb.int/sites/reliefweb.int/files/resources/1_IPC_Yemen_June2016_AcuteFoodInsecurityAnalysis_CommunicationBrief_0.pdf).

Kandeel, A. 2013. Subsidy removal will undermine region's economies. The National, 7 April 2013. (also available at http://www.thenational.ae/thenationalconversation/comment/subsidy-removal-will-undermine-regions-economies).

Khan, M. 2014. The economic consequences of the Arab Spring. Rafik Hariri Center for the Middle East at Atlantic Council. ISSUEBRIEF, February 2014. 10 pp. (also available at https://www.files.ethz.ch/isn/177370/The_Economic_-Consequences_of_the_Arab_Spring.pdf).

Levine, M., Suarez, J., Brandhorst, S., Balasubramanian, P., Cheng, C., Madia, F., Fontana, L. et al. Low protein intake is associated with a major reduction in IGF-1, cancer, and overall mortality in the 65 and younger but not older population. Cell Metabolism, 19: 407–17, 4 March 2014. (also available at http://www.cell.com/cell-metabolism/pdf/S1550-4131(14)00062-X.pdf).

Martorell, R. 2008. Malnutrition & Hunger. Copenhagen Consensus 2008 Perspective Paper, Copenhagen Consensus 2008. (http://www.copenhagenconsensus.com/sites/default/files/pp_malnutrion_and_hunger_-_martorell_0.pdf).

Merchant, A., Jones, C., Klure, A., Kupka, R., Fitzmaurice, G., Herrera, M. & Fawzi, W. 2003. Water and sanitation associated with improved child growth. European Journal of Clinical Nutrition, 57: 1562–68. (also available at https://www.ncbi.nlm.nih.gov/pubmed/14647221).

Nord, M., Cafiero, C. & Sara Viviani. 2016. Methods for estimating comparable rates of food insecurity experienced by adults in 147 countries and areas. FAO Statistics Division, Rome. 6 pp. (also available at http://www.securenutrition.org/resource/methods-estimating-comparable-prevalence-rates-food-insecurity-experienced-adults-throughout-world).

Oxford Business Group. 2017. In Morocco a series of fiscal reforms should help to reduce expenditures. In: Oxford Business Group [online]. [Cited 5 November 2017]. https://www.oxfordbusinessgroup.com/analysis/change-pace-series-financial-reforms-should-help-reduce-expenditures.

Rollins, N., Bhandari, N., Hajeebhoy, N., Horton, S., Lutter C., Martines, J., Piwoz, E., Richter, L., & Victora, C. 2016. Why invest, and what it will take to improve breastfeeding practices? Lancet, 387: 475–90. (also available at http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(15)01044-2/abstract).

Rother, B., Pierre, G. Lombardo, D., Herrala, R., Toffano, P., Roos, E., Auclair, G. & Manasseh, K. 2016. The economic impact of conflicts and the refugee crisis in the Middle East and North Africa. IMF Staff Discussion Note, September 2016. Washington, DC, IMF. 43 pp. (also available at https://www.imf.org/external/pubs/ft/sdn/2016/sdn1608.pdf).

Sadoff, C., Borgomeo, E. & de Waal, D. 2017. Turbulent waters: pursuing water security in fragile contexts. Washington, DC, World Bank. 61 pp. (also available at http://documents.worldbank.org/curated/en/885171489432062054/pdf/113504-WP-P157700-PUBLIC-3-14-8am-W16005-eBook.pdf).

Sdralevich, C., Sab, R., Zouhar, Y. & G. Albertin. 2014. Subsidy Reform in the Middle East and North Africa: Recent Progress and Challenges Ahead (Washington, D.C., International Monetary Fund).

Semba, R., Shardell, M., Ashour, F., Moaddel, R., Trehand, I., Maleta, K. Ordiz, I. et al. 2016. Child stunting is associated with low circulating essential amino acids. EBioMedicine, 6(2016): 246–52. (also available at http://www.ebiomedicine.com/article/S2352-3964(16)30069-X/fulltext).

Sen, A. 1981. Poverty and famines: an essay on entitlement and deprivation. Oxford, Clarendon Press.

Silva, J., Levin, V. & Morgandi M. 2012. Inclusion and resilience: the way forward for social safety nets in the Middle East and North Africa (overview). Washington, DC, World Bank. 72 pp. (also available at http://documents.worldbank.org/curated/en/248591468052751183/pdf/NonAsciiFileName0.pdf).

Syrian Center for Policy Research (SCPR). 2016. Syria: confronting fragmentation! Impact of Syrian crisis report. New York, UNDP. 66 pp. (also available at http://www.sy.undp.org/content/syria/en/home/library/poverty/confronting-fragmentation.html).

Syrian Observatory for Human Rights (SOHR). 2017. About 465 thousand persons were killed in 6 years of the Syrian revolution and more than 14 million were wounded and displaced. In: SOHR [online]. [Cited 13 March 2017]. http://www.syriahr.com/en/?p=62760.

Uauy, R., Suri, D., Ghosh, S., Kurpad, A. & Rosenberg, I. 2016. Low circulating amino acids and protein quality: an interesting piece in the puzzle of early childhood stunting. EBioMedicine, 8: 28–29. (also available at http://www.ebiomedicine.com/article/S2352-3964(16)30210-9/fulltext).

UN DESA. 2017. World population prospects: the 2015 revision. In: UN DESA, Population Division (UNPD) [online]. New York. [Cited 7 August 2017]. https://esa.un.org/unpd/wpp/dataquery/

UNHCR. 2017. Mid-year population statistics. In: UNHCR [online]. Geneva. [Cited 7 August 2017]. http://popstats.unhcr.org/en/overview

UNHCR. 2017. UNHCR Syria regional refugee response inter-agency information sharing portal. In: UNHCR [online]. Geneva. [Cited 7 August 2017]. http://data.unhcr.org/syrianrefugees/regional.php

UNICEF, WHO & World Bank. 2017. Joint child malnutrition estimates. New York, UNICEF. 16 pp. (http://www.who.int/nutgrowthdb/estimates/en/).

UNOCHA (Syrian Arab Republic). 2017. Humanitarian needs overview. New York, UNOCHA. 60 pp. (also available at http://reliefweb.int/sites/reliefweb.int/files/resources/2017_Syria_hno_161205.pdf).

UNOCHA (Republic of Yemen). 2016. Humanitarian needs overview. New York, UNOCHA. 53 pp. (also available at http://reliefweb.int/sites/reliefweb.int/files/resources/YEMEN%202017%20HNO_Final.pdf).

UN Peacebuilding Support Office. 2017. What does 'sustaining peace' mean?. New York, UN Peacebuilding Support Office. 8 pp. (https://undg.org/wp-content/uploads/2017/01/Guidance-on-Sustaining-Peace.170117.final_.pdf).

UNSD. 2017. National accounts main aggregates database. In: UNSD [online]. New York. [Cited 5 November 2017]. https://unstats.un.org/unsd/snaama/Introduction.asp).

Verme, P. & Araar, A. 2017. The Quest for Subsidies Reforms in the Middle East and North Africa Region (Washington, DC, World Bank).

Victora, C., Bahl, R., Barros, A., Franca, G., Horton, S., Krasevec, J., Murch, S., Sankar, M., Walker, N. & Rollins, N. 2016. Breastfeeding in the 21st century: epidemiology, mechanisms, and lifelong effect. Lancet, (387): 475–90. (also available at http://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736(15)01024-7.pdf).

Vollmer, S., Harttgen, K., Subramanyam, M., Finlay, J., Klasen, S. & Subramanian, S. 2014. Association between economic growth and early childhood undernutrition: evidence from 121 demographic and health surveys from 36 low-income and middle-income countries. Lancet, 2, April 2014. (also available at http://www.thelancet.com/journals/langlo/article/PIIS2214-109X(14)70025-7/fulltext).

Wanner, N., Cafiero, C., Troubat, N. & Conforti, P. 2014. Refinements to the FAO methodology for estimating the prevalence of undernourishment indicator. ESS Working Paper, No. 14–05, September 2014. Rome, FAO.

WFP. 2015. Consolidated Approach to Reporting Indicators of Food Security (CARI). Rome, WFP, Food security analysis (WFP VAM). 61 pp. (also available at http://documents.wfp.org/stellent/groups/public/documents/manual_guide_proced/wfp271449.pdf?_ga=2.40370210.1282745699.1501757852-1026174483.1497772511).

WFP. 2016a. Iraq comprehensive food security vulnerability analysis (Iraq CFSVA). Rome, WFP. 191 pp. (also available at http://reliefweb.int/sites/reliefweb.int/files/resources/CFSVA%20Iraq%202016.pdf).

WFP. 2016b. Rapid food security assessment, Libya: report. Rome, WFP. 49 pp. (also available at https://www.humanitarianresponse.info/sites/www.humanitarianresponse.info/files/assessments/wfp-libya_rapid_food_security_assessment_final.pdf).

WFP. n.d. CARI & IPC factsheet: technical annex. Rome, WFP, Food security analysis (WFP VAM). 6 pp. (also available at http://documents.wfp.org/stellent/groups/public/documents/manual_guide_proced/wfp271451.pdf?_ga=2.119818248.1282745699.1501757852-1026174483.1497772511).

WHO. 1996. Indicators for assessing vitamin A deficiency and their application in monitoring and evaluation intervention programmes. Geneva, WHO. 66 pp. (also available at http://www.who.int/nutrition/publications/micronutrients/vitamin_a_deficieny/WHONUT96.10.pdf).

WHO. 2009. Global prevalence of vitamin A deficiency in populations at risk, 1995-2005. WHO global database on vitamin a deficiency. Geneva, WHO. 68 pp. (also available at http://apps.who.int/iris/bitstream/10665/44110/1/9789241598019_eng.pdf).

WHO. 2010. Nutrition landscape information system (NLIS) country profile indicators: interpretation guide. Geneva, WHO. 50 pp. (also available at http://apps.who.int/iris/bitstream/10665/44397/1/9789241599955_eng.pdf).

WHO. 2011. Serum retinol concentrations for determining the prevalence of vitamin A deficiency in populations. Vitamin and mineral nutrition information system (WHO/NMH/NHD/MNM/11.3). Geneva, WHO. 5 pp. (also available at http://www.who.int/vmnis/indicators/retinol.pdf).

WHO. 2015. The global prevalence of anaemia in 2011. Geneva, WHO. 48 pp. (also available at http://apps.who.int/iris/bitstream/10665/177094/1/9789241564960_eng.pdf).

WHO. 2016. Infant and young child feeding fact sheet. In: WHO [online]. Geneva. [Updated September 2016]. http://www.who.int/mediacentre/factsheets/fs342/en/

WHO. 2017a. Global database on the implementation of nutrition action (GINA). In: WHO [online]. Geneva. [Cited 7 August 2017]. https://extranet.who.int/nutrition/gina/

WHO. 2017b. Global health observatory data repository. In: WHO [online]. Geneva. [Cited 7 August 2017]. http://apps.who.int/gho/data/node.main.

WHO. 2017c. Yemen cholera situation report no. 4 (19 July 2017). Geneva, WHO. 5 pp. (also available at http://www.emro.who.int/images/stories/20170719_WHO_cholera_SitRep_4_v2.pdf?ua=1).

WHO. 2017d. Yemen cholera response: daily epidemiological update (28 August 2017). Geneva, WHO. 2 pp. (also available at http://www.emro.who.int/images/stories/yemen/Yemen_Cholera_Response_-_Daily_Epidemiological_Update_-_2017-08-28.pdf?ua=1).

WHO, UNICEF & UN University. 2001. Iron deficiency anaemia: assessment, prevention and control. Geneva, WHO. 114 pp. (also available at http://www.who.int/nutrition/publications/micronutrients/anaemia_iron_deficiency/WHO_NHD_01.3/en/).

World Bank. 2014a. MENA quarterly economic brief. Issue 2, January 2014. Washington, DC, World Bank. 18 pp. (also available at http://siteresources.worldbank.org/INTMENA/Resources/english.pdf).

World Bank. 2014b. Middle East and North Africa Region (MENA) economic monitor: corrosive subsidies. October 2014. Washington, DC, World Bank. 54 pp. (http://documents.worldbank.org/curated/en/922481468275944547/pdf/912100WP0Box380RSION00CTOBER040214.pdf).

World Bank. 2017a. Doing business: measuring business regulation, distance to frontier database, 2010–17. In: World Bank [online]. Washington, DC. [Cited 5 November 2017]. http://www.doingbusiness.org/data/distance-to-frontier

World Bank. 2017b. Ease of doing business rankings. In: World Bank [online]. Washington, DC. [Cited 5 November 2017.] http://www.doingbusiness.org/rankings

World Bank. 2017c. World Bank list of economies (by income class) (March 2017). In: World Bank [online]. Washington, DC. [Cited 5 November 2017.] http://databank.worldbank.org/data/download/site-content/CLASS.xls

World Bank. 2017d. World development indicators. In: World Bank [online]. Washington, DC. [Cited 5 November 2017.] http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators

2017

Near East and North Africa

REGIONAL OVERVIEW OF FOOD SECURITY AND NUTRITION

BUILDING RESILIENCE FOR FOOD SECURITY AND NUTRITION IN TIMES OF CONFLICT AND CRISIS: A PERSPECTIVE FROM THE NEAR EAST AND NORTH AFRICA REGION

- Food security in the NENA region is fast deteriorating, driven by conflict and leading to a widening gap in well-being between conflict and non-conflict countries. The level of undernourishment in the conflict countries is now six times larger than that in non-conflict countries, and the level of severe food insecurity in the conflict countries is twice that in others. To get an understanding of the significance of the gap between the two subregions, the prevalence of undernourishment in the NENA conflict countries is similar to that in the Least Developed Countries (LDCs) of the world, while that in the non-conflict countries is under 5 percent, on the level of developed countries.

- The gap in food security has been widening since 04–2002, and has coincided with changes in the intensity of violence in the two subregions. Measures of the intensity of violence for the two subregions have been moving in opposite directions since 2003, after moving towards each other between 1990 and 2002.

- The growing gap in well-being in the region has affected indicators of child anthropometry for children aged 6 to 59 months. The conflict countries performed poorly in relation to non-conflict countries within each World Bank income class, including low-medium and high-medium income.

- Conflict causes great challenges for monitoring the SDGs. Measures of food insecurity and nutrition status used to assess SDG Targets 2.1 and 2.2 have inherent limitations that make them less reliable during conflict. UN agencies do gather and assess information on food security and nutrition status during conflict, but these data are not always complete and are difficult to compare with peacetime data. An initial consideration of Syrian malnutrition data collected during conflict gives cause to regard them with scepticism.

- The 'parting of the ways' extends to policies as well. Conflict countries have few resources to implement government policies designed to achieve SDG 2, since expenditures on dealing with violence and improving security tend to crowd out expenditures on other priorities. In the five states of the region in civil conflict, 21 to 67 percent of the countries' GDP were spent on perpetrating, containing, preventing and dealing with the consequences of violence.

- Policies to reduce food insecurity and malnutrition must go far beyond the nutrition and health sectors. A review of development indicators indicated that the main regional policy drivers supporting the reduction of undernourishment and stunting in the region have been (1) poverty reduction, (2) economic growth, (3) improvements in maternal and childhood nutrition and public health, (4) increases in the food supply (for malnourishment only) and (5) less episodes of political violence.

- FAO and the UN System have taken a resilience-centred approach to development assistance in the region in order to prevent the repetition of the cycle of recurring conflict. A resilience-centred approach recognises that the crises in Yemen, the Sudan, Libya, the Syrian Arab Republic and Iraq are not only humanitarian and political but also developmental and that the development needs of the population should be addressed simultaneously with other needs. This is part of FAO's efforts towards building peace in the region. Sustaining peace is not only a post-conflict activity but should be a priority for assistance in countries before, during and after conflict.

- Responsibility for finding political solutions to conflict and ensuring that they are implemented falls to Member States. The 2030 Agenda adopted by the Member States in September 2015 provides a set of interrelated goals that both support sustainable development and sustain peace.

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