FOOD SECURITY AND NUTRITION IN THE SOUTHERN AND EASTERN RIM OF THE MEDITERRANEAN BASIN

Edited by:
Mark Smulders
Mohamed Aw-Dahir
Kate Dunn
René Verduijn

Food and Agriculture Organization of the United Nations
FAO Regional Office for the Near East
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<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>AMIS</td>
<td>Agricultural Market Information System</td>
</tr>
<tr>
<td>CIHEAM</td>
<td>Centre International de Hautes Études Agronomiques Méditerranéennes (International Centre for Advanced Mediterranean Agronomic Studies)</td>
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<tr>
<td>DES</td>
<td>Dietary energy supply</td>
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<tr>
<td>EFSA</td>
<td>Emergency Food Security Assessment</td>
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<tr>
<td>EMPRES</td>
<td>Emergency Prevention System of Transboundary Plant and Animal Pests and Diseases</td>
</tr>
<tr>
<td>EWS</td>
<td>Early warning system</td>
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<tr>
<td>FAO</td>
<td>United Nations Food and Agriculture Organization</td>
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<tr>
<td>FCS</td>
<td>Food consumption score</td>
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<tr>
<td>GIEWS</td>
<td>Global Information and Early Warning System (FAO)</td>
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<tr>
<td>GDP</td>
<td>Gross domestic product</td>
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<tr>
<td>HIES</td>
<td>Household income and expenditure survey</td>
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<td>IFAD</td>
<td>International Fund for Agricultural Development</td>
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<tr>
<td>IFPRI</td>
<td>International Food Policy Research Institute</td>
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<tr>
<td>ILO</td>
<td>International Labour Organization</td>
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<tr>
<td>IPCC</td>
<td>Intergovernmental Panel on Climate Change</td>
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<td>JFFLS</td>
<td>Junior Farmer Field and Life Schools</td>
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<tr>
<td>LAS</td>
<td>League of Arab States</td>
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<tr>
<td>MDG</td>
<td>Millennium Development Goal</td>
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<tr>
<td>MENA</td>
<td>Middle East and North Africa</td>
</tr>
<tr>
<td>OPT</td>
<td>Occupied Palestinian Territories</td>
</tr>
<tr>
<td>PCBS</td>
<td>Palestinian Central Bureau of Statistics</td>
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<tr>
<td>PNA</td>
<td>Palestinian National Authority</td>
</tr>
<tr>
<td>RADCON</td>
<td>Rural and Agricultural Development Communication Network (Egypt)</td>
</tr>
<tr>
<td>RBAS</td>
<td>Regional Bureau for Arab States (UNDP)</td>
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<td>RNE</td>
<td>Regional Office for the Near East (FAO)</td>
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<td>UNDP</td>
<td>United Nations Development Programme</td>
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<td>UNECA</td>
<td>United Nations Economic Commission for Africa</td>
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<tr>
<td>UNRWA</td>
<td>United Nations Relief Work Agency</td>
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<tr>
<td>WFP</td>
<td>World Food Programme</td>
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<tr>
<td>WHO</td>
<td>World Health Organization</td>
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<td>WMO</td>
<td>World Meteorological Organization</td>
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To a great extent, the sharp deterioration of the economic and social situation in the wake of the soaring food prices in 2007-08 provided the spark that ignited the ‘Arab spring’ of political upheaval starting in early 2011. Uprisings against autocratic rule, want and inequality have brought down governments across the southern and eastern rim of the Mediterranean Basin comprised of Arab states. While the Arab spring provided impetus for the present report on food security and nutrition, the study was, in fact, already in the planning stages prior to the uprisings. This was in light of a series of price shocks in the global food commodity markets, starting in 2006, which gave rise to serious food security concerns in the region. For example, the cost of a typical household food basket in Egypt rose by 47 percent over the 2005-08 period. The food riots that broke out in 2008 were an overt manifestation of the deep social problems and simmering discontent in the region.

In addition to political instability, daunting socio-economic challenges now face those in authority in the countries covered by this report: Algeria, Egypt, Jordan, Lebanon, Libya, Morocco, the Occupied Palestinian Territories (OPT), the Syrian Arab Republic and Tunisia. They must build their nations on a parched landscape in the face of high population growth rates, deepening unemployment and declining access to decent food, water and land. While countries in the region have made significant progress in reducing infant and child mortality over the past fifteen years, results have been mixed in addressing overall child malnutrition. Also, there is a worrisome increasing trend of overweight and obesity among adult women and men of the region, reaching as much as 78 percent in Jordan and 82 percent in Egypt.

Existing social protection measures relating to food are high in dietary energy content, contributing to growing rates of overnutrition, while on the other hand not always reaching the most needy. In some countries, the subsidy programmes represent a substantial fiscal burden; in Syria and Egypt, for example, food subsidies exceeded more than 1 percent of GDP before the onset of the recent political turmoil. Yet, the image of an Arab spring, verdant with possibility, remains an inspiration in the face of these challenges.

This study argues that increasing agricultural productivity and strengthening the food system — understood as the entire chain from the production to the consumption of food, as well as the nutrition and jobs it provides — offer solutions to some of the many complex and intertwined challenges facing the region. Reducing the productivity gaps in cereal yields, investing in agriculture research and development, improving food safety measures, and giving special attention to the rural poor, could all greatly contribute to reducing the dependency of the region on food imports and the promotion of a more equitable and balanced economic growth.

This report analyses the causes of food insecurity and malnutrition in the region at both household and national levels and proposes a series of remedial policy interventions. We believe the alternative measures suggested here will lead to greater food security and better nutrition. Importantly, this must be achieved through inclusive and sustainable socio-economic development, despite the limited and often stressed natural resource base.

Jomo Kwame Sundaram
Assistant Director General
Economic and Social Development Department
FAO, Rome

Abdessalam Ould-Ahmed
ADG, Regional Representative
Regional Office for the Near East
FAO, Cairo
EXECUTIVE SUMMARY

The subregional context

The Arab nations of the southern and eastern rim of the Mediterranean Basin, each of which has unique environmental, socio-economic, cultural and political characteristics, are middle-income countries. Nevertheless, food insecurity and malnutrition affect many segments of society. While large food subsidy programmes have been in place for several decades in some countries, poverty and unemployment, combined with conditions of food insecurity and malnutrition, are among the underlying causes of recent turmoil known as the ‘Arab Spring’. In the year leading up to the Arab Spring, food prices rose by an estimated 20 percent in Egypt and 13 percent in Syria. Food price inflation, stemming from global commodity price shocks since 2007, has been associated with an additional four million undernourished people in the region. About 14 percent of the population lives below the US$2 per day poverty line in the Middle East and North Africa Region, with an equally large percentage living close to that poverty line.

The first chapter of this report provides an overview of the main challenges underlying food insecurity and malnutrition in the sub-region, reflecting on the dimensions of food availability, access, stability and utilization. A picture of overwhelming difficulty emerges:

- Population growth is surging.
- Youth unemployment is exceptionally high.
- The natural resource base is in decline and further threatened by climate change.
- Food imports can be extremely costly and difficult to access in times of global shortages.
- Poverty and hunger are particularly acute in rural areas.

The discussion below, around this set of daunting challenges, is followed by a series of policy recommendations to address them. These propose turning food, agriculture and rural livelihoods into engines of growth, creating jobs, providing better quality food and higher rural incomes, and using water and land more efficiently and sustainably.

The challenges: rising demand, diminishing resources

Population of the sub-region is expected to grow by 50 percent to more than 300 million by 2050, compared to 203 million in 2009. This represents the second-highest population growth rate in the world, after Sub-Saharan Africa. About 45 percent of the people live in rural areas.

Youth unemployment is the highest in the world, averaging 25 percent across the sub-region. In North Africa, only 28 percent of women are active in the labour market. Unemployment in the formal sector exceeds 9 percent in all the countries; female unemployment is as much as three times that in Egypt, Jordan and Syria. In Algeria and the occupied Palestinian territories (OPT), almost a quarter of people with tertiary education are unemployed. For female graduates, the figure is one in three.

Economic performance in the sub-region has generally been better in recent years. This is despite financial and economic crisis elsewhere in the world since 2007. Egypt, Jordan, Lebanon, Syria, Tunisia and Libya realized average GDP growth of more than 5 percent during 2005-2010. It is too early to tell...
the full impact of the Arab Spring on GDP growth rates. Based on most recent estimates, growth is expected to decline to around 3 percent in 2012, after stagnating in 2011.

The natural resource base (water, land and biodiversity) is already strained, and faces even greater challenges from climate change and increases in population, urbanization and desertification. Lebanon is the only country in the sub-region not in a critical water situation. Across North Africa, irrigation is limited, and systems are inefficient or in a poor state of repair. In much of the region, rain-fed agriculture is practised on more than half of all arable land. Climate change models indicate reductions in rainfall ranging from 4 to 27 percent between 2030 and 2060. By 2050, arable land per capita in the Arab world is projected to fall by 63 percent from its level in the 1990s, to 0.12 hectares per capita.

While the region’s general welfare is high in comparison with Sub-Saharan Africa, extreme poverty in some pockets, particularly in rural areas, limits people’s access to food. Poverty, unemployment and underemployment are at the core of the sub-region’s food security problems. Over one-fifth of Egyptians live below the poverty line of US$2 per day, with a large proportion of the population living close to this poverty line (40 percent live on less than US$2.50 per day).

Despite very large government subsidies, the poor spend 35-65 percent of their income on food. The rural poor, in particular, do not grow enough nor earn enough to feed themselves adequately. To a great extent this is because able-bodied males migrate to cities, and farming is left to women, children and the elderly.

**Government food subsidies help the relatively better off more than the poor. They promote obesity and, paradoxically, malnutrition.** The right to food has been tacitly acknowledged in government programmes to mitigate food price shocks since 2007. These programmes support smallholders and poor consumers. The purchase of energy-rich, but nutritionally poor carbohydrates (cereals and sugar) is subsidized. As detailed in one case study in this report, excessive consumption of these foods is blamed for rising levels of overweight (45 percent of Egyptians) and rising malnutrition (one-quarter of Egyptian children). These subsidies consume substantial government resources, accounting for 0.7 percent of GDP in Morocco and 3.5 percent in Algeria in 2009.

**Arab countries import at least half of the food calories they consume,** wheat in particular. Since 2007, the impact of price shocks on food security has been very negative for several countries. In North African countries, the wheat import bill increased by 62 to 178 percent during 2006–08. The related increase in 2010 welfare spending in Tunisia and Algeria was more than 3.5 percent of GDP.

<table>
<thead>
<tr>
<th></th>
<th>Percent poor in urban population</th>
<th>Percent poor in rural population</th>
<th>Percent of total poor in rural areas</th>
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<tbody>
<tr>
<td>Egypt</td>
<td>10</td>
<td>27</td>
<td>78</td>
</tr>
<tr>
<td>OPT</td>
<td>21</td>
<td>55</td>
<td>67</td>
</tr>
<tr>
<td>Jordan</td>
<td>12</td>
<td>19</td>
<td>29</td>
</tr>
<tr>
<td>Syria</td>
<td>8</td>
<td>15</td>
<td>62</td>
</tr>
<tr>
<td>Algeria</td>
<td>10</td>
<td>15</td>
<td>52</td>
</tr>
<tr>
<td>Morocco</td>
<td>5</td>
<td>15</td>
<td>68</td>
</tr>
<tr>
<td>Tunisia</td>
<td>2</td>
<td>8</td>
<td>75</td>
</tr>
</tbody>
</table>

Source: The World Bank, Improving Food Security in Arab Countries, January 2009

Note: Poverty as determined by national poverty line; data not available for Lebanon and Libya.
Policy action: improving food security, nutrition and rural livelihoods

As a result of rapid urbanization in recent decades, enthusiasm for promoting agricultural livelihoods has waned in the countries of the southern and eastern rim of the Mediterranean Basin, as in the rest of the world. The urban pull is understandable given that city residents live much better lives than the population in rural areas (Table 1 above). But migration to the city, or out of the rural areas, is no longer the solution to poverty that it used to be. The popular uprisings since early 2011 are clear evidence of high levels of dissatisfaction among urban residents.

Despite high returns on investment in agricultural research and development (R&D) and the social advantages of promoting rural livelihoods, there is gross underinvestment in agricultural R&D in the sub-region. It amounts to 1 percent or less of total agricultural GDP. FAO recommends a minimum investment of 2 percent of agricultural GDP in R&D.

Many of the changes needed to improve rural livelihoods and food and nutrition security would be of general benefit to the sub-region. These include the need for family planning to reduce the anticipated 50 percent increase in population by 2030, increased and better education and employment, improvements in governance at all levels, and action to mitigate the impact of climate change.

As for strategies pertaining more specifically to food security, nutrition and rural livelihoods, they should build on the following five pillars:

1. Improved governance of relevant institutions.
2. Enhanced food production and improved rural livelihoods.
4. Reduced exposure to market volatility.
5. Strengthened farmer institutions and increased knowledge relevant to food security.

Improved governance. The largest overriding change required is the clear need for a shift towards improved governance for food security, based on a human rights approach as captured by the PANTHER principles.1 Government agencies must start to function more effectively. They should coordinate and facilitate strong governance, also at decentralised levels, while promoting transparent and equitable rural institutions. This should also include the integration of inclusive, consultative and participatory mechanisms dealing with the sub-region’s food security and nutrition challenges.

Enhanced food production; improved rural livelihoods. The smallholder farming community should be at the centre of agricultural development and poverty reduction strategies. This entails strengthening an array of supporting functions including, but not limited to: (1) financial services (2) extension services (3) land and water resource management practices (4) access to safety nets and (5) off-farm employment opportunities.

The reality that women make up half the agricultural labour force must be acknowledged to a greater degree in policy formulation and implementation. Access to agricultural finance for women and youth remains critical in improving rural livelihoods and food security.

Irrigation reforms are long overdue. Irrigation systems are in disrepair and inefficient; water management belies the scarcity of the resource in the region. Shortcomings in technical, policy and institutional areas must be addressed, particularly as climate change threatens to worsen water scarcity. This report takes the view that irrigation water should be mainly dedicated to the production of high-value crops, while

1 PANTHER is an acronym for the seven principles supporting the rights-based approaches to development: participation, accountability, non-discrimination, transparency, human dignity, empowerment and the rule of law.
other foods (cereals in particular) would be imported to a much greater degree than is the case today. Sales of higher-value crops would help fund imports.

**Strengthened safety nets.** Given the prevalence of poverty and hunger in rural areas, direct and well-targeted safety nets and social protection programs, based on legal guarantees and solid entitlements, would improve rural incomes. This would provide a reliable footing on which rural populations could plan their lives, investing in education, health care and productive activities to generate cash and food. However, this is not an endorsement of economy-wide policies (such as border trade measures) to protect farmers; these distort production incentives and have a negative impact on long-term national food security.

**Reduced exposure to international market volatility.** Governments and their domestic, regional and international partners are increasingly focused on the need to strengthen national and regional market information, food security monitoring and early warning systems. This is vital as climate change plays havoc with weather patterns and regional turmoil yields socio-economic unrest. Separately and together, the relevant authorities must develop food security monitoring capacities and strengthen preparedness and response capacities.

Governments within the sub-region must use all available tools to reduce the cost of food imports. A 2009 World Bank/FAO/IFAD study estimated the government of Egypt might have saved between US$144 million and US$648 million on wheat procurement had hedging, futures contracts or options, rather than monthly tenders been used (World Bank et al., 2009).

Timely dissemination of key data would help smallholders to make better-informed decisions about their operations and increase farm efficiency. This includes agro-climatic monitoring, crop production forecasting, animal and plant disease monitoring and surveillance, markets and trade information, policy monitoring and reports on the social and political environments.

**Strengthened farmer institutions; increased knowledge of food security and nutrition issues in the sub-region.** Rural institutions and organizations must be supported financially and technically to provide farmers with more research, extension services and means to organize. Farmers' associations and co-operatives can provide vital links among farmers, markets, the private sector and government. Improved extension services should allow knowledge exchange among technical experts, suppliers and farmers; these services should be demand-driven and embedded in producer organizations.

Consumer education can change unhealthy eating habits and address the subregional phenomenon of concomitant increases in under-nutrition and obesity. Social protection schemes must be reviewed to reduce waste, target the most needy and make these programs more sustainable over time.

As is demonstrated in the three case studies included in this report, governments, academic institutions and international partners need to collect and analyse data on household food security and nutrition to understand key drivers of food insecurity and malnutrition. This is essential to promote an appropriate, evidence-based mix of remedial policy actions.
STRUCTURE OF THE PAPER

Chapter 1 provides an overview of food security and nutrition in the region, followed by a more detailed analysis along the four dimensions of food security, namely: food availability; food accessibility; food utilization; and stability in food supply and access to food. This overview emphasizes the interdisciplinary nature of food insecurity concerns, which have to be addressed through an effective cross-sectoral approach.

Chapter 2 describes the socio-economic characteristics of households in the sub-region, using available information and analysis, distinguishing between rural and urban households, with attention to gender and age aspects. This is followed by an analysis of the vulnerability context in the sub-region, particularly in relation to its scarce and often depleted natural resource base, its high rates of unemployment and underemployment, and its great dependence on imports of key agricultural commodities. Population growth, persistent poverty and growing disparity are then discussed as critical drivers of future food insecurity and malnutrition.

Chapter 3 contains three case studies that provide in-depth information on household food insecurity and malnutrition experiences in OPT, Tunisia and Egypt. The different methods used in all three cases provide excellent examples of what can be learned about household food security and nutrition situation, despite limited availability of relevant socio-economic data and scarce funds to conduct in-depth surveys.

Chapter 4 reviews in more detail the policy actions required to overcome stated constraints and challenges and builds on opportunities identified in the earlier chapters. These options offer national governments, civil society and development partners an array of policy choices to help them address current food insecurity, and manage the risk factors that make people in the sub-region vulnerable to future food insecurity and malnutrition.
CHAPTER 1: DIMENSIONS OF THE FOOD SECURITY AND NUTRITION SITUATION

1.1 Regional overview

The countries of the sub-region share a common cultural and historical heritage. They also share a vulnerability context that includes a fragile and overexploited natural resource base (land and water, in particular) that has come under stress from population growth and climate change. This chapter provides a brief overview of the region’s food and agricultural sector and its natural resource base. It discusses demographic and socio-economic factors driving food insecurity and malnutrition. This discussion does not include an analysis of the underlying political forces, which combined with socio-economic inequality, have led to the recent uprisings, which have collectively become known as the ‘Arab spring’.

Agricultural production in the sub-region is constrained by limited water resources and fertile land, extremely low and variable precipitation, exposure to extreme weather events, land degradation and desertification. Water is becoming increasingly scarce in several countries in the region. The availability of renewable water has fallen, on a per capita basis, by more than 70 percent since 1950; a further 40 percent decrease from present levels is expected by 2050. These constraints hamper efforts to maintain current levels of self-sufficiency in food production. The sub-region is the largest importer of wheat in the world and depends on foreign markets for the bulk of its cereals generally. On the other hand, the sub-sub-region struggles to ensure local production of fresh and nutritious foods (red meat, poultry, dairy, fish, fruits and vegetables) is adequate to meet a large part of domestic demand.

Despite constraints in production and marketing, the crop and livestock sectors make a significant contribution to the rural economy. The agricultural sector overall contributes on average 10 to 20 percent to national GDP in the sub-region, reaching 15 percent in populous Egypt and Morocco and less than 5 percent in Lebanon and Jordan. Perhaps even more importantly, the agriculture sector employs significant numbers of people - 46 percent of the active population in Morocco and 30 percent in Egypt and in Syria (for Syria, this statistic is from before the onset of the current civil war).

Interestingly, the limited rural resource base and rapid urbanization have not discouraged agricultural employment, which has grown significantly in the sub-region in recent years. Between 1990 and 2005, employment in agriculture grew close to 60 percent in Algeria and Jordan, 43 percent in the Syria, 32 percent in OPT, 24 percent in Tunisia, and 13 percent in Egypt (World Bank et al., 2009). Part of this expansion has come through real growth. Syria for instance, saw its agricultural production grow significantly in the last decade reaching self-sufficiency in wheat, food legumes, vegetables, fruits, olive and olive oil and, to a large extent, also in livestock products. The expansion in employment often involves cheap foreign labour or may imply an expansion of unpaid family labour, as a consequence of high youth unemployment and the absence of formal employment opportunities in manufacturing and services, often associated with developing societies with higher urbanization rates. Sadly, the on-going devastating armed conflict and civil insecurity in Syria will most likely reverse progress made over the past number of years.

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2 Main authors for this chapter include: Mulat Demeke, Fatima Hachem, Szilvia Lehel, Dost Muhammad, Maylis Razes, Jean Senahoun, Markos Tibbo and René Verduijn (all FAO)

3 In Jordan, foreign workers — mostly Syrians and Palestinians — dominate in agricultural labour.

4 This may give new meaning to Clifford Geertz’s 1956 concept of “shared poverty”. It described traditional agriculture’s declining capacity to absorb extra labour, which he characterized as “agricultural involution”. 
The sub-region's general welfare is significantly higher than that of Sub-Saharan countries, with GNI per capita (in PPP\(^5\)) in 2008 as follows: between US$ 4,000 and US$4,500 (Morocco and the Syrian Arab Republic), US$5,500 (Jordan and Egypt), US$7,000 (Tunisia), US$8,000 (Algeria), US$10,880 (Lebanon) and more than US$15,000 for Libya. Welfare is relatively well distributed in comparison with Sub-Saharan Africa and Latin America. The latest Gini coefficient estimates were 0.32 for Egypt, 0.38 for Jordan, and 0.41 for Morocco and Tunisia (Breisinger, Clemens et al. 2011). In terms of welfare programmes, the countries in the sub-region spend significant amounts on food imports in support of food subsidies (cereals, sugar and edible oil mainly).

Despite this relative wealth in society, poverty levels are still relatively high, with about 20 percent of people in the sub-region living below the equivalent of US$2 per day. Moreover, it is estimated that a decrease in income of only US$0.50 per person per day would almost double the number of poor in Egypt, Jordan and Morocco (IFPRI, 2010). This vulnerability is particularly acute given that the region’s economic health is closely tied to the performance of global markets, particularly for energy and agricultural commodities. The region is the largest importer of cereals in the world.

The impact that changes in the global economy have on national- and household-level budgets in the sub-region has been amply demonstrated several times during the past decade, most recently during the 2007-08 food and fuel price crisis, the current period of still high and volatile food prices, and the global economic crisis that started in 2010 (see also the Egypt case study in chapter 3). The sub-region is highly dependent on: (i) remittances which account for as much as 25 percent of GDP in Jordan and 19 percent in Lebanon, and (ii) tourism and associated service sectors, both of which are affected deeply by swings in the regional and global economy.

To varying degrees, countries in the sub-sub-region have policies in place to respond to food price volatility and increasing levels of vulnerability. These include social safety nets and consumer subsidies run by governments, ‘zakat’ systems and other charities. The sustainability of government-run schemes is questionable, due to their burden on government budgets. In addition, the effectiveness of these measures in targeting benefits to those most in need and their role in reducing malnutrition is in question and is considered to be very low.

While the region’s performance in meeting dietary energy requirements is encouraging, levels of malnutrition (as measured through anthropometry\(^6\)) are of concern for Egypt and Libya. Both exhibit moderate levels of stunting (growth retardation or low height-for-age) among children, a manifestation of chronic malnutrition, as well as moderate levels of underweight (low weight-for-age). Of greater concern are levels of malnutrition in Morocco and Syria with moderate prevalence of stunting and underweight children, and a high prevalence of wasting (low weight-for-height), a manifestation of acute malnutrition. Perhaps surprisingly, the Palestinian territories showed a low prevalence of all three anthropometric indicators. This could be attributed to strong kinship and other social factors, and well-targeted humanitarian support.

Micronutrient deficiencies are a concern for the sub-region, especially among the rural landless and poor urban households. Fortunately, food supplementation such as salt iodization is taking off, with coverage at virtually 100 percent in Tunisia and 60 percent in Algeria. The exception to this growing success is Morocco, where only 21 percent of households have easy access to iodized salt. Anemia is a common problem in the region and prevalence transcends household income levels. The regional median is about 30 percent for non-pregnant women, with Lebanon on the lower end (17 percent) and

\(^5\) PPP: purchasing power parity
\(^6\) Using WHO standards for: height-for-age, weight-for-age and weight-for height below minus two standard deviations from the median of the reference population (WHO, 2006)
Dimensions Of The Food Security And Nutrition Situation

Egypt (41 percent) and OPT (47 percent) at the higher end. Despite the high prevalence of anaemia, awareness of the symptoms and treatment is low (World Bank, 2006).

Dimensions of the sub-region’s food security and nutrition situation are explored further, below. An understanding of these dimensions is important in the progressive realization of the right to adequate food for individuals and population groups.

1.2 Food availability

Food availability: The availability of sufficient quantities of food of appropriate quality, supplied through domestic production or imports - including food aid (FAO).

There is a variety of farming and rural livelihood systems in the sub-region, ranging from predominantly pastoralist and agro-pastoralist societies in arid and semi-arid areas, to intensive crop production under irrigation and well-adapted animal production systems. This section describes the challenges, risks and opportunities in crop and animal production systems, which are vital sources of available food, and their importance in achieving food and nutrition security.

Crop production. Crop production is the main contributor to agricultural GDP in the sub-region. Arable land is extremely limited; on average, arable land as a percent of total land area is 10 percent for the sub-region with Syria having the highest ratio of 25 percent. As a result, the sub-region consists predominantly of arid and semi-arid areas with low and variable rainfall. Despite natural resource constraints, crop production will continue to play a major role in the economies of most countries and in the livelihoods of farming communities. Moderately humid zones account for less than 10 percent of the land area, with nearly half of the agricultural population. The drier areas account for nearly 90 percent of the land area with less than 30 percent of the population. Rain-fed crops are grown mainly during the wetter winter period, while irrigated areas are cultivated year-round.

The total cultivated area in the larger Arab world is about 46 million hectares. Of that, 80 percent is rain-fed agriculture and the rest is under irrigation. Due to low, erratic rainfall and the limited use of modern farming techniques, yields in rain-fed areas are extremely poor and fluctuate widely. The average yields in these areas are generally less than one ton per hectare with a cropping intensity of about 57 percent, which is much lower than under irrigated conditions.

Cereals, wheat in particular, dominate the cropping systems, followed by barley, rice, cotton, vegetables and fruit trees. Forages are also important in all countries and are intercropped mainly with date palm. The most common horticultural crops in the tree layer are date palms, mangoes, citrus, grapes and fruit trees, such as figs, mulberries, pomegranate and olives, all of which are native and well adapted to arid and Mediterranean climatic conditions. Most of the countries with an agricultural base export some vegetable and fruit production. Certain countries, such as Jordan, are pursuing an aggressive agricultural modernization policy in bringing more land under irrigation while also moving towards increased privatization in the sector. However, many problems continue to hamper agricultural development, including marketing and access to inputs and credit.

In 2009, country-level self-sufficiency ratios in total cereals ranged from 3 to 81 percent; a significant proportion of total available food in the sub-region was imported. Table 2 below provides historical self-sufficient ratios (SSR) in the sub-region for a variety of commodities. Due to limited land holdings and scarcity of quality irrigation water, farmers in the region traditionally engage in subsistence and integrated farming systems. Field crops, particularly wheat, barley and pulses are grown mainly under rain-fed conditions and occupy around 60-70 percent of the total cropped area in most of the sub-region. Wheat is the most important crop from a national food security point of view; barley plays an equally important role as livestock feed, as it is drought and salt tolerant and can be grown successfully in places where most other crops would fail.
Because of rapid commercialization, growers of field crops and cash crops (such as vegetables and fruit) compete increasingly for limited land and water resources. Nevertheless, the present pattern of intercropping orchards with field and fodder crops is likely to continue. This trend does not undermine the importance of field crops in the current farming system. Almost all of the area under vegetable production is planted with improved seeds for imported varieties, marketed by private seed companies. The intensification of commercial vegetable and fruit production has discouraged proper crop rotation. Because single species are cropped continuously on the same piece of land, soil fertility has been depleted and pests and plant diseases are common. Heavy doses of chemical fertilizers and pesticides are needed to maintain and enhance productivity. Thus the cost of production has increased and commercial agricultural profits have fallen. Sustainable agricultural development requires consideration of crop rotations and intercropping of leguminous field crops (pulses) with vegetable and fruit crops.

With population growth and subsequent increases in food demand, traditional systems of farming will not be adequate to meet regional needs. This calls for more efficient use of agricultural resources: water, fertilizers, plant genetic resources (including improved types and varieties of fruits and high yielding vegetable seeds). Together with intercropping field and fodder in orchards, rotating leguminous crops with cereals and vegetables will help control insects and diseases while maintaining soil fertility. The use of integrated pest management and off-season organic vegetable production could enhance crop productivity further.

The challenge for the future will be to develop integrated farming systems that are suited to the sub-region's various environments and help to meet farmers' needs for both food and cash income. Organic fruits and vegetables produced in the off-season can help meet both needs. Furthermore, improved varieties of fruits and vegetable crops planted under better farm management practices can yield superior produce suitable for domestic and foreign markets, and raise farm income.

**Animal production.** Livestock and poultry production represent an important socio-economic activity, and form an integral part of the agricultural system in the southern and eastern rim of the Mediterranean Basin. Animal production contributes to food security and nutrition, household welfare, employment, income generation and other social services. The sector’s contribution to agricultural output is as high
as 60 percent (in Jordan). In other countries, imports of animal and animal source foods are very high (85 percent in Lebanon), so these countries are vulnerable both to price volatility and to trans-boundary animal diseases. On the whole, the sector has suffered from a number of factors: low investment; harsh climate; frequent drought; chronic feed and water scarcity; rangeland degradation; inadequate utilization of adapted animal genetic resources; endemic, zoonotic and trans-boundary animal diseases; poor market access and insufficient attention from policy makers.

Over the past four decades, most livestock populations have increased in the majority of countries in sub-region other than in Morocco where the numbers have declined. There has been an unprecedented decline of the camel population throughout the sub-region other than in Morocco, Tunisia and Algeria where their numbers have bounced back. Nevertheless, rising demand for animal products, stemming from population growth and rising incomes, has outpaced growth in the subregional livestock industry. Intraregional trade is very weak due to lack of policy coordination and restrictive trade policies, coupled with sanitary barriers, among other reasons.

Despite numerous challenges, the region is quite resilient in that it is home to many livestock breeds adapted to various climatic challenges, including dry areas, oases, humid coastal regions, temperature extremes and poor seasonal nutrition brought on by degradation of rangelands. The region has many adapted breeds of local sheep, goat, cattle and camel. Most are considered to be tolerant of heat and solar radiation. For example, over 70 percent of the sheep breeds in the region are ‘fat-tailed’, an adaptation that allows them to cope with fluctuations in feed availability. On the other hand, some fat-tailed sheep breeds are becoming inbred; others are close to extinction because of indiscriminate crossbreeding or small population sizes. Adapted animal genetic resources represent an important asset for current and future generations, particularly in the context of climate change. On the other hand, settlement policies force pastoralists to give up nomadic lifestyles, with negative consequences for their breeds and their environments. This has implications for their household food security and nutrition situation.

Environmental issues must be addressed wherever intensification of livestock production is underway, or where significant changes in livestock production practices have prevailed. Livestock activities in urban and peri-urban areas have increased in recent years. The push-pull factors include degradation of rangelands, better access to agro-industrial by-products and markets, and alternative income-generating activities for families in peri-urban areas. Growth in demand for livestock products has triggered commercialization of the sector near or in cities. Livestock production systems have intensified. As a result, the development of the milk processing industry and related marketing practices has provided more and diverse milk products and stimulated demand in many areas.

The contribution of animal production to household income is threatened by feed scarcity (in both quantity and quality) associated with degraded rangelands and pastures, sharp and cumulative increases of feed prices, inadequate investment, and imports of cheap animal products encouraged by weak monitoring and other conditions. The prevalence of animal diseases is affecting productivity and profitability, adding to the cost of production, reducing the selling price of the animals and limiting access and competitiveness of smallholders in the main markets. Ineffective policies caused by poor targeting and implementation also undermine production. Other problems include insufficient logistical support for animal disease control and prevention and inadequate veterinary services. Quarantine establishments and other efforts to improve sanitary and phytosanitary standards require commitments from importing and exporting countries and from trading partners.
1.3 Food access

**Food access:** Access by individuals to adequate resources for acquiring appropriate foods for a nutritious diet (FAO).

Poverty is at the core of the food security problem in the southern and eastern rim of the Mediterranean Basin. In addition, the sub-region’s poor suffer from fluctuations and shocks in international food prices (UNDP, 2009). The sub-region is far more self-sufficient in food commodities more likely to be consumed by the rich (meats, fish, and vegetables) than those more likely to be consumed by the poor (cereals and sugar). High and growing dependence on imported foods, particularly food commodities that feature heavily in the regular diets of the poor, has undermined their access to food.

In countries such as Syria and Egypt, which have across-the-board food subsidies, the cost of those supports exceeds 1 percent of GDP and could become a major fiscal problem, if commodity prices stay high or in the event of further price shocks (World Bank et al., 2009). Moreover, the perverse food subsidy mechanisms that predominate in the sub-region do not help much as they are poorly targeted, benefiting the rich more than the poor. In Egypt, it is reported that in the past, as much as 61 percent of the baladi bread subsidy benefited the non-needy (IFPRI, 2001).

Food subsidies in the sub-sub-region mainly support provision of high energy, low nutrition commodities such as sugar, cereals and edible oils. So they tend to reinforce rather than ease food insecurity and malnutrition (FAO, 2011d). The sub-region’s poor, who spend anywhere from 35 to 65 percent of their income on food, are hit hardest by food price shocks. Rising food prices can force the urban poor to reduce food consumption (quantity and/or quality), which then negatively impacts their nutritional status (see Egypt case study, chapter 3.3). The poorest households are likely to incur debts and reduce expenditures on health and education, and to switch toward cheaper, less micronutrient-rich foods (see chapter 2.4 on food utilization). As a coping strategy to increase household income, poor families also may take their children out of school and put them into low-paying work (Jones et al., 2009).

Poverty is generally higher in rural areas than in urban areas. It is estimated that 70 percent of the sub-region’s poor live in rural zones, and the proportion is higher in countries such as Egypt and Tunisia (Table 3). Poor rural households often are headed by women, the landless and farm labourers and account for 55 and 27 percent of rural population in OPT and Egypt, respectively. Rural poverty, unemployment and underdevelopment are fuelling migration to the cities, but the urban sector is unable to create enough jobs to absorb the increasing labour force.

**Table 3: Poverty in the southern and eastern rim of the Mediterranean Basin**

<table>
<thead>
<tr>
<th>Country</th>
<th>Percent poor in urban population</th>
<th>Percent poor in rural population</th>
<th>Percent of total poor in rural areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Egypt</td>
<td>10</td>
<td>27</td>
<td>78</td>
</tr>
<tr>
<td>OPT</td>
<td>21</td>
<td>55</td>
<td>67</td>
</tr>
<tr>
<td>Jordan</td>
<td>12</td>
<td>19</td>
<td>29</td>
</tr>
<tr>
<td>Syria</td>
<td>8</td>
<td>15</td>
<td>62</td>
</tr>
<tr>
<td>Algeria</td>
<td>10</td>
<td>15</td>
<td>52</td>
</tr>
<tr>
<td>Morocco</td>
<td>5</td>
<td>15</td>
<td>68</td>
</tr>
<tr>
<td>Tunisia</td>
<td>2</td>
<td>8</td>
<td>75</td>
</tr>
</tbody>
</table>

*Source:* The World Bank, Improving Food Security in Arab Countries, January 2009

*Note:* Poverty as determined by national poverty line; data not available for Lebanon and Libya.
Groups that stand to lose the most from higher food prices are the urban poor, the rural landless, and small and marginal farmers. Farmers who produce surpluses are likely to benefit from higher prices but a large proportion of small farmers in the region stand to lose because they are net consumers of food.

The urban and rural poor tend to have large families, low levels of education and work in the informal sector. There are also the urban unemployed who tend to be young and more educated than their rural counterparts. According to ILO’s Global Employment Trends 2012 report, the south and eastern Mediterranean countries suffer the highest unemployment rates in the world (the rate was 10.9 percent for North Africa and 10.2 percent for the Middle East in 2011).

When attempting to unveil dynamics behind poverty and food insecurity, “jobless growth” appears to be a double burden on the sub-region’s poor. There is the weak link between real GDP growth and employment generation, and difficult and precarious working conditions faced by poor people who actually manage to find employment. Since the 1990s, the informal sector has been the main employer of these underprivileged people in the region. Strikingly, in 2008 vulnerable employment 7 as a percentage of total employment in developing Arab countries amounted to 60 percent for men and 67 percent for women (UNDPa, 2010).

Most governments in the sub-region have a long history of subsidizing food to help consumers deal with food price increases. The middle classes and other groups also feel the effects of the crisis and believe they also deserve support. Although many people believe they are entitled to food subsidies, from a rights-based perspective this is not necessarily coherent with “right to food” principles. In a rights-based approach, the poorest and most vulnerable people should have priority access to social protection and transfers. Also, there should be clear mechanisms for targeting the most disadvantaged while avoiding discrimination, leakages and patronage. Food subsidies are more effective when they are well targeted (through coupons or vouchers). Otherwise, they may not have the desired redistributive effect (under some conditions, they could have the opposite effect). Social protection or access policies must be designed to cover needs adequately. In crises and other extreme conditions, access to food energy requirements is an adequate criterion. But in less stressful conditions, the reference for support should be provision of a nutritious and balanced diet for the most vulnerable populations. In particular, interventions are needed for specific vulnerable groups (children, pregnant and nursing mothers etc.) to prevent micronutrient and vitamins deficits.

In recent years, national governments in the sub-region have used an array of policy instruments to reduce the impact of the global price increases on consumers while ensuring sufficient food supply and stimulating domestic production. These measures taken can be categorized as follows:

1. **Producer support:** (a) minimum guaranteed prices for farmers (b) cash payments (c) seed and fertilizer distribution (d) input subsidies (e) land rent ceiling (f) rescheduling loan repayments and subsidizing loans to farmers.

2. **Trade-related measures:** (a) a ban on exports of grain and other foodstuffs such as tomatoes and live animals; (b) reduction or elimination of export subsidies; and (c) reduction of import duties on basic food staples.

3. **Consumer support:** (a) increased public sector wages; (b) cash payments; (c) fixed consumer prices for staples such as bread; (d) distribution of food staples (including sugar and rice) to poor households; and (e) ceilings on profit margins for wholesale and retail sales (FAO, 2011g).

7 Vulnerable employment is defined here as either contributing family workers or own-account workers (as a percentage of total employment). Such people are less likely to benefit from safety nets that guard against loss of incomes during economic hardship. [http://data.worldbank.org/indicator/SL.EMP.VULN.FE.ZS](http://data.worldbank.org/indicator/SL.EMP.VULN.FE.ZS)
However, in many countries the measures did not prevent an increase in domestic food prices. For instance, in 2010, food price inflation was estimated at nearly 20 percent in Egypt, over 13 percent in Syria and 6 to 7 percent in Lebanon. The food price inflation rate was much lower — 2 to 5 percent — in Algeria, Tunisia, Jordan, Morocco and OPT, mainly because of subsidies for fuels and some basic foods and controls on prices for regulated commodities (World Bank, 2011).

1.4 Food utilization and nutrition

Utilization: Utilization of food through adequate diet, clean water, sanitation and health care to reach a state of nutritional well being, where all physiological needs are met (FAO)

Nutrition in early stages of life – a crucial period for building human capital. Countries in the southern Mediterranean basin have made significant progress in reducing infant and child mortality over the past fifteen years, but have achieved less homogeneous results in addressing child malnutrition. Chronic malnutrition as measured by stunting among children under the age of five (height-for-age Z-score< -2) improved in Jordan and Tunisia, has shown no improvement in Algeria and Lebanon and deteriorated in Egypt, Syria and Morocco. The impacts of malnutrition on children’s well-being and the associated long-term human and economic costs are well documented. Malnutrition accounts for 35 percent of the disease burden in children under the age of five, irreversibly affecting cognitive and intellectual development and lowering labour productivity. Stunted children become stunted adults, who are 2 to 6 percent less productive than adults of normal stature. It is estimated that a 1 percent decrease in adult stature is associated with a 1.4 percent decrease in productivity.

Despite the persisting prevalence of a traditional social fabric and the low rate of female participation in paid labour in most of the countries, women in the southern Mediterranean countries are drifting away from breastfeeding their children. The rate of exclusive breastfeeding in the sub-region is 28 percent (UNICEF, 2008), lagging behind Sub-Saharan Africa (30-39 percent) and 10 percentage points below the average for developing countries. The importance of breastfeeding for the growth, development and protection of children is not only a right but also an important factor in providing protection against chronic diseases later in life. Recent studies have established that breastfeeding a child helps to protect them against medical conditions later in life, particularly overweight, obesity, blood pressure issues and blood cholesterol (WHO, 2005).

Going beyond the immediate signs of malnutrition, micronutrient deficiencies are prevalent in the sub-region and are a feature of the “double burden” of malnutrition. Anaemia stands out as the most prevalent micronutrient deficiency in children under the age of five that has shown any signs of improvement in last 15 years. The prevalence of sub-clinical forms of vitamin A deficiency in children under age five (based on a serum retinol level of <20 μg/dl) ranges from 10 percent in Egypt and Syria to 17 percent in Jordan and 40 percent in Morocco. In some countries, the prevalence of iodine deficiency disorders is still considered a moderate public health problem and consumption of adequately iodized salt is very low.

Nutrition in adulthood. An increasing trend of overweight and obesity has been registered among women and men of the Mediterranean basin, in addition to the prevalence of micronutrient deficiencies. Overall, available data indicate that a much higher prevalence of obesity is observed among adult women as compared to men and is reaching alarming levels in Egypt (82 percent), Jordan (78 percent), Lebanon (69 percent), Morocco (63 percent) and Tunisia (73 percent). Parallel to that, these countries have been witnessing a rapid rise in the prevalence of non-communicable diseases such as diabetes, cardio-vascular diseases and cancer. Available data also suggest that “hidden hunger” is prevalent in the southern Mediterranean countries, especially for nutrients such as iron, iodine, zinc, calcium, vitamin
A, vitamin D and folate. Anaemia is especially prevalent in women of childbearing age and vitamin D deficiency is also emerging in this population.

**Changes in the diet and in consumption patterns.** The shifts observed in nutritional status and disease patterns are largely determined by changes in food consumption patterns and in the way of life in these countries. In the sub-region as a whole, dietary energy supply has increased since the mid-1960s, with the sharpest increases observed in Egypt, Lebanon and Algeria. Paradoxically, food consumption surveys in Egypt and Tunisia showed a trend of decreasing energy intake between 1980 and 2000. The average daily kilocalorie intake decreased from 3,057 kcal to 2,460 kcal in Egypt and from 2,347 kcal to 2,207 kcal in Tunisia.

The food diversification index (share of foods other than cereals and starchy roots in the dietary energy supply) ranges from 32 percent in Egypt and Morocco, where cereals provide almost 66 percent of energy, to 63 percent in Lebanon, where cereals contribute up to 33 percent of the energy supply. It is worth noting that along with the diversification of the food supply, the contribution of vegetable oils and sweeteners in the energy supply is on the increase. In Jordan, this contribution exceeds the recommend level set up by WHO. The share of lipids in the dietary energy supply ranges from 14 percent in Egypt to 30 percent in Syria, reaching the upper limit of WHO recommendations. Overall, the share of cereals in the energy supply tends to decrease while that of foods of animal origin tends to increase. All these changes have major (both positive and negative) health consequences.

The well-known, healthy Mediterranean diet is not the order of the day in the region. Food consumption surveys in Morocco and Tunisia have revealed the substitution of locally produced foods with imported ones in recent decades. This is the case for example of durum wheat and bread wheat, olive oil and other oils (sunflower, soya, maize).

Urbanization, economic prosperity and globalization are driving dietary change, not only in the types of foods eaten, but also in consumption behaviour. The shift from a traditional diet to a more westernized one is observed across the sub-region as consumers shift to ready-to-eat and industrially processed foods and more “eating out”, all of which means an increased intake of sugar and fat.

Historically, the sub-region has been an important producer and consumer of fruit, but there is a clear trend showing a significant decrease in the consumption of fruits and vegetables. Urbanization is part of the issue, as it distances people from primary food production. The urban poor, in particular, have greater difficulty ensuring a varied and nutritious diet with adequate fruits and vegetables. Paradoxically, urbanization may, for high-income groups, increase access to a diverse and varied diet though at a much higher cost, reinforcing the above phenomenon of pro-rich growth.

As a result of high food prices, the poor depend increasingly on subsidized staple foods such as bread. These, have a high energy content made up of “empty” calories. As a result, poor people have an inadequate intake of other essential nutrients. This would seem to reinforce observations of food insecurity and the high incidence of malnutrition, stunting and micronutrient deficiencies (notably iron deficiency) and obesity in children. In addition to consuming lower-quality diets, the poor may respond to food price shocks by withdrawing children from school and spending less on health services, with potential long-term consequences and significant welfare losses.

### 1.5 Stability of food supplies

**Stability:** To be food secure, a population, household or individual must have access to adequate food at all times; they should not risk losing access to food as a consequence of sudden shocks (e.g. a natural disaster or an economic crisis) or cyclical events (e.g. seasonal food insecurity), nor
have to compromise on the quality of their diet (e.g. due to high and volatile prices). The concept of stability therefore relates to the other three dimensions of the comprehensive definition of food security (availability, access and utilization). For any given situation, the stability dimension of food security explains the vulnerability context (FAO).

Stability in food prices is important to the sub-region as it affects both income from exports and expenditures on imports. The sub-region's economy is characterized by a pronounced reliance on primary products. This includes a high dependency on oil and gas exports (Algeria, Libya and Egypt), prices for which are subject to volatile international petroleum demand and prices. While the economies of the sub-region's non-oil producers are more diversified than those of oil exporting neighbours, they are highly dependent on exports of primary commodities or products of low technological structure, such as clothing and textiles. These commodities and products are vulnerable to market volatility and the global economic climate in general (FAO, 2010e).

In countries with little or no economic growth, a significant food price increase could result in a marked rise in poverty levels and political instability. Because of the ongoing political turmoil, GDP in 2011 was 1 percent lower for the sub-region as a whole compared to the previous year; in all likelihood, poverty and food insecurity has worsened since the uprising. The political crisis has followed on the back of the food, fuel and financial shocks, leading to a significant degree of instability in living standards, especially in oil importing countries of the sub-region in recent years. GDP growth is forecast to rebound in the sub-region to roughly three percent in 2012 (World Bank, 2012a).

The impacts that sharp increases in food commodity prices throughout 2007–08 have had on food insecurity and poverty in the sub-region have been examined in a number of studies. These have attempted to reveal distributional impacts on rural and urban households and on smallholder farmers. The aim has been to determine the level of vulnerability among these groups and potential responses and coping strategies. It is thought that higher prices offer farmers opportunities within a country, if the right policy support is in place. But a recent study (El-Dukheri et al, 2011) demonstrated that the ability of smallholders to benefit from higher domestic prices was seriously limited by drought, higher input prices (especially for fertilizer) and the timing of the price increases in relation to specific crop cycles. Other factors are associated with smallholders’ poor bargaining power and reflect their very limited access to timely information on market prices and to credit facilities. On the other hand, farming households that are net consumers of food adopted coping mechanisms that included increasing off-farm activities and remittances, reduced consumption of some foods, or consuming lower quality foods. Farmers acknowledged the importance of government support (food and fuel subsidies and education and health support) in easing the burden of soaring prices (FAO, 2009b).

What policy makers may not realize is that the majority of the rural poor in the sub-region are net food consumers, even though they are mostly farmers (who also sell their labour). In Egypt and Morocco for instance, farmers and their families account for about 60 percent of all poor, however only 40 percent of their incomes originate from farms. Similarly, an earlier study on rural Egypt established that only half of food price increases were offset by increased wages; substitution effects in consumption are 30 times smaller than direct negative income effects from increased food prices.

Governments have implemented a series of measures to offset the impact of soaring world food prices. These include tariff waivers, price controls, subsidies and wage increases. All these have strained public finances considerably. In all countries, the food import bill increased dramatically in the past decade. In Algeria, Egypt, Libya, Morocco, Mauritania and Tunisia, the wheat import bill increased by 62-178

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Footnote:

9 It has been shown that, barring economic growth, a 30 percent increase in food prices in Egypt would have resulted in a 12 percentage point increase in poverty (World Bank, 2009).
Table 4: Government Subsidies in sub-region (2009)

<table>
<thead>
<tr>
<th>Country</th>
<th>Percent of GDP</th>
<th>In US$ (billions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tunisia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food</td>
<td>1.2</td>
<td>0.5</td>
</tr>
<tr>
<td>Energy</td>
<td>1.0</td>
<td>0.4</td>
</tr>
<tr>
<td>Transport</td>
<td>0.4</td>
<td>0.2</td>
</tr>
<tr>
<td>Lebanon</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Energy</td>
<td>4.3</td>
<td>1.4</td>
</tr>
<tr>
<td>Jordan</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food</td>
<td>0.8</td>
<td>0.2</td>
</tr>
<tr>
<td>Energy</td>
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<td>0.1</td>
</tr>
<tr>
<td>Morocco</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food</td>
<td>0.7</td>
<td>0.6</td>
</tr>
<tr>
<td>Fuel</td>
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<td>1.0</td>
</tr>
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<td>Egypt</td>
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<tr>
<td>Food</td>
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</tr>
<tr>
<td>Energy</td>
<td>6.0</td>
<td>11.3</td>
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<tr>
<td>Other</td>
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</tr>
<tr>
<td>Syria</td>
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<td></td>
</tr>
<tr>
<td>Food</td>
<td>1.4</td>
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</tr>
<tr>
<td>Other</td>
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</tr>
<tr>
<td>Implicit energy subsidies</td>
<td>4.9</td>
<td>2.6</td>
</tr>
<tr>
<td>Algeria</td>
<td>13.5</td>
<td>18.8</td>
</tr>
</tbody>
</table>

Source: World Bank, 2011
Data not available for two countries (OPT and Libya)

percent between 2006-07 and 2007-08. In Egypt, the bread subsidy system is estimated to cost the Government about two billion US dollars a year. Food subsidies varied between 0.7 percent of GDP in Morocco and 13.5 percent in Algeria in 2009 (Table 4).

In summary, evidence shows that virtually all households — rural and urban alike — in the sub-region were worse off as a result of higher food prices, and national poverty rates increased. This is despite government support for both food producers and consumers. Similarly, the greatest impediment to a sustained supply response from smallholder farmers may have been volatility in prices for farm inputs (energy, fertilizers, etc.) and inconsistent government policies and legislation.
2.1 Description of livelihoods in the sub-region

About 45 percent of the sub-region’s population lives in rural areas, mostly at lower-middle income levels. It is estimated that 10 to 30 percent of this population falls under the poverty line (ranging from 8 percent in Tunisia to 55 percent in OPT), while their urban counterparts experience much lower levels of poverty (from 2 percent in Tunisia to 21 percent in OPT). Rural economies are intrinsically linked to the availability of land and water. Most are heavily reliant dry-land farming systems\textsuperscript{10} that are highly climate-sensitive and prone to droughts and flash floods. This puts the rural landless and small and marginal farmers most at risk.

Continuing political and social unrest in several countries of the sub-region negatively affects poor households’ access to food and income, and consequently food and livelihood security. Both are particularly low in Upper Egypt and parts of Libya, Tunisia and Syria, where poor rural and urban households are squeezed by loss of income, displacement and high prices for staple foods.

Persisting uncertainty about security in large parts of the sub-region means tourism has slowed down (prompting significant income losses also for the associated service sectors); financial and investment flows to the region have decreased significantly. These multiple and simultaneous shocks continue to push many poor households towards greater vulnerability and high levels of food insecurity and malnutrition. The urban poor, the rural landless and small and marginal farmers stand to lose the most from higher food prices. Farmers who produce food in surplus to their own needs are likely to benefit from higher commodity prices for produce they can sell, but a large proportion of small farmers stands to lose because they are net consumers of food.

At least 80 percent of cereal production in the Maghreb is rain-fed and 50-60 percent in the countries of the Mashreq (FAO 2008b). Rainfall in the growing season is generally low (250–600 mm) and unevenly distributed. As a result, frequent dry spells cause severe moisture stress. Furthermore, low levels of soil water mean options are limited for using inputs such as fertilizer and responsive varieties. The result is low yields and decreased rainwater productivity. Climate change is likely to bring more frequent droughts and heat waves in the decades to come; hence rain-fed yields will become increasingly unreliable. Average yields are expected to fall by 20 percent for the sub-region and by nearly 40 percent in Algeria and Morocco. For instance, output from Tunisia’s crucial olive oil industry is expected to fall by 50 percent towards 2030, and the total area under non-irrigated cultivation may drop by almost half.

As for the livestock sector, small ruminants, such as sheep and goats are a major component of small-scale pastoralist and oasis farming systems in the sub-region. They are an important source of income and dietary protein for rural people. This scale of animal husbandry requires relatively little investment and the livestock can be reared on marginal land, converting low-quality feed into high-value milk and meat. However, such livestock rearing depends on traditional rangelands and natural patterns of rainfall and temperature, so they carry environment and climate-related risks similar to those for crops.

\textsuperscript{9} Main authors: Mohammed Bazza, Ileana Grandelis, Szilvia Lehel, Nora Ourabah-Haddad, Cristina Rapone, Jean Senahoun and René Verduijn (all FAO).
\textsuperscript{10} Dry-land farming is defined as the practice of growing profitable crops without irrigation in areas with annual rainfall of 500 mm or less (FAO, 2010).
The informal sector absorbs much of the immense rural youth population into on-farm and off-farm activities; the youth work mostly in agriculture as unpaid family labour (mainly in the horticulture, organic agriculture, herbs, medicinal and aromatic plants, livestock and agro-processing). As rural population continues to grow, it becomes harder for the sector to absorb additional labourers, given productivity constraints.

To highlight the limits on labour absorption in the agricultural sector, it’s useful to compare farm labour productivity in the sub-region with that of a developed country such as Spain. Two-thirds of the farm labour productivity difference between the sub-region and neighbouring Spain is explained by the ratio of labour to land, which is much higher in the former. For many, migration to urban areas and to other countries remains attractive as a mechanism for risk diversification and income generation. If left unchecked however, the large-scale exodus of the most productive workforce (youth) from rural and farming areas may produce an additional negative impact on food production in the longer term.

The size of the non-agricultural informal sector is remarkable, too. It ranges from 40 percent of the labour market in Tunisia and Morocco to 80 percent in Egypt. This sector absorbs the ‘surplus’ urban workforce of unskilled and unprotected labourers, whose risk of falling into poverty is almost double that of individuals employed on a regular basis.

The depth of the rural-urban divide is highly variable across the sub-region. According to the Arab Human Development Report 2009 this gap is most significant in Tunisia, followed by Morocco and Egypt. In these countries, the ratio of rural to urban poverty is 4.9, 3.0 and 2.9 respectively. Per capita household consumption in rural areas is only 54 percent of that in Morocco’s urban areas while in Jordan the figure is 24 percent. A number of analyses point to a strengthening urban bias, with some suggesting that for certain countries, economic reforms have had an adverse impact on rural populations. In many cases there is a strong indication that GDP growth has favoured the urban rich, and the wealth it has generated has not reached the poorest in society. Rising inequality has yielded a fragile social equilibrium.

Evidence also points to significant spatial disparities in educational achievement, as students in rural schools receive education of lower quality than those in urban schools in the sub-region. The issue of accessibility places an additional burden on rural households, as the percentage of the rural population with access to an all-season road was estimated at 60 percent in 2004. The only regions where this is worse are Sub-Saharan Africa and South Asia.

Furthermore, gender disparities (for instance in education) are generally larger in rural areas. This is exacerbated by a lack of opportunities for women outside the agricultural sector and their reproductive responsibilities. These mirror higher demographic dependency ratios in comparison with urban households. Women have inadequate access to land and credit and little or no control over property. In the same vein, due to the underdevelopment of agricultural land markets in the region, it is often difficult for landowners generally to possess recognized ownership of their holdings, limiting their access to credit or efforts at land consolidation.

The rural-urban divide is not as extreme in the sub-region as it is in much of the rest of the world. Only Egypt and Morocco stand out as the countries in which rural-urban disparities are a significant part of the inequality picture (World Bank, 2010a). There is still a divide between urban and rural areas in levels of poverty and food insecurity. While rural Upper Egypt (versus urban Lower Egypt) has only 40 percent of the country’s population, it has a 60 percent share in Egypt’s poverty and 80 percent of its severe poverty. This confirms a consensus in the literature that rural populations are indeed worse off than their urban counterparts, lacking opportunities to engage in trade, manufacturing or off-farm employment due to limited infrastructure, lack of natural and financial assets (particularly land) and lack of access to public services.
This also confirms the large cities, or megalopolis, of the sub-region as the main generator of economic activities, exploiting the established common and specialized networks and services or agglomeration effects. On the other hand, this is perhaps an unnecessary defeatist stance: more than 60 percent of the consumption gap between Lower and Upper Egypt is explained not by differences in income but rather by the higher demographic dependency rates of working-age people in Upper Egypt households (World Bank, 2011). This should be a reminder to policy makers that a vision for rural economic growth is not a lost cause and worthwhile pursuing. This case has been recently made in Egypt, where many felt that the government policies in the past 20 years (under the Mubarak rule) have had an urban bias.

2.2 Depletion of natural resources

The natural resource endowments – in particular land, water and biodiversity - in the southern and eastern Mediterranean region have witnessed extreme over-exploitation over the past three to four decades. Pressure from population growth and the resulting increase in demand for food and other services, mismanagement and natural hazards, particularly more frequent and severe droughts, have led to ample degradation of forests and agriculture and pasture lands, pollution of surface and groundwater and increased risks for the loss of ecosystems and biodiversity. In many parts of the region, the damages have reached irreversible stages with desertification, loss of fertile lands and reduction in fresh water resources. Climate change is expected to exacerbate these threats unless drastic measures are taken.

Opportunity for expansion of arable land is limited. For most of the twentieth century, arable- land expansion in Arab countries outpaced the global average but in the 1990s it slowed significantly (World Bank et al, 2009). This slowdown was mostly due to urbanization and stiff competition for scarce water resources. Limited land resources and a rapidly growing population may combine to create a troubling future: by 2050, arable land per capita is projected to reach 0.12 hectares per capita, a fall of 63 percent from its 1990s level (World Bank et al., 2009).

The region is also characterized by chronic and acute water shortages, albeit with varying degrees between countries. Average annual precipitation is less than 250 mm per year and varies drastically as a result of frequent droughts and other extreme weather events. The per capita available renewable water resources for eight countries of the sub-region (except OPT) vary from less than 100 m3/year in Libya to over 1 000 m3/year in Lebanon. With internal renewable water resources above 1 000 m3 per capita per year and a dependency ratio (on external water) below 50 percent, Lebanon is the only country not in a critical water situation in the region. Algeria, Jordan, Libya and Tunisia have less than 500 m3 per capita per year and are therefore in critical water shortage. The remaining countries are in the range of 500 – 1 000 m3, but with a high dependency on water flowing from outside, as is the case of Egypt and Syria (FAO RNE, 2010).

Most countries rely on groundwater to meet water demands for all sectors. The contribution of groundwater to the total water use varies from 2.3 percent in Egypt and 13 percent in Algeria to over 80 percent in Libya. Much of the groundwater comes from deep aquifers that have a negligible recharge rate and so these resources are considered non-renewable, particularly in Libya. The use of unconventional water resources, including desalinated seawater for domestic purposes and treated domestic wastewater for agriculture, has significantly increased in recent decades to partially alleviate fresh water scarcity.

The total water use for all purposes as a percentage of the total renewable resources ranges from 30 percent in Lebanon (in 2005) to 720 percent in Libya (in 2000). The figure exceeds 100 percent in Egypt, Jordan and Syria and is 50-60 percent for the remaining countries. The average for the whole region is well above 60 percent, which is the recommended threshold for economic and environmental

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11 The higher demographic dependency may further be explained by cultural constraints that probably prevent more rural than urban women to engage in economic activities outside the household.

12 The OPT is not included because occupation has impeded collection of data on water resources and their use.
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sustainability. The depletion of water resources in the sub-region as a whole is alarming. Agriculture accounts for over 77 percent of the total water use sub-region-wide; more specifically, this varies from 60 percent in Lebanon to over 80 percent in Egypt, Libya, Morocco, Syria and Tunisia. However agriculture’s share of water use has fallen over the past two decades and is expected to decrease further in relation to competition from other sectors, especially from urban areas.

Acute water scarcity and increasing demand have led most countries of the sub-region to invest heavily in infrastructure to increase supply. However, this option has reached its physical or economic limits, as indicated above. There have been efforts to address the demand side, albeit with varying levels of success. Nevertheless, overall efficiency and productivity in the use of the available resources is well beyond the potential and is not in keeping with the reality of scarcity. Improving water demand management, through appropriate policies and the application of proven tools and methods, will open avenues through which scarcity can be addressed and is the only option left for most countries. This is a big challenge, especially for the agriculture sector, which is releasing to competition some of the water it uses, and is expected to increase crop and food production with less water. The good news is that it is do-able.

2.3 Population growth

Population growth is a key driver of current and future food and nutrition insecurity. The sub-region’s population is estimated at 203 million (2009) with the majority (113 million) residing in urban areas. The population is expected to grow by another 50 percent by 2050 (UNFPA, 2009). This is expected to have disastrous effects on the already scarce natural resources in the sub-region, unless urgent action is taken. Without great efforts in providing people with access to family planning services, promoting education, and protecting natural resources, while at the same time generating employment, the consequences of unchecked population growth will manifest itself in environmental, social and fiscal costs.

The high urbanization rate in the sub-region is often mentioned as an additional burden on food insecurity. Algeria, Morocco, Syria and Tunisia show significantly higher urban growth rates than national averages for the rest of the sub-region (see table 5). Contrary to what is often stated, a recent World Bank publication questioned the view that urbanization is especially pronounced in the sub-sub-region: the rate is consistent with that of other developing nations. The share of national population living in major urban centres, such as Cairo, Rabat, Algiers and Damascus, has remained fairly stable over time (World Bank, 2011). Particularly in Egypt, rural populations across the sub-region (except for Lebanon) are expected to show further growth.

Table 5: Population-related indicators for the region

<table>
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<tbody>
<tr>
<td>Algeria</td>
<td>34.9</td>
<td>49.6</td>
<td>1.5</td>
<td>66</td>
<td>23.0</td>
<td>2.5</td>
<td>10.0/17.4</td>
</tr>
<tr>
<td>Egypt</td>
<td>83.0</td>
<td>129.5</td>
<td>1.8</td>
<td>43</td>
<td>35.7</td>
<td>1.9</td>
<td>5.6/19.3</td>
</tr>
<tr>
<td>Jordan</td>
<td>6.3</td>
<td>10.2</td>
<td>3.0</td>
<td>79</td>
<td>5.0</td>
<td>3.1</td>
<td>n.a</td>
</tr>
<tr>
<td>Lebanon</td>
<td>4.2</td>
<td>5.0</td>
<td>0.8</td>
<td>87</td>
<td>3.7</td>
<td>1.0</td>
<td>8.6/10.1</td>
</tr>
<tr>
<td>Libya</td>
<td>6.4</td>
<td>9.8</td>
<td>2.0</td>
<td>78</td>
<td>5.0</td>
<td>2.3</td>
<td>n.a</td>
</tr>
<tr>
<td>Morocco</td>
<td>32.0</td>
<td>42.6</td>
<td>1.2</td>
<td>56</td>
<td>17.9</td>
<td>1.9</td>
<td>9.4/ 9.5</td>
</tr>
<tr>
<td>OPT</td>
<td>4.4</td>
<td>10.3</td>
<td>3.2</td>
<td>74</td>
<td>3.3</td>
<td>3.5</td>
<td>26.2/ 23.5</td>
</tr>
<tr>
<td>Syrian Arab Rep</td>
<td>21.9</td>
<td>36.9</td>
<td>3.3</td>
<td>55</td>
<td>12.0</td>
<td>4.0</td>
<td>8.4/ 24.2</td>
</tr>
<tr>
<td>Tunisia</td>
<td>10.3</td>
<td>12.7</td>
<td>1.0</td>
<td>67</td>
<td>6.9</td>
<td>1.6</td>
<td>11.2/ 15.9</td>
</tr>
<tr>
<td>Region total</td>
<td>203.4</td>
<td>306.6</td>
<td>n.a</td>
<td>55.3*</td>
<td>112.5</td>
<td>n.a</td>
<td>n.a</td>
</tr>
</tbody>
</table>

Source: State of World Population 2009; *adjusted to population size per country
2.4 Unemployment

In the first decade of the new millennium, economic performance in the countries of the sub-region generally was positive, at levels around or above world averages. Egypt, Jordan, Lebanon, Syria, Tunisia and Libya enjoyed average GDP growth of more than five percent between 2005 and 2010 (Breisinger et al. 2011). Overall, countries in the southern Mediterranean basin were less affected by the global economic and financial crisis unleashed in 2008-09. Regional poverty rates have been generally lower than those in other developing regions (World Bank, 2011). Nevertheless, widespread dissatisfaction would seem to indicate that growth in GDP did not translate into increases in living standards (Breisinger et al. 2011).

In particular, most countries in the region still face important and structural unemployment challenges which are dramatically interlinked with increasing spatial and social inequalities. High youth unemployment has undoubtedly contributed to recent uprisings in many southern Mediterranean countries. They demonstrated that current patterns of economic growth that failed to generate enough good-quality and diversified jobs to absorb young and increasingly well-educated labour market entrants.

Unemployment rates in the formal sector exceed 9 percent in all countries of the sub-region. Unemployment is much higher for females, in some cases two or almost three times as high (e.g. in Egypt, Jordan and Syria), reaching nearly 39 percent in the Occupied Palestinian Territories according to the International Labour Organization and the World Bank. This disparity is particularly worrisome because of other persistent gender-based inequalities in the labour market, such as very low participation by women in the labour force. In North Africa, only 28 women out of 100 are active in labour markets (ILO, 2011). Women are also more likely to be found in vulnerable occupations: about 42 and 55 percent of women are estimated to be in vulnerable employment in Middle Eastern and North African countries, respectively, compared with 27 and 32 percent of men (ILO, 2012).

Unemployment is particularly severe among the youth. In many countries, they are at least twice as likely as adults to be unemployed. Youth unemployment in the region is the highest in the world at nearly 25 percent, with peaks of almost 40 percent in the OPT and 30 percent in Tunisia. There is a mismatch growing between skills demanded by employers, and skills offered by young people. This is evident in the high and increasing unemployment rates of university graduates in some countries. In Algeria, for instance, almost 23 percent of people with tertiary education are unemployed; in the OPT that number is 26 percent. In both countries, unemployment among female university graduates is 10 percentage points above the rate for men (ILO, 2011).

Overall, if employment opportunities are rare for young men in the region, they are nearly non-existent for young women. The average participation rates are for young women are 13 and 20 percent in Middle East and North Africa respectively, compared with 30 and 34 percent for young men. This gender gap is mainly the result of cultural barriers, leading in turn to unfavourable business environments for women entrepreneurs and their poor access to resources such as land and credit.

In addition to the high unemployment rates, underemployment and inactivity represent another major challenge, especially for women and youth. Many existing jobs are of low quality, informal, underpaid and insecure. Where wages are increased, they usually do not reach the most vulnerable, as they are unemployed, or work in the informal sector or are self-employed with low bargaining power. This is reflected in the persistence of high rates of working poverty in the region: higher than 30 percent in

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13 ILO defines workers in vulnerable employment as the sum of own-account workers and contributing family workers. Vulnerable employment is often characterized by inadequate earnings, low productivity and difficult conditions of work that undermine workers’ fundamental rights (ILO, 2009).
North Africa. Even in countries that are rapidly urbanizing, the usual transition of labour out of agriculture remains slow. Agriculture still employs nearly 28 percent of the total labour force in North Africa and about 17 percent in the Middle East (ILO, 2012). Half of the agriculture workforce is female across the sub-region, rising to more than 60 percent in Jordan, Libya, OPT and Syria (FAO, 2011h). Employment in agriculture is often seen as a safety net, for example in conflict areas like the OPT where the percentage of people engaged in part-time farming rose from 16.8 percent to 32.6 percent at the onset of the second intifada (World Bank, 2007). Growth in agricultural employment is not always sustained by gains in labour productivity. People employed in agriculture are often the aged, the less educated and women with large household responsibilities. Over the next years, growth in rural population, if not adequately addressed, is likely to increase pressure on land and other natural resources such as water (World Bank, 2007). This tension in the rural employment market is an urgent call to implement multi-sectoral approaches. Besides, increased investments in agriculture and in the rural non-farm economy are necessary to reduce rural poverty and urban-rural disparities.

2.5 Exposure to highly volatile global agricultural commodity markets

The sub-region is made up of food-deficit countries where agricultural production fluctuates markedly from year to year due to highly variable weather conditions. Even in good years, land and water constraints mean that countries in the sub-region rely heavily on cereal imports to cover their consumption needs. The Arab region is the largest wheat-importing zone in the world. Egypt is the single largest importer, buying about 10 million tonnes internationally each year for the past three years. Cereal import dependency has remained high over the past decade for most countries, fluctuating in relation to domestic production. Tunisia, for instance, imported about 76 percent of its wheat utilization in 2002/03 after a severe drought devastated crops in the main producing areas. The following year, the ratio of wheat imports to total domestic utilization dropped to 32 percent following a record harvest. However, the country’s average dependency rate remained at about 65 percent over the past five years. Similarly, Algeria, Morocco and Egypt imported between 48 and 67 percent of their domestic wheat utilization during the 2010/11 marketing year (see Figure 1). Given high import dependency ratios, countries of the region are highly exposed – and have been seriously affected – by high and volatile international commodity prices.

For most of the countries in the sub-region, however, the hike in international food prices has not translated into high domestic prices. This is due mainly to government intervention aimed at maintaining subsidies on basic food items. The exception is perhaps the OPT, where the capacity of the Palestinian National Authority (PNA) to develop and enforce policies is considerably restricted because of constraints such as lack of control over cross-border trade, domestic and international food trade, strategic stock management, agricultural subsidies, control over land and water resources, and over food safety measures.

In Tunisia, despite the country’s high import-dependency ratio, the food inflation rate largely remained stable during the first half of 2011. The year-on-year inflation rate in the food sector in September 2011 in Algeria, Tunisia and Morocco was around 5.7 percent, 4 percent and 1.5 percent respectively. On the other hand, government measures did not prevent an increase in domestic food prices in other countries of the sub-region, and strong pass-through rates have been observed. For example, following the high food price crisis in 2007-08, the year-to-year inflation rate in the Egyptian food sector peaked at 23.7 percent in August 2008. Similarly, food price inflation accelerated to over 13 percent in Syria in 2010 thanks to increases in international food prices.
Livelihoods and vulnerability context

Over the past four years, the global economy has been in the midst of the broadest and most buoyant commodity price boom since the early 1970s, and both fuel and food prices have been following an upward trend. Hence the balance of payments (BOP) effect of the price increases has been mixed. The impact has been very negative for several countries in the sub-region. For instance, the budgetary impact in 2010 of the “compensation system” for wheat importers introduced by Morocco and the increase in welfare spending in Tunisia and Algeria was about 4 percent, 5 percent and 3.5 percent of the GDP of these countries, respectively.

By contrast, the overall impact of the 2007-08 price increases on BOP had been positive for major oil exporters, such as Libya. In Libya, the combined effect of oil and food price spike and the various welfare and safety net measures taken by the Government represented an increase in Government budget of about 9 percent of GDP according to the Economic Intelligence Unit. Therefore high commodity prices had differential impact across countries and the position of net oil importers is more precarious, as these countries have also been affected by other severe external shocks including the drop in revenue from tourism. Most projections indicate that high and volatile prices are here to stay, which is likely to lead to more serious BOP issues and other economic problems, unless countries modify their overall policy environments.

2.6 Food security governance

The region’s governance mechanisms have largely influenced the food security status of its population, and governments’ abilities to deliver on their obligations in regard to their citizens’ right to adequate food. More importantly, the region’s governments have, for a long time, been in a social contract with their people (Alam, 2011) in which a government is expected to ensure the affordability of staple food commodities. As a result, food security in the region has attained significant socio-political and economic dimensions. The citizens implicitly supported the regimes, as long as they delivered on their end of the social contract. However, in recent years some regimes failed to deliver on their end of the social contract, leading to massive food riots that eventually fed the upheaval of the Arab Spring. Judging from the most common government response to the Arab Spring, it can be assumed that there is a very close link between food prices and political and social stability in this region. However, food was not the only
reason for the food riots, as socio-economic factors played a major role. This is supported by Malik and Awadallah (2011) and by Ianchovichina et al. at the World Bank (2012b). They contend that, faced with global pressures and revolts, governments in the region increased food and energy subsidies and public sector salaries, consequently reinforcing the “social contract”.

Even before the prevailing political and social unrest associated with the Arab Spring, some governments in the sub-region used unsustainable subsidy programs in the pursuit of food security. But, many of these subsidy programs have had serious leakages, and often were poorly targeted. Studies show that these food subsidy systems are not only poorly targeted, but also benefit the better off more than the poor (Breisinger et al., 2010). In Egypt, more outlets for subsidized baladi bread were found in rich neighbourhoods than in poor neighbourhoods (IFPRI, 2001). The percentage of GDP dedicated to these food price supports has remained consistently high, putting a heavy burden on national budgets.

Governments in the region will have to improve targeting of food subsidies or, alternatively, start using other safety nets. Appropriate mechanisms are needed to put to ease the economic burden of subsidies on long-term development programs in these countries. Furthermore, as these countries move toward increasing political liberalization, as is underway in Egypt, Tunisia and Libya, governance mechanisms are expected to become more inclusive, participatory and consultative. This will ensure that citizens of these countries eventually have a voice in policy dialogue. This has been cited as one of the necessary factors for effective delivery of rights to food, which though not entirely sufficient, creates an enabling environment for the attainment of this right.
3.1 The impact of soaring food prices on household food security and nutrition: the case of Egypt

Food security, livelihoods and nutrition in Egypt. A food subsidy system has been in place in Egypt since the early 1940s, centred on highly subsidized bread made readily available to the majority of Egyptians. The global grain shortages in 2007-08 forced the government to ration the otherwise unrestricted access to subsidized bread. Starting at dawn, people queued-up at state-run bakeries for their bread rations. The crisis also spurred higher food prices in the local market, all of which led to riots in which several people died and a major political crisis was born.

Egypt’s vulnerability to fluctuations in international food prices is well known. Limited natural resources and a rapidly increasing population exacerbate the pressure on these resources. Egypt is a net food importer. In addition, the emphasis on bread in Egyptian diet puts Egypt among the biggest wheat importers in the world. The events in Egypt before, during and after the 2007-08 global food price crisis has amplified the impact of the crisis on household food security and nutrition in the country.

The global food price crisis happened when Egypt was enjoying one of the best economic growth rates (7 percent) in the region. However, that growth was not shared equitably among the population, as indicated by the deterioration of socio-economic indicators. In 2007, 40 percent of the Egyptians were living on less than US$2 per day (PPP terms) with poverty more concentrated in Upper Egypt and among the rural population. According to official sources, unemployment rates were 10 percent on average, increasing to 28 percent for youth and women.

The 2007-08 food price crisis followed a string of other major shocks to Egypt’s economy and society. These several affected some livelihoods and already pushed up local food prices prior to the global crisis, thus straining the population’s coping strategies to their limits. The other shocks were (i) the devaluation of the Egyptian pound in 2004 and the resultant increase in food prices; (ii) the onset of the avian influenza in 2006 and the erosion of the livelihoods for millions thanks to bird culling and poor compensation schemes, and (iii) the successive diseases that affected livestock in Egypt, coupled with increases in feed prices between 2006 and 2008 that pushed the price of animal proteins beyond the reach of much of the population.

The global food crisis occurred against the backdrop of an increasingly alarming nutrition situation in Egypt. The country had achieved in increasing food availability over the last decades. In reality, Egypt presents a paradox, where the per capita daily energy supply (DES) is trending upward while per capita caloric consumption, as measured by national surveys, is trending downward. On the other hand, Egypt has been going through a nutrition transition with manifested coexistence of high rates of over-nutrition and very high rates of under-nutrition among children. The rates of obesity among women reached a 40 percent high in 2008, while stunting among children under the age of five registered an alarming 29 percent. In addition, Egypt has struggled for years with high levels of anaemia prevalent in the population that reached 50 percent among children in 2005. Against the above background, we assessed the impact of the 2007-08 soaring food prices crisis on household food security and nutrition.

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14 Main authors are Fatima Hachem (FAO) and Marwan Abi Samra (UNDP)
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in Egypt based on: (i) an analysis of the evolution of consumer food prices between 2004 and 2008; (ii) an analysis of the raw data from the 2005 Household Income and Expenditure Survey (HIES); and (iii) a prospective analysis of the impact of rising prices based on these data.

The method for analysing household food security in Egypt included the extraction of relevant data, analysis and information from the 2005 HIES and comparing these with the evolution of consumer prices over the period 2004-2008. The analysis showed that consumer prices for all food commodities registered large increases between January 2004 and May 2008. The highest increases were registered for fruits and vegetables (139 percent and 102 percent respectively), followed by milk products and eggs (82 percent), meat (74 percent), bread and cereals (66 percent) and oils and fat (64 percent). The onset of the global food crises in 2007 led to higher price increases in a shorter period of time. Between January 2007 and May 2008, the highest increase was registered for fruits (72 percent) followed by oils and fats (53 percent) and bread and cereals (51 percent). The increases in food prices in Egypt were much higher than those experienced in many developing countries.

Analysis of the 2005 HIES confirmed that cereals were the most important contributors to food intake in Egypt. The poor are the group most dependent on cereals, especially bread, for their food intake. Despite this, poor people’s expenditure on cereals is relatively low. On average, cereals represent about 9 percent of total food expenditure for the whole population and about 12 percent for the poorest two quintiles. This stems from the very low price of subsidized bread, which remained unchanged since 1989. In 2005, it represented about one-fifth of its market value.

On the other hand, pulses, in particular foul (fava beans) and falafel (chick peas) represented 20 percent of total per capita food expenditure, with the poorest two quintiles of the population registering higher shares (30 percent and 26 percent, respectively). It is worth noting that between January 2007 and May 2008, fava beans (foul), the most consumed pulses, registered the highest price increase (83 percent) among this food group.

Data on meat and animal products showed very low per capita annual consumption in Egypt in comparison with other middle-income countries (14.5 kg of poultry, 36 kg of meat and fish: 8.6 kg of red meat, 12.6 kg of fish, and about 100 eggs per capita). However, the share of this group in total food expenditure is quite significant, especially for the poor. The poorest two quintiles spend 21 percent of total food expenditure on meat, fish and eggs, compared to 29 percent for the richest quintiles. Therefore, increases in the prices of these commodities will have more impact on the expenditure of the poor. From 2005 to May 2008, the price increases registered in the Egyptian market were 41 percent for beef and 92.6 percent for poultry in comparison to 4.6 percent and 12.9 percent, respectively in the international market.

The analysis also showed that vegetable consumption was, on average, 107 kg per capita per year, with the poor consuming half the amount of the rich. While the richest quintile consumes 146 kg per capita per year, the poorest two quintiles consume 71 and 91 kg per capita per year, respectively. In terms of expenditure, vegetables represent on average 6 percent of total food expenditure for the Egyptian population and 7 percent of total food expenditure of the poorest two quintiles. The poor also consume a very low quantity of fruits as compared to other income groups. The share of fruits in total food expenditure of the poorest quintile is 2.8 percent, as compared to 4 percent for the richest quintile and 3.7 percent for the total population. In comparison to other food groups, fruits and vegetables saw the highest price increases despite the country’s self-sufficiency in these two groups, with the most frequently consumed fruits registering the highest price increases.

The calculated welfare loss resulting from food price increases between 2005 and 2008 was, on average, 35 percent for all households in Egypt. However, the negative impact of soaring food prices was greater
for urban dwellers, and for the poor, for whom food expenditure represents a greater share of their total expenditure. For the poorest two quintiles of the population, food accounts for about 62 percent of total expenditure.

Based on the analysis of this study, the following observations can be underlined in relation to Egypt:

1. The need to take into account the local context in which the spike in international food prices occurred. The 2007-08 global food crisis was preceded by a dramatic increase in local food prices following the devaluation of the Egyptian pound. The latter decreased the poor households’ purchasing power by 10 percent and contributed to an increase in poverty.

2. The increase in consumer food prices in local markets is far from being a simple transmission of the increases in international food prices. Local dynamics lead to increases in food prices in local markets not directly related to international prices. Egypt recorded one of the highest increases in food prices in the world. Moreover, this increase was not limited to imported products. Paradoxically, the prices of local products experienced an even greater increase than imported products.

3. The increase in the price of cereals is not necessarily a relevant indicator for assessing the impact of soaring food prices on household food security and nutrition. Cereals make up about 60 percent of DES in Egypt, yet they represent a low share of food expenditure as a result of the food subsidy, especially for bread in particular. Given the stability of the subsidized bread price since 1989, the increase in other food prices has more effect on food consumption and hence on food security and nutrition of vulnerable households. This is particularly the case for pulses (fava beans, chickpeas, lentils), which represent 26 percent of the expenditure of the poorest 40 percent of people. It is also true for meat, eggs and fish, which despite their very low share in daily caloric intake (40 g of meat and fish per person per day for the poorest) represent 21 percent of total food spending by the poorest two quintiles.

4. The increase in prices has accentuated the dependence of poor households on subsidized food. Despite the fact that rich and urban households in Egypt benefit more from food subsidies, transfers resulting from these subsidies represent an important share of the food consumption by the poorest (14 percent for the poorest two urban quintiles and 11 percent for the poorest two rural quintiles). In the context of soaring food prices, the value of transfers resulting from the distribution of the same quantities of subsidized food to households has more than doubled between 2005 and May 2008.

5. The negative impact of the increase in food prices is more important to the urban poor, but is also significantly important to the rural poor, especially those with no access to productive assets. Despite the importance of subsidized products in food consumption, the cost of the food basket consumed by households between 2005 and 2008 recorded an average increase of 59 percent in urban areas compared to 52 percent in rural areas (taking into account home production and subsidized products).

6. An increase in wages did not compensate for losses resulting from the increase in prices. In urban areas, wages increased slightly between 2005 and 2008, and in rural areas, the poor were hit hard by the increase in food prices because a large number of farmers (more than 60 percent) have an agricultural area of less than one feddan (0.42 hectares) and therefore are mostly net buyers of food products.

7. This situation will contribute heavily to rising malnutrition and hidden hunger in Egypt. With Egypt’s high poverty rates, rising food prices will spur more dependence on subsidized foods, especially bread, as a source of cheap calories and proteins. It will also discourage consumption of other food products, particularly meat, other products of animal origin, and fruits and vegetables. This will further worsen the nutritional situation in Egypt, as subsidized foods are mainly energy-dense and micronutrient-poor commodities (sugar, oil, bread).
3.2 Household food security: the case of the Occupied Palestinian Territories (OPT)\textsuperscript{15}

**Food security, livelihoods and nutrition in OPT.** The protracted crisis in the Occupied Palestinian territories (OPT) has been marked by a volatile political and economic environment, and it affects most drivers of economic growth. In addition to natural resource constraints, the Palestinian economy has been fragmented and distorted by restrictions on land, water resources, movement of people and of commercial goods, combined with a total lack of control over its own borders. The OPT is a net food importer, while livelihood assets have been destroyed and employment lost. After years of conflict, much of the OPT population is now chronically food insecure and dependent on food imports. As a result, it is extremely vulnerable to international food price shocks, although the presence of international aid organizations offers some respite from this.

A large proportion of its population is poor compared to the other countries in the sub-region. More than one-quarter of the population lives under the poverty line, out of which 14 percent are unable to meet their basic needs. There were some minor improvement in the poverty rate between 2009 and 2010 (less than 1 percent). There is evidence of increasing inequality: the gap in consumption between the richest 10 percent and the poorest 10 percent of the population is widening. However, international humanitarian aid has moderated the impact of the humanitarian crisis and reduced the poverty gap by 40 percent (PCBS, 2011).

**Social safety nets**

Food insecurity in OPT stems largely from income poverty, which negatively impacts households’ overall consumption levels. Because of this, food insecurity analysis and response coordination mechanisms in the OPT have been adapted to specific circumstances common to countries with a medium or low GDP per capita. This includes structured social safety nets, which largely depend on imported staple food commodities. As such, the OPT relies on social safety net programs implemented mainly by international humanitarian agencies. Palestinians (particularly refugees) have relied on humanitarian assistance for over 60 years.

International aid to the OPT plays a crucial role in mitigating the negative effects that prolonged conflict has had on food security. The importance of social solidarity mechanisms must be acknowledged (including networks of relatives, friends and neighbours, and local charities and NGOs). The consumption gap is being reduced with support from the United Nations, governmental and non-governmental organizations, which provide food, cash and other forms of assistance. Currently, the UN Relief Works Agency (UNRWA) is the main provider of assistance for Palestinian refugees living in the Occupied Palestinian Territories, and in Syria, Lebanon and Jordan (and including Bedouin communities in ‘Area C’ of the West Bank\textsuperscript{16}). The World Food Programme (WFP) in partnership with the Ministry of Social Affairs and international NGOs, are the largest distributors of food assistance to non-refugees.

**Main characteristics of food insecure households**

In 2010, 1.43 million people in the OPT were food insecure — a three percent drop from the previous year. The severity of food insecurity grows in relation to a household’s gender and age structure and its size. On average, a food insecure household is composed of seven members while food secure families

\textsuperscript{15} Main authors for this chapter are Rana Hannoun and Ekci Suyapino (FAO)

\textsuperscript{16} The Oslo Accords created three distinct administrative divisions in the West Bank and Gaza Strip until a final status accord would be established. Area ‘A’ – with full civil and security control by the Palestinian Authority. This area includes all Palestinian cities and their surrounding areas, with no Israeli settlements. Area ‘B’ - Palestinian civil control and joint Israeli-Palestinian security control. Includes areas of many Palestinian towns and villages and areas, with no Israeli settlements. Area ‘C’ - Full Israeli civil and security control.
typically have five members. Additionally, there are more children and females in food insecure families. The dependency ratio therefore increases in accordance to the severity of food insecurity and as such, the most food insecure households are prone to a greater number of shocks and use more coping strategies to manage those shocks.

In 2010, the main shock impacting on households was an increase in food prices. Slightly more West Bank households were affected compared to the Gaza Strip. Since over 70 percent of the Gaza population is reliant on humanitarian assistance, the price shocks had less of an impact in that zone. Additionally, OPT is still recovering from the global price shock of June 2008 and this recovery is happening at a slow rate. The August 2010 price hike interrupted this recovery. Food prices remain high and have yet to return to the pre-June 2008 levels.

To manage high food prices, food insecure households default on bill payments, purchase food on credit, reduce the number of meals eaten daily and eat lower-quality food. On top of the price hikes which affected the wider population, in 2010 pastoralists were faced with high fodder prices and repeated drought, while tomato farmers were hit hard by an outbreak of the tomato leaf miner, which pushed up prices of tomatoes and threatened to devastate tomato crops.

Despite the recurrence of natural, economic and political shocks that are seriously disrupting rural and urban livelihoods in the OPT, no system has been developed to prepare for and recover from those shocks. A risk monitoring and early warning system integrated into the existing food security and resilience analytical framework would support humanitarian and development actors formulating responses to OPT livelihood crises. Food security analysis in the OPT is shifting towards resilience analysis to provide information that will support emergency responses, which are accompanied by recovery measures enabling households to rebuild livelihood assets and adapt to future shocks.

**Method for analysing household food security in OPT: the resilience framework**

The resilience framework looks at the root causes of household food insecurity and vulnerability instead of trying to predict how well households will cope with future crises or disasters. It measures the ability of a household to keep within a certain level of well-being (e.g. food security) withstanding stresses and shocks. This depends on: i) the options available to the household to make a living and, ii) its ability to manage risks (FAO, 2009). The resilience framework provides the closest quantified approach to a livelihoods analysis in the OPT, given the complexity of different livelihood systems. It provides a tool to analyse why and how people become food insecure, and identifies areas that if supported, will enhance households’ ability to withstand shocks by managing the risks; this in turn will improve the households’ resilience to food insecurity.

Specific groups of indicators are identified, measured and combined to estimate every one of a total of six components of the resilience framework, in using various methods (factor analysis, principal components analysis, optimal scaling, and others). The estimated components become covariates in the estimation of the overall “resilience score” index using an iterated principal factor method. The

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**Box 1. The Resilience tool**

Factors that make households resilient to food security shocks and stresses include:

1. Income and access to food;
2. Assets such as land and livestock;
3. Social safety nets such as food assistance and social security;
4. Access to basic services such as water, health care, electricity, etc.;
5. Households’ adaptive capacity linked to education and diversity of income sources; and
6. Stability of all these factors over time.
Radar chart visualization is used to present the data, which helps in comparing the contribution of the various parameters with the overall resilience of the household.

**Resilience versus vulnerability to food insecurity**

Vulnerability to future food insecurity is a forward-looking concept, in the sense that it is not concerned with current outcomes, but looks at their future incidence and depends on a household’s risk exposure and resilience to such risks. The most common methods for analysing vulnerability are static in nature, and thereby fall short of an appropriate assessment of the dynamic nature of the concept. Moreover, future risks are unpredictable, which makes it difficult to measure vulnerability.

However, household resilience to food insecurity, defined as a household’s ability to maintain a certain level of well-being (food security) in the face of risks, depends on the options available to that household to make a living and on its ability to handle risks. It refers therefore to ex-ante actions aimed at reducing or mitigating risks, and ex-post actions to cope with those risks. It also covers both short-term actions (e.g. coping) and actions that have a longer-term impacts (e.g. adaptation to structural changes to ensure household functioning) (FAO, 2009).

**Detailed analysis: household resilience to food insecurity in OPT**

The Socio-Economic and Food Security survey data was analysed using the resilience module. The resulting scores clearly show where investments need to be made to further build resilience. By using this quantitative approach, decision-makers can target their actions objectively and measure their results over time. As can be seen in the previous chart, weaknesses are in all aspects of household resilience. The resilience levels varied from -0.58 for food insecure households to 0.69 for the food secure households. An analysis of the six different indices is provided below.

**Income and food access (IFA)**

This index is constructed using income and expenditures with dietary diversity and household’s food insecurity access scale. In the OPT, an adult should consume US$6 worth of food daily to be considered above the deep poverty line. The food insecure and vulnerable households live on average on US$3/adult/day; however, their dietary diversity and perception of their access to food is relatively good. The food secure households registered a higher score in income and food access when compared with food insecure and vulnerable households.

**Access to basic service (ABS)**

Basic services such as water, electricity and sewage networks are reported to be equally available to the population in the OPT. However, analysis shows the food secure population has slightly better access to health facilities. This is despite the fact that the more food insecure population has free health insurance from UNRWA and the government. Access to health services by this population group is characterised by a limited number of facilities and long waiting lists. Investment in this area would improve the resilience of the food insecure.

**Assets (A)**

Another aspect of household’s resilience to food insecurity is ownership of assets. This index is estimated using several variables including ownership of physical capital such as land, livestock, number of owned
rooms within a dwelling and durable goods owned. Analysis clearly showed variations between the population groups in their access to assets. Land ownership contributes substantially to household resilience. This is very important in the Palestinian context because this access is threatened by confiscation and displacement, threatening household’s agricultural and pastoral livelihoods.

Social safety nets (SSN)
As reported in the 2010 poverty report, humanitarian aid reduced relative poverty by 16.8 percent and deep poverty by 26.6 percent. Aid and assistance plays a major role in enhancing household resilience. While the ratio of aid received to income is as high as 130 percent and an indicator of a high dependency on aid, in the absence of real economic growth and employment opportunities, this support is vital to household resilience to food insecurity.

Adaptive capacity (AC)
Adaptive capacity represents the extent to which an entity can modify the impact of a stress by making decisions to reduce vulnerability. The AC score was between -0.49 for the food insecure population and 0.23 for the food secure. The stronger adaptive capacity score is a result of diverse income sources, occupations and higher employment ratio; apparently working for government and in Israel secures better incomes. Food secure households earn a larger share of income from these two sources.

Stability (S)
The stability indicator represents the degree to which a household’s options vary over time; stability decreases as dependency on assistance increases, and as more household members lose their jobs. Food insecure households reported a higher volatility in income and expenditure changes and very high dependency on social assistance. Moreover, more than half of Palestinians’ total cash expenditures were on food. This is an alarmingly high level, compared with international standards.

Conclusion – how does this method inform decision-making?
Dismantling of the root causes of food insecurity requires the identification of possible actions to reduce food insecurity. By diversifying income sources and ensuring stable income, as well as better access to public services and productive and non-productive assets, the impact of interventions would increase household resilience and reduce household vulnerability to food insecurity.

Box 2. PCBS/FAO/WFP/UNRWA partnership
Since 2006, FAO, WFP and UNRWA have teamed up to strengthen systematic socio-economic and food security monitoring and its use in OPT. This is in close collaboration with the Palestinian Authority and, more specifically, the Palestinian Central Bureau of Statistics (PCBS). Regular surveys are conducted and results are analysed using the resilience model.

UNRWA applied the resilience model based on its large-scale community level Household Economic Survey to improve their targeting in the West Bank. The six indices allow for a visual representation of the various dimensions of resilience and at the community level in UNRWA’s case, it was possible to easily capture weak indices of access to basic services. UNRWA was able to identify some communities lacking health facilities and/or schools and utilized the analysis to plan infrastructure investments in refugee camps across the West Bank.
The protracted crisis in OPT means that responses to food insecurity must combine emergency responses with livelihood support, and that the type of food security analysis should inform the link between social safety nets and productive safety net programs. Food assistance remains crucial, in particular for hardship cases; however, in identifying the appropriate assistance for households to shift away from emergency support to sustainable livelihood support, direct cash transfer and cash assistance is receiving increasing attention.

One national priority is to increase domestic food production and ensure food quality and safety for consumers. The most food insecure and vulnerable households are in families reliant on agriculture for income. So scaling up food production in the OPT provides an entry point to support livelihoods with a wider goal of ensuring the current and future food needs of a growing population are met.

3.3 The impact of the revolution and the Libyan crisis on food security: the case of Tunisia

Background. Since the country became independent, there have been significant improvements in food security in Tunisia, thanks primarily to targeted food and agricultural policies focusing on food self-sufficiency. Such was the case until the mid-1980s, which were characterized by heavily subsidized food production and consumer prices. This era was followed by economic liberalization and reforms within the framework of structural adjustment; these gave market mechanisms a greater influence in assuring the population’s food security. From the 1960s to the 2000s, daily availability of average dietary energy supply per capita climbed from 2 000 to 3 500 kilocalories. The share of cereals is high (64 percent of total calories) and the share of fat is low (24 percent). This reflects the current stage, where the quality of food consumed varies more than the quantities.

Various symptoms of food insecurity have been linked to poverty, which is significantly more prevalent in rural areas (8 percent) than in urban areas (2 percent). Poverty is also more prevalent in the south and the west of Tunisia than elsewhere in the country. Levels of poverty relate to both differing agroecological conditions (e.g. desert in the south) and the location of economic activities. Food expenditures represent 35 percent of total expenditures at the national level; this number is even higher among rural households (43 percent) compared with urban households (33 percent). Food expenditure represents about half of total expenditures among the poor and vulnerable (2005).

Prices for certain staple foods have remained relatively stable thanks to government subsidies although cereal prices have risen rapidly and those increases are not fully covered by subsidies. Income levels and poverty have been the main determinants of the prevalence of household food insecurity, given the dependence on market purchases for the bulk of food consumed.

The fervent street protests that began in December 2010 were motivated by disillusionment, due to high unemployment, corruption, poverty and high food prices. These escalated and led to the president’s expulsion in January 2011. The Tunis uprising fuelled the Arab Spring phenomenon across the region. The main drivers of current food insecurity include: the consequences of civil unrest, rapidly rising food prices, and general economic downturn resulting in part from the recent armed conflict in Libya, which started in February 2011. An interim government was formed in Tunisia in January 2011, followed by the election of a national constituent assembly on 23 October 2011. The latter has a mandate to rewrite the constitution and organize subsequent legislative elections.

17 Main authors are Osama Mohamed (WFP) and Szilvia Lehel (FAO).
Analysing household food security in Tunisia: the Emergency Food Security Assessment

In the aftermath of the 2010 street protests and subsequent upheaval in Tunisia, little was known about the specific details of the rapidly evolving food insecurity situation in the country. As a result, FAO and WFP agreed to conduct a joint Emergency Food Security Assessment (EFSA) that would be undertaken in mid-2011.\(^{18}\) The study would examine and analyse food security indicators in four carefully selected regions; this information would provide the basis of policy recommendations. More specifically, the study aimed to determine the level and causes of food insecurity in the selected regions as well as profile vulnerable populations and their coping strategies vis-à-vis shocks. This would provide deeper insight into structural problems linked to food insecurity that would, in turn, help target assistance to where it is needed most. The EFSA was to provide a clear understanding of the main drivers of food insecurity in light of political turmoil in the country, food price increases, and the influx of refugees and labour migrant returnees from Libya.

Access to food was estimated by combining the type of income sources with the type of expenditure in a household. The Food Consumption Score (FCS) was used to rate households on their food consumption patterns (a combination of frequency and quality of meals). Similarly, using a Food Insecurity Score (FIS) researchers aggregated households into three groups, depending on a combination of food consumption score and economic access to food. Finally, the Coping Strategy Index (CSI) measured the existence and importance of coping strategies according to six categories (none/very weak/weak/moderate/very high).

**Figure 2: Tunisia: Governorates included in the FAO/WFP Emergency Food Security Assessment**

Experts from different regions of Tunisia informed the selection of four Governorates for inclusion in the survey (Beja, Kasserine, Tataouine and Medenine, see map in Figure 2). The selection was based on prevailing socio-economic indicators such as poverty, unemployment, illiteracy rate and influx of Libyan refugees and/or Tunisian returnees from Libya, plus geomorphological aspects. Researchers selected

\(^{18}\) The study was carried out by BHMT Consulting, supported by Bruno Minjauw and Paola Cadoni of FAO SNE, and Hans Vikoler and Osama Mohamed of WFP.
four localities in each region for focus group discussions, while household surveys were conducted in 30 localities (12 households in each). The focus group discussions took place in each community with the participation of four groups comprising of 5-10 people belonging to a specific predefined socio-economic category (e.g. women of different backgrounds, smallholder farmers, migrants returning from Libya, unemployed youth, traders and shopkeepers, retirees).

The EFSA aimed to unveil a host of food security concerns in four governorates, each with a very particular socio-political context defined by a host of exceptional events. The results should be interpreted with the knowledge that only four regions were examined in the study; hence, the results cannot be extrapolated to the entire country.

**Detailed analysis: household characteristics derived from the EFSA.**

The study found there is no significant difference among severely food insecure, moderately food insecure, and food secure households in terms of the household size, the age of family members, and the average age of household head. Also, the relative health of household members does not vary significantly across different food insecurity scores. When considering gender as a function of food insecurity, it appears that female-headed households are more vulnerable, as they are predominantly single-parent households with widowed, divorced or unmarried mothers bearing the brunt of poverty.

Regarding sources of income, most food insecure households (54 percent) rely mainly on income from casual labour. The primary sources of income for these households are social benefits, irregular unskilled off-farm employment (32 percent), irregular unskilled jobs in agriculture (25 percent), unskilled regular employment (17 percent) and livestock and animal products (15 percent). Approximately half of the households interviewed are engaged in agriculture, including animal husbandry.

Despite the high Food Insecurity Score reported in the north of Tunisia, regular income sources are more common in the north (32 percent households), as compared to 15 percent in the south and 14 percent in the centre. Conversely, irregular income sources are common in 58 percent of households interviewed in the south, 37 percent in the centre and 16 percent in the north. In addition, over 70 percent of households experiencing severe food insecurity rely on unprotected water sources, against 45 percent in moderately secure and 15 percent in food secure households.

**Findings**

The most vulnerable households in the study are in the Governorate of Kasserine. The majority (80 percent) are food insecure (27 percent severe and 53 percent moderate food insecurity), while almost half (48 percent) have low access to food.

**Figure 3 (a) Food Insecurity Score (FIS) presented by region and Figure 3 (b) food as first (main) source of expenditure (by governorate)**
Additionally, based on Food Consumption Score findings, the central region presents the lowest combination of quantity and quality of meals consumed, holding the highest number of households in the “borderline” FCS category. Households in this category are most prone to falling into a state of food insecurity when the economy and/or their social situation deteriorate.

Main reasons for food insecurity

Although food staples and energy prices are fixed by the government and did not increase significantly in the past year, the survey revealed that over 50 percent of sampled households indicated an increase in food prices (74 percent) as a cause of their food insecurity, followed by health expenses/health problems (67 percent), unemployment (62 percent), and an increase in gas/electricity prices (59 percent).

The main causes of food insecurity vary from region to region. In Beja for instance, most of the households named health problems (17 percent) as the main cause while in Kasserine, the most commonly indicated cause is unemployment (19 percent). In the southern region (Medenine and Tataouine) high food prices were cited (24 percent).

Additional causes cited are isolation in the rural and mountainous areas, and the lack of regular sources of income, decent health and sanitation facilities and good infrastructure. Purchasing power in vulnerable households may have decreased because of higher prices for staple foods excluded from the government’s subsidy scheme (such as vegetables, fruits, meats and condiments); rising demand for food due to the influx of Libyan refugees (particularly in the south); and decreased credit availability. Figure 4 summarizes the primary causes of food insecurity as perceived by households interviewed for the study.

Because of the Libyan crisis, traders and smallholder farmers in the Governorate of Kasserine signalled a decrease in the volume of commercial transactions with their Libyan counterparts. In the south east (in Médenine and Tataouine), the effect of the conflict was even more profound. Families hosting refugees are of very modest economic means and the arrival of refugees significantly pushed up demand and prices for certain products (such as mineral water, sugar and eggs) due to soaring demand; there also were interruptions in supply of some foodstuffs such as milk and sugar.

Figure 4: Primary causes of food insecurity as perceived by interviewed households
Household coping strategies and immediate needs. Households have developed two distinct coping strategies in response to food insecurity, namely smoothing consumption by switching to cheaper foodstuffs, and in decreasing the number and/or size of meals; and smoothing assets, i.e. consuming seed stocks or selling household and/or productive equipment and livestock. Table 6 summarises various coping strategies applied in different governorates.

According to the picture emerging from interviews, the most immediate needs of households are the following: (i) social benefits for needy families (through compensatory payments); (ii) upgrading drinking water infrastructure; (iii) general health care coverage; (iv) assistance to small farmers; and (v) accessible microcredit schemes.

In addition, the EFSA revealed the following:

1. The number of food insecure households is highest in Kasserine (central region), followed by Beja (northern region).
2. Food insecurity is caused by high food prices coupled with unemployment and health problems; households in the remote locations experience lack of regular income sources as well as proper sanitation and health infrastructures.
3. Although severe food insecurity was not reported in the south (Medenine and Tataouine), socio-economic vulnerability is likely to increase in the near future because of the Libyan refugee influx, a decline in tourism, and the likely drop in the Tunisian GDP growth rate. Without a doubt, Tunisia’s 2011 social and political unrest has led to an unprecedented slowdown in its economy, with a negative impact on government revenues and employment. In the first quarter of 2011, Tunisia’s GDP declined by 7.8 percent compared with the same period in 2010; 0.4 percentage points of that change are due to the Libyan crisis (Santi et al., 2011).

The above-mentioned factors were identified as concurrent causes of decreasing credit availability, while also stretching the capacity of aid providers (extended family, government and non-governmental organizations). As for the country’s central and north regions, the structural causes of food insecurity (remote location of households in the mountainous areas, the lack of regular income sources, poor health and sanitation facilities and poor infrastructure), probably will continue to impact on food security in the near future, although they may be addressed in the longer-term.

Table 6. Coping strategies applied in governorates

<table>
<thead>
<tr>
<th>Governorate</th>
<th>Coping strategy</th>
<th>Béja</th>
<th>Kasserine</th>
<th>Médenine</th>
<th>Tataouine</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of HHs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>percent</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seed stock consumption</td>
<td>27</td>
<td>22,5</td>
<td>23</td>
<td>19</td>
<td>5</td>
</tr>
<tr>
<td>Decrease in agricultural expenses</td>
<td>15</td>
<td>12,5</td>
<td>18</td>
<td>15</td>
<td>3</td>
</tr>
<tr>
<td>Decrease in health expenses</td>
<td>58</td>
<td>48</td>
<td>68</td>
<td>56,6</td>
<td>37</td>
</tr>
<tr>
<td>Sale of household equipment</td>
<td>7</td>
<td>5,8</td>
<td>42</td>
<td>35</td>
<td>6</td>
</tr>
<tr>
<td>Sale of productive equipment</td>
<td>3</td>
<td>2,5</td>
<td>9</td>
<td>7,5</td>
<td>5</td>
</tr>
<tr>
<td>Sale of livestock</td>
<td>12</td>
<td>10</td>
<td>30</td>
<td>25</td>
<td>58</td>
</tr>
<tr>
<td>Wild fruits consumption</td>
<td>21</td>
<td>17,5</td>
<td>40</td>
<td>33</td>
<td>-</td>
</tr>
<tr>
<td>Sending household member off to work elsewhere</td>
<td>25</td>
<td>20,8</td>
<td>30</td>
<td>25</td>
<td>12</td>
</tr>
</tbody>
</table>
Recommended areas of future intervention

Taking into account the EFSA, and considering the loss of purchasing power and diminished credit availability recorded in the rapid assessment, policymakers may want to address food insecurity concerns by strengthening food availability through enhanced production, and by stimulating the markets. Recommendations for direct and immediate programmes include the following:

1. **Enhancing agricultural productivity** might offset the impact of food insecurity particularly in the north and central regions, which are more fertile than the south (although households-centred agricultural projects might be developed in the south, too).

2. **School feeding programs** might be a viable option, particularly considering the high percentage of dispersed households within the sampled population and the high rate of school dropouts in rural areas.

3. **Cash and vouchers projects** could provide valuable support to food insecure households. These may be suitable because markets function adequately in Tunisia and governmental and non-governmental aid agencies are over-stretched, a situation that might worsen in the event of a prolonged fiscal crisis. Similarly, developing agricultural productivity and sanitation infrastructure at household and/or locality level might be considered in the context of cash-for-work projects.

Conclusion: how does the EFSA method inform decision-making?

For Tunisia as a whole, the challenge ahead is to ensure that economic growth is high enough to meet the demand for jobs and higher standards of living. This will require balanced, market-oriented policies. In the interim, an increase of social benefits and subsidies on basic food items may be needed to ease the situation of the unemployed. In the long term, however, fundamental changes will be necessary, with policy responses targeted at the multiple challenges.

The EFSA revealed regional particularities and informed the design of FAO and WFP interventions. It proved useful especially in devising a joint cash-for-work programme. As for other stakeholders, the EFSA findings will underpin the importance of addressing prevailing regional disparities in the country, while identifying underlying causes of food insecurity and malnutrition and designing interventions that target more effectively the most vulnerable (e.g. through social safety nets).

3.4 Observations on the case studies

The first observation that can be made is to note the detailed information offered by all three case studies. The case studies describe and analyze very specific experiences at household level food security and nutrition situation, which is not the case in the other chapters in this publication, given that the information is provided at a higher level of aggregation. As such, the case studies presented here greatly enhance the reader’s understanding of the problems underlying food insecurity and malnutrition in the sub-sub-region, while also providing more detailed evidence needed to support the formulation of better-targeted policies, programs and investments.

Second, the three country studies make a strong case for analyzing sub-national data sets to better understand the local context. For example, Egypt’s currency devaluation in 2004 provided an initial, important food price shock later compounded by significant increases in global food prices and the related burden of buying food imports at a high cost to satisfy national demand. The studies also show that it is important to understand the particular geography, socio-economic, historical and political context of the sub-region to interpret the state of urban and rural livelihoods, and the associated food security and nutrition conditions. Diverse livelihoods in Tunisia, OPT and Egypt provide an indication of the wealth of information one would like to access to better understand the key drivers of food
insecurity and malnutrition in the sub-region and to design an appropriate mix of remedial policies, programmes and investments.

Furthermore, the case studies have used different methods corresponding to different information system functions. The Emergency Food Security Assessment (EFSA) conducted by WFP and FAO in Tunisia is a clear example of a needs assessment to feed into a response analysis (i.e. following the signals from the early warning system indicating a perceived problem at household level). The EFSA uses a fairly standardized rapid appraisal survey instrument to assess a situation of acute food insecurity, and identifies the immediate needs of affected populations in particular.

While the EFSA relied on primary data from a rapid assessment, the two case studies on Egypt and OPT made use of existing national household survey data, namely: the National Household Income and Expenditure Survey in Egypt (2005), and the Socio-Economic and Food Security Survey in OPT (2010) – the latter being a joint collaboration between the Palestinian Central Bureau of Statistics, FAO and WFP. They differ in various aspects:

1. **Geographic coverage**: the OPT with a population of only 4.4 million versus Egypt with 83 million. This difference has immediate implications for the level of statistical representation of the results, where the survey conducted in the smaller entity, would generally be able to show statistical validity of the data at much more decentralized administrative levels than the other, mainly due to financial constraints inhibiting an increase of the overall sample;

2. **The scope of the surveys**: the Socio-Economic and Food Security Survey (SEFSec) in OPT is conducted with a clear user perspective to respond to a chronic emergency situation whereas the HIES is not;

3. **Time frame**: the SEFSec is conducted annually while the HIES is carried out every five years. This shows that the HIES data is more limited to use in trend analysis over time;

4. **Use of data sets**: the specific design of the SEFSec survey and its annual conduct allow for detailed analysis that complements and contributes to additional sources of information available through the Palestinian Central Bureau of Statistics. It is therefore possible to investigate the relationships between indicators at the household and individual levels.

Finally, we note that the three case studies have a typical sub-national geographic scope, which should be further promoted in the sub-sub-region. However, little regional analysis has been conducted to look at the relations and cross border, formal and informal trade flows between countries in the sub-region. Given the importance of remittances, migration flows from outside and within borders, additional work could enhance the knowledge of the food security and nutrition (FSN) problems and inter-dependencies between countries of the sub-region. This knowledge would form part of a systematic subregional monitoring and evaluation framework of FSN and would encourage improvement in national and subregional policies through better information and accountability. As such, this is an area that national governments, regional entities and academic institutions should prioritize on their research agenda and in their policies, programs and investment plans.
Governments and others in the public sector have the main responsibility for facilitating economic growth, while safeguarding the welfare of the most vulnerable groups in society. This includes achieving greater food and nutrition security for all. Countries of the southern and eastern rim of the Mediterranean Basin should consider the following policy options and recommendations to address current challenges to food insecurity and malnutrition, while also taking advantage of tremendous economic opportunities of the food and agricultural sectors. The large number of policy options and recommendations are presented below under ten different sub-headings. For each section, most relevant background information is provided before a number of specific policy options and/or recommendations are listed.

4.1 Natural resource management: the impact of climate change

Future climate change could undermine, to a critical extent, efforts to promote sustainable development in the southern Mediterranean region. In particular, climate change is expected to result in extreme weather events and exacerbate the existing problems of desertification, water scarcity and food production, while introducing new threats to human health, ecosystems and national economies. Between 2030 and 2060, an annual average temperature rise of 1 to 3 degrees might occur. The International Panel on Climate Change (IPCC) projects reductions ranging between 4–27 percent (Figure 5). In this figure, while rainfall shows a negative trend (bottom lines) evapotranspiration (top lines) exhibits a positive trend that will increase the potential water deficit. As a consequence, the frequency and severity of droughts could increase across the sub-region. Changes in large-scale atmospheric circulation — as represented by the El Niño-Southern Oscillation (ENSO) and the North Atlantic Oscillation — would further affect the occurrence of extreme events.

Figure 5: Climate change projections in Morocco
Reductions in water availability related to climate change will hit southern Mediterranean countries very hard. In Algeria, Egypt, Lebanon, Libya, Morocco, Tunisia and Syria, water availability is already near or below 1,000 cubic meters per person per year, which is the acknowledged benchmark for water scarcity. Clearly, less water will affect agricultural productivity and rural livelihoods. Increased strain on the agricultural system will mean greater volatility in food prices, with frequent price shocks becoming the norm. Especially the rural agricultural poor, who are net food buyers, the rural non-agricultural poor and the urban poor are most vulnerable to increased levels of food insecurity and malnutrition.

4.1.1 Policy recommendations for improved natural resource management

Climate change mitigation requires a system-wide approach, with awareness and education campaigns throughout the food and agricultural system, from the farmer to the consumer. Key proposals include:

1. Water and soil
   - **Upgrading irrigation systems and techniques.** Many of the sub-region’s irrigation systems are under considerable environmental strain due to salinity, water logging and overexploitation of groundwater. Most surface water networks use open canals, which exposes them to pollution and unnecessary loss of water. The sub-region must adopt more up-to-date irrigation systems to improve the irrigation efficiency and to save water (Hamzé et al., 2010).
   - **Water harvesting.** This may involve a range of different structures such as hill lakes, average-sized reservoirs (500 cubic meters), concrete reservoirs, and water harvesting reservoirs (Darwich, 2009).
   - **Re-use of treated water.** Slightly saline water in agriculture and agro-forestry could help compensate for the shortage of water. With the development of wastewater treatment stations and the availability of large quantities of treated water, recycling is becoming promising and should be incorporated into national strategies (Hamzé et al., 2010).
   - **Using the Clean Development Mechanism.** Large expanses of degraded land could be reforested if grazing is controlled. Planted forests may help to counteract negative effects of climate change on natural forests and improve local water cycles. In the sub-region, Egypt has been building solid experience in reforestation and reclamation of desert areas, using sewage water for irrigation (FAO, 2008c).
   - **Improve soil management.** The drought tolerance and resilience of soils must be increased organically to conserve soils and to improve their structural stability. Improving the physical and chemical properties of soils would make them more resistant to water and wind erosion and increase their capacity for water retention (Hamzé et al., 2010).

2. Crops, livestock and fisheries
   - **Identify and adopt species** better suited to new climate conditions. Perennial species yielding substantial economic returns should be among the first used in adaptive strategies designed to mitigate the effects of climate change. This means citrus, date palm and banana trees in coastal areas, apple trees at higher altitudes and apricot and cherry trees in the valleys (Chalak and Sabra, 2007).
   - **Favour early flowering species.** Mediterranean tree species that better tolerate present and future pedoclimatic conditions should be developed. These include olive, almond, fig and

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20 The United Nations Clean Development Mechanism (CDM) allows a country with an emission-reduction or emission-limitation commitment under the Kyoto Protocol to implement emission-reduction projects in developing countries. Such projects can earn saleable certified emission reduction (CER) credits, each equivalent to one tonne of carbon dioxide, which can be counted towards Kyoto targets.

21 A pedoclimate is a microclimate within the soil, integrating its temperature, water content and aeration.
carob trees. Priority should be given to the protection of existing genetic resources, such as the early flowering almond tree, that currently is vulnerable to a high risk of spring frost. Provided the trees are protected, early flowering will be an advantage, ensuring maximum use of rainfall (Hamzé et al, 2010).

- **Replace crops that require large amounts of water.** This includes new maize varieties introduced to produce silage. Mixed farming of cereals (barley, oats) with annual Mediterranean legumes (vetches, clovers and medics) will provide a more reliable source of forage.

- **Farm aromatic and medicinal plants.** As these require little irrigation water, they may be a valuable alternative to thirstier plants, particularly if an attempt is made to promote niche markets for them (Hamzé et al, 2010).

- **Develop plant and animal epidemiological models.** Understanding, modeling and mapping future risks to animal and plant health will help in the fight against diseases. Strategies to address disease could be tailored to the severity of the risk and targeted at the periods and areas in which risks are high and the capacity of pathogen population to adapt is low (Guis, et al, 2010).

- **Develop fish farming.** With the global decline of wild fisheries, fish farming has become a major source of protein and micronutrients, especially in cultures reliant on fish consumption. Sustainable fish farming should be considered as an option for improving local food security (FAO, 2010).

3. Urban areas

- **Encourage open-space urban design.** Urban areas produce ‘heat islands’, worsening climate change. Both the impact of urbanization on climate change and the vulnerability of cities to climate change are influencing urban planning, bringing the greening and resilience of cities into new and profound significance. Open-space design incorporates principles of ecosystem planning and biodiversity conservation, including spaces for food and tree crops and for raising small (and possibly large) agricultural animals (FAO, 2011a).

- **Encourage non-commercial subsistence.** Many people in high- and low-income countries depend on household food production for food and nutrition security. Today food, forest, fish and animal production systems are being included in urban planning. Subsistence food production is a strategy for resilience and adaptation in the face of volatile economic and climate change in cities (FAO, 2011a).

Ultimately, the long-term sustainability of the Mediterranean region requires a global effort to keep climate change within tolerable bounds. At the national and subregional levels, adaptation mechanisms and strategies are needed to mitigate the potential impact of climate change on the population, particularly in regard to the food security and nutrition situation of the most vulnerable. The value of efficient safety nets and poverty reduction strategies cannot be over-emphasized. Furthermore, the sub-region would greatly benefit from FAO’s experience with specialized programs and tools such as the Mitigation of Climate Change in Agriculture programme (MICCA), Climate Smart Agriculture (CSA) and the Framework Programme on Climate Change Adaptation (FAO-Adapt). The Modeling System for Agricultural Impacts of Climate Change (MOSAICC) is packaged for integrated impact assessment. It combines climate scenarios with national economic impact analysis, has been successfully tested in Morocco, and can be replicated elsewhere.
4.2 Water management

When fundamental principles, appropriate technological tools, and well-adapted practices are applied coherently in conditions of water scarcity, these can yield optimal agricultural outputs, while also ensuring sustainability of natural resources.

Water is generally the main limiting factor for agricultural production in the sub-region. Its use requires sound planning and diligent management, based on economic optimization, social equity and protection from degradation. The protection and sustainability principle also applies to other natural, related resources — land, forests and pastures — and requires strict observance of supportive capacities and the prevention of depletion and degradation.

Effective water management policies and strategies include:

- enhancing the supply of water
- assessment, accounting and monitoring
- concerted planning and allocation
- decentralized management
- participation by water users
- arbitration and conflict resolution
- service cost recovery (user pays)
- protection and pollution control (polluters pay)
- private sector involvement

Most of these policies are embedded in the water laws of many countries of the southern and eastern Mediterranean. But regulations to apply these policies either have not been implemented or are not enforced.

All countries in the sub-region are short of water and irrigation plays an important role in promoting their economic and social development. However, the performance of agricultural water in terms of efficiency and productivity is below potential and does not reflect the reality that water is scarce. The reasons for the shortages and the technical, policy, and institutional changes required to address them have been well documented.

4.2.1 Policy recommendations for improved water management

The following summarizes the main reforms required to ensure irrigation water is utilized in the face of rising demand. Most countries in the sub-region have attempted to adopt some of these reforms over the past 20 to 30 years. However, adoption has been partial at best and so the expected improvements have not been realized.

1. Irrigation management transfer

The majority of irrigation systems in the sub-region, particularly large-scale developments, have been publicly financed, implemented and managed. This has imposed an intolerable burden on public finances and led to low-quality services for beneficiaries. This in turn has had a negative impact on water use.

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22 Access to water in sufficient quantity and quality for all is a human right recognized under international treaties. Sub-regional governments must ensure more efficient use of water, so that available water resources meet the competing needs of use by growing populations in urban settlements and for agricultural production and industrial use in a sustainable manner.
efficiency and productivity. So, just when publicly funded irrigation should contribute increasingly to global food security, its productivity is declining and its capital assets are deteriorating.

One proven option is to transfer management of these schemes to beneficiaries and to build users’ capacity to play significant roles in water management. This and other aspects of modernizing water management would open avenues for higher productivity, making them more competitive and extending their longevity.

2. Water services cost recovery
In countries practicing cost recovery for irrigation schemes, often only a small portion of the operations and maintenance costs are actually being recovered. Moreover, the recovered funds are not re-invested to improve existing irrigation systems, making farmers more reluctant to pay for irrigation services. On top of this, capital costs are often excluded from cost recovery programs, making these cost recovery systems highly unsustainable. A shift is underway, with more countries likely to adopt water pricing in the near future designed to fully recover operation and maintenance costs.

While a promising tool, water pricing has its limits and conditions. These are: a country’s economy, its physical and climatic conditions, available market opportunities, and the share of water costs in relation to other production costs. Also key is the nation’s capacity to implement the reforms needed to create the enabling environment for successful water pricing.

3. Unlocking the potential role of the private sector
The performance of private irrigation in the sub-region is far higher than that of publicly managed schemes. The private sector can provide financing and improved services and take a share of the risks associated with agricultural water management. Unlocking this potential requires appropriate reforms and regulatory frameworks.

4. Alternative sources of water
The shortage of fresh water has led to the use of low-quality water often referred to as non-conventional water resources. Treated domestic wastewater, brackish water and desalinated water constitute important resources in the sub-region and their contribution to agriculture is increasing rapidly.

The re-use of treated wastewater contributes to water conservation and also makes economic sense. Moreover, wastewater usage schemes, when properly planned and managed, have a positive environmental impact, while also increasing agricultural yields. In countries with severe water scarcity, such as Jordan, the share of treated wastewater in agriculture can reach up to 25 percent in drought years. The capacity to manage such re-use has improved in the sub-region, albeit to different degrees in different countries.

Spain and the United Arab Emirates desalinate brackish groundwater for agricultural use; the practice is expected to find its way to the southern Mediterranean soon. Blending fresh Nile water with ‘salty water’ from the agricultural drainage system is a common practice in Egypt. A study carried out recently in Morocco with FAO support indicated that desalination of seawater for agricultural use can be economically viable, provided the water is used to grow high-value cash crops and the treatment plant serves an irrigated area of 7 000 to 10 000 hectares. Farmers would be able to support 30–40 percent of the capital investment costs and all of the operation and maintenance costs.

5. Water resources and food trade policies
Despite many efforts made to increase levels of self-sufficiency in food production and to boost agricultural exports, all countries of the sub-region are net importers of food. This is because of their limited natural resources, particularly water. It is possible to narrow the gap in the agricultural trade
balance through increased production for which a margin still exists in all countries of the sub-region. However, the economic returns from water resources must be integrated into trade policies. To avoid a high national cost of aiming at greater staple food self-sufficiency, sparse water resources should be used for the production of high-value crops suited to local conditions; proceeds from the sale of high-value crops can then help defray the cost of imports of lower-value foods, particularly cereals.

4.3 Smallholder farming

Smallholder farming constitutes the major source of agricultural production in most countries in the sub-region and remains the focus of national agricultural development strategies. Prior to the reforms and structural adjustment programs of the late 1980s, most countries had agricultural production and marketing systems heavily controlled by the state. Most interventions were in the form of subsidies on input and output prices, controlled production, commodity processing and marketing, investment in infrastructure, and management of the entire food supply chain through parastatals.

Since the late 1980s, the movement to liberalize and privatize agriculture has presented small farmers with both opportunities and challenges. On the one hand, farmers have become more proactive, participating in the market on the basis of price signals; on the other, they are also more exposed to market shocks. Price volatility has become a key policy issue, while also shaping farmer decisions regarding what and how much to produce and how to produce it. High production risks, due to adverse climate conditions (mainly rainfall shortages and fluctuations) present another challenge.

The food price crisis of 2007–08 prompted many governments in the sub-region to take policy measures to protect producers from high input and fuel prices. These policies remain in force in the face of ongoing high prices for several food items and fuels. Most are economy-wide measures to secure the availability of adequate and affordable food supplies.

As indicated in Table 7, the measures have included:

- increasing quantities of subsidized basic food items (mostly wheat flour and bread),
- strengthening consumer price controls and imposing price ceilings
- expanding the coverage and quantity of food rations
- reducing grain import tariffs and taxes
- banning certain food exports (e.g. rice in Egypt) to curb domestic prices
- raising public sector wages.

To boost local production, Egypt, Morocco, and Syria have taken measures to increase levels of guaranteed farm prices for cereals, mainly wheat. Some countries have also taken measures to deal with the medium- to long-term implications of rising food prices. These include taking a more serious look at measures to build up and use strategic national or regional reserves. Some rich countries with limited land and water resources are encouraging investments in food production abroad.

A noticeable change in farmers’ livelihoods might take a long time to materialize, depending on the magnitude and timing of price shocks. The impact also depends on whether the farming unit is a net producer of food or a net consumer, among other things. In general, food expenditures comprise a large share of poor people’s total expenditures, so they are the hardest-hit by food price increases.
Table 7: Countries addressed the recent price shock through various economy-wide policies and existing social protection programs

<table>
<thead>
<tr>
<th>Country</th>
<th>Economy-wide policies</th>
<th>Existing social protection programs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Reduce tax on food grains</td>
<td>Increase supply using food grain stocks</td>
</tr>
<tr>
<td>Egypt</td>
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<tr>
<td>Morocco</td>
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<td>Lebanon</td>
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Source: Adapted from: World Bank/FAO/IFAD, 2009

A recent FAO–IFAD study23 analyzed responses of smallholders in six Near East countries24. The study found that the overall effect of high food prices on the potential supply response of small farmers varied across countries, depending on:

- the speed of farm gate price adjustments
- the change in the ratio of input to output prices
- government policies
- local structural constraints
- rainfall conditions.

More than 60 percent of farmers would anticipate expanding the area of cereals planted if prices were to remain as high as those of early 2008, but the subsequent sharp reduction in prices in 2009 had blurred farmers’ decisions. Price volatility is perhaps the greatest impediment to small farmers’ sustained supply response.

4.3.1 Policy recommendations for support to smallholder farming

1. Farmers’ response to high food prices

Based on the FAO/IFAD study, some key policy recommendations to boost farmers’ supply response include the following:

- Timely dissemination of economic, price and climate data to assist farmers make better-informed decisions and would increase the efficiency of farm planning.
- Access to agricultural finance, particularly for women and youth, is an important ingredient for a more effective supply response; timing the availability and affordability of these financial resources is critical.
- Direct and well-targeted safety nets and social protection programmes are needed, based on legal guarantees and solid entitlements for the poorest segment of smallholders.


24 Egypt, Jordan, Morocco, Sudan, Syria and Yemen.
• Economy-wide policies (such as border trade measures) to protect farmers distort production incentives and will have a negative impact on long-term national food security; hence such policies must be carefully implemented to ensure benefits to farmers are carefully balanced against interests of other stakeholders in the economy.

2. **Policies and actions to improve crop production**
   • Regulate resource use and foster markets for increasingly scarce resources, notably water.
   • Strengthen local institutions through community empowerment.
   • Develop more constructive partnerships between the private sector, major donors, the research community and the state.
   • Through sound policies and incentives, facilitate formation of producer marketing groups and action research groups.
   • Explore new systems of cropping sequences, intercropping and in season management using proactive farmer-researcher groups.

3. **Policies and actions supporting animal nutrition**
   Improve the quantity and quality of feed produced and improve animal nutrition by:
   • increasing the feed resources base through improved utilization of locally-available feeds and inclusion of agro-industrial by-products in the formulation of animal feeds
   • adopting a national strategy to manage, rehabilitate and improve rangelands
   • conducting research to improve the efficiency of feed utilization in animal breeds.

4. **Policies and actions to improve animal productivity**
   • strengthen relevant public–private partnerships
   • increase productivity in the small-scale dairy sector
   • address small ruminant production and marketing through technological, institutional and policy interventions and strengthened producer associations
   • create niche markets for traditional animal products
   • strengthen livestock extension services
   • involve local communities and farmers in policy implementation

5. **Policies and actions to control animal diseases**
   • sufficient logistical support for animal disease control and prevention and sustainable delivery of veterinary services
   • coordinated national and regional strategies to address transboundary animal diseases affecting trade and zoning in the context of ‘One World, One Health’ approach
   • increased awareness and preparedness in the prevention of animal-source food emergencies along the value chain as linked to animal-associated health threats
   • strengthened capacities in animal identification and traceability of animal and animal products.

6. **Policies and actions to improve animal genetic resources**
   • implementing the Global Plan of Action for Animal Genetic Resources
   • improving utilization and conservation of adapted animal genetic resources

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25 One World, One Health is an international effort focused on the current and potential movements of diseases among human, domestic animal and wildlife populations.
• developing national breeding strategies and programmes for different livestock species and breeds. This requires strengthening national capacities in animal identification and performance recording including data management.

4.4 Producer organizations as service providers

Farmers’ associations and co-operatives can be vital two-way links between farmers, the private sector and governments, providing an array of services, such as the ones listed below. Governments of the sub-region should consider formulating policies, or strengthening existing policies, in support of these services.

4.4.1 Policy recommendations for producer organizations as service providers

1. Enhancing access to, and management of natural resources

Institutions are crucial in regulating how the natural resource base is accessed and managed to achieve sustainable food security. Organizations and institutional arrangements can regulate smallholders’ access to, and management of natural resources. Such organizations include mediation committees for resolving conflicts over land or for securing land-use rights, women’s groups for reclaiming land and community-based forest enterprises for generating income. In Morocco, for example, an FAO project[^26] aims to increase water productivity in major irrigation schemes in the country. The project employs a consultative approach with professional organizations such as water user and agricultural producer associations, leading to an increased understanding of natural resource use in the region. This has inspired development of more efficient irrigation schemes for local farmers, which, in turn, has reduced considerably the negative environmental impacts of irrigation.

2. Accessing input and output markets

Producer organizations can increase their members’ productive assets and access to markets, while reducing transaction costs. Acting collectively, small producers have better access to seeds, fertilizers and financial services. In the West Bank, the FAO and the OPT Ministry of Agriculture, Trade and Women’s Affairs are jointly supporting 84 women’s associations (approximately 900 women farmers). These associations have developed value-chain linkages between women farmers and national and international markets. This is both particularly challenging and encouraging in light of the mobility restrictions in Palestine. This effort has played a crucial role in local agricultural development (FAO, 2011e). Similarly, in Morocco FAO is involved in a project called ‘Renforcement des capacités institutionnelles pour développer les produits de qualité de montagne - cas du safran’. The aim is to develop the saffron value chain and related institutional support. With the development of a ‘denomination of origin’[^27] and inter-sectoral linkages, the project directly involved local rural organizations, enabling local farmers to sell their saffron on national and international markets.

3. Improving access to information and knowledge

Producer organizations, connected with non-governmental organizations (NGOs) and public and private entities, can help small-scale producers to improve their access to changing markets and use of information and knowledge to innovate and adapt accordingly. Some enable farmers to build their capacity to analyse their production systems, identify their problems, test possible solutions, and eventually, adopt practices and technologies most suitable to their farming systems.

[^26]: The FAO project is called ‘Proyecto de asistencia al plan nacional de economía del agua de Riego en Marruecos, proyecto piloto en el perímetro de Doukkala’.

[^27]: According to Wikipedia, a denomination of origin is a legal designation ensuring that only products genuinely originating in a particular sub-region (e.g. Champagne) may be identified as such in commerce.
The Rural and Agricultural Development Communication Network (RADCON) in Egypt illustrates innovation in disseminating knowledge among farmers (FAO, 2010d). RADCON is a community-based information and communication system combining videos, television, radio and the Internet. It enables family farms and dispersed communities to link with an interactive information system integrating extension, research and private and public sector information and service providers. The information includes local experiences, problems, traditional practices and success stories provided by rural people. These are communicated through downloadable radio and TV programmes (FAO, 2010d).

Another successful example comes from the OPT’s West Bank, in the Hebron district, where FAO launched a Junior Farmer Field and Life Schools (JFFLS) program in 2008. JFFLS programs empower youth by teaching agricultural and business expertise. These skills improve their employment opportunities, livelihoods, long-term food security, farming knowledge, entrepreneurship, life skills and self-esteem.

An estimated 2,000 youths have been trained in the West Bank and Gaza Strip since 2008. In the final phase of one seven-month cycle involving 260 girls and 280 boys, products grown by students were sold to teachers and parents and the funds were saved for future activities. Graduates from selected JFFLS schools in the Hebron district joined the Al-Shiva Hive Cooperative Society where they were trained in beekeeping, bee hiving and honey processing. The whole program had a significant direct impact on the food security of students’ households, showing the importance of rural institutions as a tool to enhance existing competencies and foster local development (FAO, 2010c).

4. Facilitating smallholder participation in policy-making

Producer organizations also help smallholders to voice their concerns and interests in policy-making processes such as multi-stakeholder platforms and consultative forums. Encouraging such participation also improves governance for food security.

The FAO Regional Office for the Near East (RNE) assisted the Government of Egypt in formulating its ‘Sustainable Agricultural Development Strategy Towards 2030’ and the associated implementation plan. Importantly, farming organizations, including cooperatives and agricultural traders, were involved in the formulation as key stakeholders. As a result, the strategy and its action plan have clear, strategic orientation and will promote and strengthen the role of producer organizations and cooperatives in policy-making for agricultural development.

Small producers, governments and profit and non-profit private actors must find better ways to collaborate in shaping the environment that enables and supports producer organizations. Within these collaborative ventures, some of the main challenges for policymakers are:

- to build upon the knowledge, capacities and skills of small producers and their organizations
- to formulate and design better policies that support small producers’ strengths and respond to their needs rather than trying to direct them.

To implement this new form of multi-stakeholder partnership, governments, development practitioners and other stakeholders have to shift the nature and quality of the support they provide. Where they once focused on providing assistance, now they must become facilitators of change in a people-centered approach to developing the knowledge and capacities of individuals who are key to strengthening rural institutions.

4.5 Research and development

Agricultural research and development (R&D) is recognized as a high yielding investment with many social advantages. They enhance food security, nutrition and rural livelihoods through on-farm and off-farm employment and food for consumers. Therefore, the public sector has a prime responsibility to invest in agricultural R&D (FAO, 2009).
There is gross underinvestment in agricultural R&D worldwide despite returns estimated at 45 percent (FAO, 2009); in Arab countries, returns are lower but still very impressive, at about 36 percent (Alston et al., 2000). Public funding for agricultural R&D was 0.5 percent of agricultural Gross Domestic Product (GDP) for Arab countries generally. This compares poorly with middle-income countries in Latin America such as Argentina and Brazil, which spend 1.0 and 1.4 percent of their agricultural GDP and on R&D, respectively. In the sub-region, Libya (1.6 percent) and Jordan (1.2 percent) have spent the most; Morocco spent around 1 percent while Egypt, Lebanon, Syria and Tunisia spent around the regional average of 0.5 percent. This is well below FAO’s recommendation that at least 2 percentage points of agricultural GDP should be dedicated to R&D in agriculture (FAO 2009).

In 2000, US$175 million was spent on agricultural R&D in the sub-region compared with US$924 million in Brazil whose population is similar in size to the southern Mediterranean basin. Researchers are not attracted to jobs in the sub-region’s public research sector. Underinvestment in equipment, information technology and support prevents the sector from producing leaders and innovations that can drive agricultural productivity upwards.

4.5.1 Policy recommendations to strengthen research and development

1. Greater investment and cooperation in R&D

One dilemma in the sub-region has been the lack of cooperation between various entities working in agricultural R&D. There are signs this is improving. The League of Arab States (LAS) and the United Nations Development Program (UNDP) have developed a multilateral research agenda based on a regional R&D fund; commitments have been made to a long-term budget to support these efforts (FAO, 2009). Better coordination in R&D will further the efforts of research institutions engaged in the Arab countries. These include national agricultural R&D institutions, the International Centre for Agricultural Research in Dry Areas (ICARDA) and the Arab Centre for the Studies of Arid Zones and Dry Lands (ACSAD) established by LAS in 1968. A regional R&D fund could facilitate stronger cross-border collaboration to increase significantly the number of beneficiaries of agricultural innovation. The overall aim of support should be to strengthen local adaptive research.

2. Ensure R&D takes into account needs of smallholders and sub-sectors

Other goals are to develop capacity, strengthen extension services and conduct research in sub-sectors (crops, vegetables, livestock, etc.) covering the whole food chain. Also, efforts should focus on the main natural resource constraints in the sub-sub-region; a first aim should be to gain greater efficiencies in the use of water and land. This drive would seek to improve traditional technologies and might include new management and better policy implementation. These would be addressed at various administrative levels and include innovative forms of demand-driven extension services such as embedding them in producer organizations. Given the role of food and agriculture in supplying jobs in rural areas, special attention should be given to measures to enhance the resilience of small-scale agriculture to cope with climate change and resource scarcity. R&D should take in account needs and capacities of smallholders, providing options that are adequate and easy to adopt. Often, the options promoted do not fit the limited capacity of smallholders and vulnerable people to take risks.

4.6 Promoting decent employment for all

The four strategic objectives of the Decent Work Agenda, promoted by the International Labour Organization, are to create jobs, guarantee rights at work, extend social protection, and promote social

AgGDP as a share of total GDP is 5 percent in Argentina and Brazil, which is lower than most of the sub-region especially Egypt (10 percent), Algeria (12 percent),Morocco (15 percent), and Syria (21 percent)(World Bank, 2011).
dialogue. Furthering the Decent Work Agenda must be a priority in the sub-region where unemployment, underemployment and a general lack of opportunities, especially for youth, pose major development challenges. Promoting job-centred growth strategies anchored in decent employment opportunities for all is crucial in addressing the root causes of long-term poverty and food insecurity. Recent political upheaval in the sub-region has provided ample warning of widespread public dissatisfaction. Sustainable growth patterns are not only a function of the number of jobs created but also of their quality and capacity to address shortages of good jobs, hopelessness, employment gaps and exclusion faced by people in rural and urban areas.

In particular, rural labour markets in the sub-region are generally distinguished by: high levels of informality; a preponderance of casual and self-employment; labour force fragmentation; uneven access to information; and the inherent uncertainties of agricultural production. Moreover, rural working conditions are often poor, and access to social protection is limited. Rarely enforced labour legislation compounds the situation; rural workers are the least organized and the least protected by legislative frameworks; dialogue on social issues is generally weak (FAO 2011c). More and better jobs can be created, especially for women and youth, with a greater focus on Decent Work Agenda.

Youth employment. Job creation for young women and men is an imperative for the sub-region, particularly given demographic trends. In North Africa, the working-age population grew by 27.8 percent between 2000 and 2010 (ILO, GET, 2011). This is because the population is growing by about 2 percent per year, well above the 1.2 percent world average and second only to Sub-Saharan Africa’s annual growth rate of 2.5 percent (ILO, 2011). This means that the population in the sub-region will explode in the next two decades. In the OPT over 40 percent of the population is currently under 15 years old. Based on projected population growth rates, the Arab Human Development Report (UNDP 2009) estimated that Arab states, of which the countries in the sub-region are a part, will need about 51 million new jobs by 2020 to absorb the new entrants. Underinvestment in job creation for young people clearly will have negative impacts on local economies (World Bank, 2010b). Substantially higher investment is needed to address high youth unemployment and its socio-economic and political implications.

In some countries, national and regional action plans to promote youth employment are in development (e.g. in Egypt and Tunisia; ILO 2011, UNDPa, 2010). Increasingly, youth inclusion is an important part of developing national agricultural plans, as in Algeria (CIHEAM 2008). Overall, a process of structural and economic transformation is needed to create decent jobs, especially for the young generation.

Employment-enhancing strategies should harness the potential of agriculture and rural areas. They should support labour-intensive, high-value agriculture and a dynamic non-farm rural sector while enhancing rural-urban linkages. Adopting territorial approaches that remove structural disadvantages faced by peripheral and rural areas could reduce spatial inequalities. These approaches include improvements to the investment climate and access to social services. At the same time, interventions should systematically place youth economic inclusion at the centre of any new development discourse.

4.6.1 Policy options and recommendations towards decent employment for all

As stated before, two major constraints prevent people from entering the labour market: lack of jobs and constraints on the supply side, including skills mismatched to demand (World Bank 2010b). Employment-enhancing strategies should address those constraints in rural and urban areas. Doing so would improve food security, reduce unemployment and underemployment and foster inclusiveness. Possible policy actions include (FAO 2011c; World Bank 2010b; UN 2010):

- Improve the quality and relevance of educational and vocational training to develop skills demanded by employers. Skills development is central to sustaining productivity growth and translating that growth into more and better jobs. Integrated approaches, such as Junior
Farmer Field and Life Schools (JFFLS) pioneered by FAO in the sub-region, combine agricultural, entrepreneurial and life skills. (FAO, 2010c)

- Promote self-employment, entrepreneurship and group cooperation, particularly in the rural farm and non-farm economy, and facilitate access to training, credit and financial services, especially for youth and youth groups.
- Provide support services to rural small- and medium-sized enterprises to harness the potential of food processing, retail and other aspects of the rural non-farm sector, which are labour-intensive and closely related to the agricultural sector.
- Improve labour market information systems and enhancing capacity to conduct situation analysis and labour market diagnosis. It is especially important to improve the quality and availability of gender- and age-disaggregated labour market statistics, with particular attention to rural labour markets and the informal economy.
- Strengthen capacities of governments and other national stakeholders to explicitly address the employment dimensions of policies and programs. Employment should be considered a central determinant of sustainable rural development and food security outcomes. Employment enhancement through responsible agricultural and rural investments should include: (i) fostering linkages between rural and urban interests and with migrants and diaspora groups; (ii) promoting occupational safety and health and other aspects of decent work conditions in rural and informal settings; and (iii) protecting migrant workers and fostering the active engagement of women and youth in producers’ and workers’ organization and in decision-making forums.

4.7 Social protection

Social protection in the sub-region consists of policies and strategies to reduce poverty and vulnerability, while promoting efficient labour markets; and diminishing people’s exposure to risks, while enhancing their capacities to protect themselves against hazards.

Social protection is one of the four pillars of the Decent Work Agenda. Evidence shows that promoting a social protection floor, particularly in rural areas, is central to minimizing the negative impacts of high food prices and food price volatility. It also improves working conditions for rural workers, particularly in the informal economy. The current lack of adequate access to social services in the sub-region is reinforced by the prevalence of informal and irregular employment in rural areas. Furthermore, the lack of social infrastructure and reward for unpaid care work, undertaken mainly by women and young girls, increases gender inequality, hampering the participation of women in the labour market, and their contribution to agricultural production and food security.

Recent and current trends. Existing social protection programs and policies in the sub-region have played a crucial role in reducing poverty and promoting high economic growth in comparison with other regions of the world. Rapid economic growth in recent years is, in part, the result of increasing revenues from oil in some countries and increasing opportunities through migration to neighbouring countries. Growth, including higher incomes and improved levels of human development, has increased per capita GDP (ILO, 2011) and funded government social programs that have improved living standards. This is despite the fact that many countries in the sub-region are rated as middle-income.

However, GDP growth has not prevented crises. Fluctuating oil prices, high population growth, unemployment, and food and political crises have combined to increase the number of vulnerable people in the sub-region living below the poverty line of US$2 per day. It is estimated that over one-fifth of Egyptians live below the poverty line. The global economic and financial crises since 2007 have pressured governments to place even greater emphasis on social protection. Historically, social protection
policies in the Arab states tend to be fragmented between different types of programs, target groups, and public and private provision (World Bank, 2000). Limited creation of quality jobs and a poorly-educated labour force are a concern to policy makers. Governments in the region should use social protection programmes to achieve higher levels of economic and human development.

Social protection programmes are also important counter-cyclical mechanisms to shore up the welfare of the poor and the fragile middle class during difficult times, such as the recent fuel and food price shocks, and political, financial and economic crises. Safety nets\textsuperscript{29} protect vulnerable households, helping them to balance livelihood risks, to maintain adequate food consumption and to otherwise improve food security.

**Forms of support.** Government social supports may include fuel and food subsidies, pensions, unemployment insurance, cash transfers and medical care. In Egypt, a considerable portion of food imports is channelled into food subsidies, 75 percent of which is used for bread (World Food Programme, 2009). Most food subsidies schemes in the sub-region are costly and not well targeted to the poor (World Bank, 2007). At household levels, people rely on kinship networks and other informal support to help them cope in crises.

Safety nets are important for poverty eradication, when they are part of national social protection strategies and food security programs (FAO, 2011a). Many governments and their development partners provide cash and in-kind transfers to reduce poverty and improve food security and nutrition. In-kind transfers include food aid provided through schools to students and to other vulnerable people, nutrition programmes for mothers and children, financial aid to the long-term poor who have no possibility of supporting themselves, and cash transfers to poor families needing income support.

In response to food price shocks, food-based safety nets such as school feeding\textsuperscript{30} can help to safeguard household investment in education. Vouchers and cash transfers help households to maintain caloric intake and diet quality and to fill other household needs. Transfers and vouchers are appropriate when markets are functioning, stimulating the local economy and providing food. To ensure sustainability, they should be integrated into broader social protection strategies. Conditional food-based transfers can be used to promote maternal and child health and nutrition.

Employment-based safety nets such as public works and employment guarantee schemes entail regular payment, in cash or in kind, in exchange for work. Public works schemes offer short-term employment to poor and vulnerable workers during crises, while employment guarantee schemes take a rights-based approach in providing access to longer-term work.

Public works consist mainly of labour-intensive infrastructure development projects; increasingly, such jobs are being created in the social sector, in environmental services and in community-driven programs. Some programmes include skills and other training components (ILO 2010b). Wages in traditional public works projects are typically below market rates, which will ensure that only the most needy will take part. On the other hand, promotion of employment guarantee schemes paying minimum wage rates are likely to enhance decent work conditions and give rural workers greater bargaining power (ILO 2010b).

\textsuperscript{29} The World Bank defines safety nets as non-contributory transfer programs targeted to the poor and vulnerable. FAO defines social safety nets as cash or in-kind transfer programs that seek to reduce poverty by redistributing wealth and protecting households against income shocks.\textsuperscript{30} World Food Programme school feeding policy, 2009.
Correct design of employment-based safety nets is crucial in overcoming possible negative effects, such as the poor quality and financial sustainability of the infrastructure built. If underfunded, public works may have a negative impact on nutrition, considering the amount of energy people expend working on them. Furthermore, they may not be appropriate for all needy groups such as children, the elderly and disabled people. Special attention is needed to address gender issues, for example making sure that women are not expected to do heavy manual work, and have sufficient time for domestic and other care responsibilities (Devereux, 2010).

The United Nations can help governments in the sub-region to analyse and formulate food security legislation and programmes in alignment with national poverty reduction strategies and other relevant initiatives.

4.6.1 Policy recommendations to strengthen social protection

1. Ensure social protection programmes are rights-based, flexible and affordable
   The strongest social protection policies and programmes are rights-based and integrated with poverty reduction strategies and other system-wide approaches, particularly in education. The policies should be affordable, sustainable and mainstreamed institutionally. They must be flexible enough to respond to rapidly changing scenarios and to support individuals through various stages of life. The UN has a comparative advantage in developing national government capacity in relation to social protection programmes for food security.

2. Reform existing social protection programmes
   While generous, social protection systems and schemes in the sub-region require reform to improve markedly their efficiency and effectiveness in reaching the poorest people and in addressing youth unemployment. A few countries have initiated such reform, including Egypt, OPT and Jordan. A comprehensive review of these social protection schemes should examine administrative capacities and performance, while improvements must be aligned to available resources. There is great urgency for reform of social protection programmes, as the number of people dependent on these programmes, in particular the youth, will increase significantly in the coming years, due to population growth, the difficult macro-economic global climate and socio-political instability in the sub-region.

4.8 Food security monitoring and early warning

It is clear from the global economic and food price crisis of 2007-08 that the sub-region has insufficient capacity to monitor hazards relevant to food security and nutrition. Nor is there capacity to analyse the possible impact those hazards may have on the economy and its people, with specific attention paid to the most vulnerable populations. Some information on agro-climatic conditions, markets, trade and food security and nutrition is collected by government institutions and/or by global monitoring systems such as FAO’s Global Information and Early Warning System on Food and Agriculture (GIEWS).

Unfortunately, much of the national data is of poor quality in that it is often not fully up-to-date nor accessible for comprehensive national and regional-level analyses. Furthermore, national or regional data and information on the food security situation is often not presented in a manner that would encourage appropriate response by decision-makers.

A number of regional food security consultations, many facilitated by FAO, were held in 2010 and 201131. Participants concluded that urgent action is required to improve food security and nutrition

31 Including the 2-4 May and 9-10 May 2010 subregional consultations on policy and programmatic actions to address high food prices in Tunis, Tunisia and Amman, Jordan respectively; the 11-13 July 2010 regional consultative workshop on data focal points in Beirut, Lebanon; and the large Regional Multi-Stakeholder Workshop on Food Security and Nutrition that was held at the Sofitel Hotel in Cairo, Egypt from 3 to 4 October 2011.
intelligence. The result was that effective early warning systems (EWS) and the need for evidence-based and rigorous analyses have been brought to the fore in the regional food security dialogue. The overall aim is to improve knowledge on hazards and vulnerabilities, develop monitoring capacity and strengthen preparedness and response capacity. Of particular importance is the need for increased capabilities within national governments (ISDR, 2005). Coverage should include all countries in the sub-region plus Mauritania and Yemen.

4.8.1 Recommendations for strengthening food security monitoring and early warning

Given the different dimensions of food security and the complex nature of institutional and policy support mechanisms that must be in place for effective food security monitoring and early warning, the following technical areas of work need attention.

1. Agro-climatic monitoring

Much of the rural population in the sub-region is dependent on rain-fed agriculture and livestock. So the first component of an effective early warning system requires agro-climatic monitoring of the agricultural season, including: monitoring precipitation and crop and rangeland conditions using satellite imagery, such as the Normalized Difference Vegetation Index (NDVI) and rainfall estimation (RFE), in addition to calculating the Water Requirements Satisfaction Index (WRSI). Other aspects include exogenous factors such as rainfall performance in East Africa, which affects the flow of the Nile and is key to irrigation capacity in a number of states; and floods, hurricanes and droughts in other regions of the world, which may affect global prices for cereals imported to the sub-region to meet almost half of the population’s dietary energy needs.

Proposals to enhance institutional capacity in food security monitoring and EWS aim to strengthen agro-meteorological capacity inside ministries of agriculture and national meteorological agencies. This includes, among others, modernizing infrastructure for meteorological observation and increasing rainfall data collection. Success would depend on close coordination and technical backstopping by FAO, the International Centre for Agricultural Research in Dry Areas, and the World Meteorological Organization.

2. Crop production forecasting

Crop production forecasting is central to any system providing early warning of potential future shortfalls impacting on the food security and nutrition situation. Generally, the forecasts are compiled in a national food balance sheet, which is an important tool used by policy makers to monitor overall food availability and demand in a country. What is needed is enhanced capacity to generate, analyse and communicate more accurate information on key staples to users in a timely manner. FAO is an important partner in supporting the improvement of crop production estimates.

3. Animal and plant disease monitoring and surveillance

FAO’s Food Chain Crisis Management Framework (FCC) addresses, in an integrated way, all food chain threats from production to consumption, including animal health, plant protection and food safety. The agency’s Emergency Prevention System for Transboundary Animal and Plant Pests and Diseases (EMPRES) has the mandate to address prevention and early warning across the whole food chain. Protection against animal and plant diseases and pests and against food safety threats — and preventing their spread — is one of the keys to fighting hunger, malnutrition and poverty. This includes FAO’s Locust Watch, which monitors the world-wide locust situation and keeps affected countries informed of expected developments. Livestock and livestock products are vitally important for trade and consumption within the sub-region, as are growing exports of fresh produce to the Middle East and the European Union. Improved phytosanitary capacity and effective pest control will help ensure food safety for domestic consumers and secure export opportunities for countries such as Egypt, Morocco and Tunisia.
4. Monitoring markets and trade

The monitoring of – and reporting on commodity prices and trade flows is critical to ensuring market transparency and understanding food security implications. Monitoring and reporting activities should include prices for key food commodities covering post-production, wholesale and retail prices, including at global, national and sub-national levels. The analysis should cover market price and trade developments affecting both food and feed markets. FAO-GIEWS is an important source of market price data, and also conducts comprehensive market assessments and analyses.

Following the turbulence in the world commodity markets in 2007-09, the member states of the G-20 in collaboration with several UN and other international agencies, launched a new programme called the Agricultural Market Information System (AMIS).\(^{32}\) Initially, AMIS, with a secretariat inside FAO, will work to improve data collection and market outlook for four major crops: wheat, maize, rice and soybeans among the G-20 countries plus eight major cereal importing or exporting countries\(^{33}\). In most countries, market information systems and tools for data collection already exist, but the capacity to implement them is inadequate. An important part of AMIS is to enhance national capacities to collect market outlook information and improve data quality in terms of timeliness, coherence and completeness. Close collaboration between the sub-region, the AMIS Secretariat and FAO’s GIEWS are viewed as the core of improved intelligence that will support the sub-region’s heavy reliance on imports.

5. Policy monitoring

Governments fearful of food supply shortages played a significant role in responding through various policy measures to the food price crisis of 2007-08. The imposition of export restrictions greatly influenced price levels and market volatility within countries of the sub-region. Some policy measures helped farmers by stimulating local production, while others helped to reduce trade transaction costs or cushion price increases for consumers. Food policy decisions can only be effective, if they are based on intelligence and analysis derived from food security information and early warning systems.

This includes monitoring prices on global markets (see discussion on AMIS above) and ensuring that appropriate policy instruments are in place to ensure maximum benefit to national and sub-national food security objectives. In the case of Egypt, when the cost of procuring wheat soared on global markets during the 2007-08 high food prices crisis, Egypt spent more than US$4 billion on national and international procurement of wheat, including about 2.5 million tonnes procured locally at price of US$461 per tonne (close to international market prices).

The above was in line with the existing Egyptian cereal procurement policy, which among others, did not include an element for the procurement of cereals on the commodity markets in using hedging, futures contracts or options. This policy decision has come at a very high cost. A World Bank/FAO/IFAD mission in 2008 (World Bank et al., 2009) estimated that the Government of Egypt could have saved between US$144 million and US$648 million on international procurement costs had hedging, futures contracts or options been used rather than Egypt’s system of monthly tenders. This potential saving was estimated to be equivalent to a minimum of 4 percent and a maximum of 18 percent of the total procurement cost (World Bank et al., 2009).

Hence, the careful monitoring of existing policies and their effectiveness and efficiency is very important. The FAO Regional Office for the Near East has put together an inventory of all relevant policy decisions across the region. This will form the basis for building capacity to monitor and advise on, or facilitate, a regional dialogue on the appropriate policy measures to be taken by one country without impacting

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\(^{32}\) Proposed by a coalition of global players in food security led by the Organisation for Economic Co-operation and Development and FAO in a report prepared for the G20 on request in the summer of 2011.

\(^{33}\) For more information, consult: www.amis-outlook.org/home
negatively on the food security situation in neighbouring states. FAO has built a Food and Agriculture Policy Decision Analysis Tool, that aims to contribute to efforts of harmonizing member countries’ policy decisions in relation to global, regional and national food security. It does so by providing up-to-date information for policy reviews and analysis to support national policy processes.

6. Monitoring social and political developments
The recent events related to the Arab Spring have demonstrated the potential impact that socio-political processes and events can have on national and household food security. A monitoring system to keep track of such developments could include indicators on economic stability or incidences of civil unrest as well as cross-border population movements (reasons and frequency), as well as measures of urban-rural migration.

7. Monitoring socio-economic indicators
A range of socio-economic indicators must be monitored, if countries are to stay abreast of their economic performance. Authorities typically rely on national bureaus of statistics, the World Bank, the International Monetary Fund, the International Labour Organization, FAO and the World Health Organization. Important indicators include GDP, the consumer price index, wage rates, unemployment figures broken down by region, gender and age, etc. Another statistical requirement is a minimum expenditure basket of basic food items and other essential goods and services. This includes housing costs, school fees, cooking gas, staple food prices, livestock products and electricity.

8. Livelihood profiles and monitoring vulnerable population groups
Socio-economic analysis of communities and households through quantitative household and individual surveys supplemented by qualitative research is key in early warning systems. It is important to understand the different means by which households obtain and maintain access to essential resources to ensure their immediate and long-term survival. This knowledge aids early identification of which population groups are vulnerable, where they are and to what extent they could be affected by shocks such as food price increases. Analysis should include vulnerability and resilience analysis, as was illustrated by the OPT case study in this paper. FAO, WFP and UNICEF all have strong and relevant mandates to support national capacity development efforts in the sub-region.

9. Products and dissemination strategy
Based on close interaction with government and private sector users of food security data, a dissemination strategy should be developed to provide them and the public with regular information updates via the Internet and other media. Up-to-date information will strengthen the quarterly Near East food security update published by FAO’s Regional Office for the Near East and FAO-GIEWS. It already provides information on price trends of major agriculture commodities and on the food security implications of the events at regional, subregional and country levels. The bulletin also highlights rainfall and crop performance in the region. More frequent publication of the newsletter is desirable.

10. Institutional arrangements
Much of what is needed in terms of early warning systems already exists to varying degrees, although better linkages and stronger analytical capacity are needed. The highest priorities are better linkages between North African countries to improve regional analysis, and greater interaction with regional and global partners. Therefore, the newly proposed structure draws in all important stakeholders to combine intelligence, to conduct analysis of the many facets of food security and nutrition, and to communicate and advocate for food security in clear language appealing to policymakers and stakeholders directly affected (e.g. farmers, traders, importers, consumers). Important collaborators include FAO-GIEWS,

34 For example, during the Arab Spring in Libya, there were mixed flows of refugees, returning migrant citizens and third-country migrant workers.
EMPRES, WFP’s Vulnerability Analysis and Mapping (VAM) group, the U.S. Famine Early Warning Systems Network (FEWS NET), the World Bank and the International Fund for Agricultural Development (IFAD). There would be a facilitating role for the UN Regional Coordination Mechanism for Arab States, in particular its Thematic Working Group on Food Security chaired by FAO. A small secretariat is needed to lead capacity development and facilitate its implementation.
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