FIXING FOOD:
THE MEDITERRANEAN REGION

BUILDING SUSTAINABLE FOOD SYSTEMS
THROUGH CAPACITY-BUILDING AND CO-OPERATION

Written by
Fixing Food: The Mediterranean Region investigates food sustainability issues in the Mediterranean in the context of the various social, economic and environmental challenges confronting the region. As a framework, it uses the three pillars—sustainable agriculture, nutritional challenges, and food loss and waste—of the Food Sustainability Index (FSI), developed by The Economist Intelligence Unit with the Barilla Center for Food & Nutrition Foundation (BCFN). Please refer to our earlier report, Fixing Food: towards a more sustainable food system, for a detailed explanation of the Index and its composition.¹

The objectives of the Mediterranean Strategy for Sustainable Development (MSSD) 2016-25 provide a key reference point for the briefing paper.² The MSSD, formulated by the UN, seeks to achieve a sustainable future for the Mediterranean by ensuring that efforts to promote socio-economic development are also closely linked with moves to protect the environment. This briefing paper also draws on examples from the following countries: France, Greece, Italy, Portugal and Spain (in the northern Mediterranean) as well as Egypt, Israel, Jordan, Lebanon, Morocco, Tunisia and Turkey (the southern and eastern Mediterranean countries), Portugal and Jordan—which do not directly border the Mediterranean—have been included in the study, as they share many of the characteristics of the respective sub-regions to which they have been allocated. All 12 of the aforementioned countries are included in the FSI (which covers 34 countries globally).


This report was written by Neil Dougall and edited by Martin Koehring of The Economist Intelligence Unit.

December 2017
Food systems today are facing the enormous challenge of feeding an increasingly growing and urbanised population generally demanding a more environmentally intensive diet, while restoring and preserving ecosystems for the health of the planet for present and future generations.

Nutritional challenges affect all countries in the world. Malnutrition affects one in three people. More than 815m people suffered from hunger in 2016, 38m more than the previous year, largely driven by violent conflicts and climate-related shocks. The level of people recorded as overweight and obese has reached epidemic proportions, with countries showing no decline in these trends. Food production, distribution and consumption patterns pollute the environment and contribute to climate change. Our food choices are responsible for about a third of man-made greenhouse gas emissions. Land, energy and water already face major competition and environmental sustainability. Second, climate change brings about a number of challenges in terms of agriculture sustainability and food security, increasing competition for natural resources and putting agriculture at risk. There is an important economic, social and political gap between the countries of the northern and southern and eastern shores of the Mediterranean, which require policy intervention and co-operation among the region’s economies. Last, but not least, population growth, coupled with migratory flows, creates the need for a more comprehensive understanding of how food and migration are linked.

The 17 Sustainable Development Goals (SDGs), adopted by the representatives of the 193 member states of the UN, guide the actions of governments, international organisations, civil society, academia and research, as well as other stakeholders, to guarantee long-term prosperity for people and the planet. From ending poverty and hunger to guaranteeing health and wellbeing, to responding to climate change and preserving life on land and under water, to fostering innovation and education, to assuring the inclusion of women and youth, to more responsible production and consumption patterns, food lies at the heart of the 2030 Agenda and connects all SDGs.

The current global food and nutrition challenges are particularly evident in the Mediterranean. First, the region is undergoing a "nutrition transition", with eating habits shifting away from the traditional diet of fruits, vegetables, fish and healthy oils, globally recognised as a model for healthy living and environmental sustainability. Second, climate change brings about a number of challenges in terms of agriculture sustainability and food security, increasing competition for natural resources and putting agriculture at risk. There is an important economic, social and political gap between the countries of the northern and southern and eastern shores of the Mediterranean, which require policy intervention and co-operation among the region's economies. Last, but not least, population growth, coupled with migratory flows, creates the need for a more comprehensive understanding of how food and migration are linked.

The BCFN has a sustainable food system at the core of its concerns, recognising it as a global challenge that requires systemic approaches to be tackled. This was also at the core of the Milan Protocol developed in 2015. With the FSI the BCFN acknowledges that we cannot consider food, livelihoods and the management of natural resources separately. By looking at food systems in their entirety, the FSI stresses the complexity of its dynamics and identifies openings for change. For this reason, the BCFN Foundation puts science and research in communication with all stakeholders, to create networks and facilitate synergistic relationships.

With the FSI, the BCFN Foundation aims to provide an assessment tool and foster dialogue, collaboration, knowledge sharing and concrete changes by representatives of different sectors: civil society, research, education, government, communication and the private sector, coming from different regions with different levels of development. The FSI also aims to increase awareness of the broader public on the food-related challenges analysed and has a major education purpose. Against this backdrop, rankings—far from being judgmental—have the purpose of helping to understand current food system trends and dynamics.

All stakeholders are called to contribute to the economic, societal and environmental sustainability of the global food system. The great ambition of the SDGs and the 2030 Agenda can only be achieved through co-operation: multidisciplinary problems require multidisciplinary actions. The youth are recognised as fundamental actors of change to achieve this change.

In this framework, the BCFN is joining forces with other actors to set the grounds for a joint multi-stakeholders observatory, to map trends, initiatives and best practices in achieving food system sustainability. Food is emphasised as an opportunity for societal development, and for more inclusive and healthier societies. The focus on the Mediterranean countries presented in this new edition of the FSI seeks to complement and deepen the research in this direction further.

The 12 Mediterranean countries included in this study are by no means a homogenous group. The five northern Mediterranean countries (France, Greece, Italy, Portugal and Spain) are all EU members. Their average per-head income is nearly fivefold the average for six southern and eastern Mediterranean countries (SEMCs), including Egypt, Jordan, Lebanon, Morocco, Tunisia and Turkey, but excluding Israel. There are also wide variations in population size between the countries in the region—ranging from 91m in Egypt to just over 6m in Lebanon among the SEMCs, and from 65m in France to a little over 10m in Portugal in the northern economies. Population growth in the five EU members was stagnant between 2007 and 2016, but expanded at an average rate of 2.5% a year in the SEMCs (excluding Israel) over the same period. These significant income and demographic differences are, in turn, key explanatory factors for the wide variations in food sustainability and nutritional standards that exist between the northern countries and those on the southern and eastern shores of the Mediterranean.

Food sustainability also depends heavily on the effectiveness of national public institutions, both at the central and local levels. In this respect, weak governance and a lack of institutional capacity are longstanding constraints in the SEMCs. Recent political instability in a number of countries, such as Syria, has added to these difficulties.

Despite these divergences, the Mediterranean countries also face a common set of challenges, such as climate change, soil and environmental degradation, water shortages, rural depopulation and rapid urbanisation, global tourism, and significant migration flows. In addition, a sharp rise in obesity rates across the region has coincided with the demise of the traditional Mediterranean diet. Against this backdrop, there is a growing realisation that a shift towards more sustainable practices is urgently needed, together with a more energetic approach to tackling food waste and nutritional challenges.

Food represents a common thread linking the 17 Sustainable Development Goals (SDGs) adopted by UN member states in 2015. The UN strategy (officially titled Transforming our world: the 2030 Agenda for Sustainable Development) incorporates a number of far-reaching goals, including an end to poverty and hunger, improvements in health, and the protection of the environment.

The agenda sets the targets that all countries in the world are called on to achieve by 2030.

With the major food-related challenges in the region in mind, the Food Sustainability Index (FSI) can help shed light on the environmental, societal and economic sustainability of food systems in the Mediterranean. The FSI’s ranking is not intended to be judgemental. It offers instead a tool to understand and monitor performance and progress of countries vis-à-vis the main challenges confronting the global food system. By measuring progress over time, the FSI therefore provides a valuable tool for policymakers and experts to orient their actions. The FSI also performs an educational role: by providing a detailed insight into the dynamics of complex food systems, the FSI can help inform the wider public debate. As a result, this will make it easier for governments to explain and justify their policy interventions (such as official attempts to reduce food waste or controls on advertising unhealthy foods).

Chapter 1 discusses the main food sustainability issues facing the region, including climate change.

Chapter 2 provides a summary of the broad FSI results for the region.

Chapter 3 (sustainable agriculture), Chapter 4 (nutritional challenges) and Chapter 5 (food loss and waste) will then examine each of the FSI’s main dimensions, followed by a conclusion summing up the report’s key findings.

Climate change is reinforcing the need for resilient, productive and sustainable farming solutions. The supply of cultivable land is limited, and the threat posed by climate change (especially reduced seasonal rainfall) is acute in the Mediterranean region. The importance of the water-for-food nexus is underlined by the fact that agriculture is estimated to account for over 80% of total water usage in many SEMCs (compared with a global average of 70%). Intensive tillage has also led to the depletion of organic matter and—together with an over-use of chemical fertilisers—resulted in a reduction in fertility.

However, a number of projects undertaken in recent years have indicated that it is possible to mitigate some of the negative effects of climate change. For example, the ACLIMAS project conducted in six Mediterranean countries (Morocco, Algeria, Tunisia, Egypt, Jordan and Lebanon) between 2012 and 2015, focusing on saving water. Precision agriculture can also make an important contribution, through applications such as water-stress monitoring and decision-support systems for farmers. Facilitating farmers’ access to knowledge and information, technology, finance, and resources (including land tenure) is key, as is capacity-building. Research institutes have an important role to play in disseminating the knowledge about agro-ecological techniques that can help farmers cope with climate change. Close collaboration with the business community will also be essential if farmers are to receive the technical and practical assistance required for effective mitigation and adaptation strategies. Meanwhile, public authorities need to ensure that farmers are provided with the training and financial support to transition to more sustainable agricultural practices.

A “nutrition transition” is contributing to rising levels of people who are overweight or obese and have associated health problems. This transition takes the form of an ongoing shift throughout the region, away from a traditional Mediterranean diet towards one that is energy-rich and contains large amounts of animal proteins, fats and foodstuffs deficient in fibre. Often compounded by reduced physical activity, these dietary changes are resulting in an obesity epidemic. In response, government-led campaigns highlighting the importance of a healthy and balanced diet need to be strengthened. As part of an overall programme of educating the general public, a strong case can be made for making nutrition a mandatory element in the school curriculum. However, these efforts will need to be backed up by much tougher measures—for example, the imposition of taxes on sugar-sweetened beverages, and restrictions on advertising and marketing unhealthy foods (particularly those targeted towards children).

A multi-faceted and multidisciplinary approach is required when responding to the challenge of food waste and loss. Factors such as a lack of effective storage capacity and poor transport facilities still represent important constraints in the southern Mediterranean countries. Investment in storage and communications represents an obvious response, pointing to the need for increased financial support from external agencies. Governments and international public institutions also need to encourage the formation of agricultural co-operatives, in order to make it easier for smallholder farmers to access markets on a timely basis.

Meanwhile, food waste at the retail and consumer stage is the biggest concern in the northern Mediterranean countries. Public awareness of the importance of cutting food waste has risen significantly in recent years, helped by the efforts of citizens’ groups and government campaigns. However, more needs to be done to educate the general public—for example, by making a much clearer distinction between expiry and best-before dates. A legal framework, designed to militate against food waste, also needs to be rolled out in all countries. In 2016, France became the first country in the world to make it compulsory for supermarkets to distribute any excess food to food banks rather than discarding it.

Regional co-operation efforts will need to be stepped up for the protection of the Mediterranean marine environment. As recognised by the Barcelona Convention, the management of coastal zones demands integrated approaches. This reflects the pressures on the ecosystem resulting from rapid urbanisation, tourism and port developments. It also takes into account the fact that climate-driven environmental changes and problems, such as pollution, do not respect national boundaries. The depletion of Mediterranean fishing stocks represents another key challenge. The EU has recently taken the lead in organising a co-ordinated response to the problem (the “Malta MedFishWiser Declaration”). Monitoring and enforcement will not be easy, particularly as the accord covers both EU and non-EU countries. However, successful implementation of the agreement could help to foster greater co-operation in other areas.

1. Istituto Affari Internazionali (IAI) and OCP Policy Centre (OCPPC), Building Sustainable Agriculture for Food Security in the Euro-Mediterranean Area: Challenges and Policy Options, 2015. Available at: http://www.iai.it/sites/default/files/iai-ocp.pdf
**FOOD, NUTRITION AND THE SUSTAINABLE DEVELOPMENT GOALS**

<table>
<thead>
<tr>
<th>SDG</th>
<th>FOOD SYSTEM CHALLENGES</th>
</tr>
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| SDG 2: To end hunger and all forms of malnutrition by 2030 | • Access to affordable and nutritious food  
• Food fortification and vitamin supplementation programmes for needy populations                                                                                                                                 |
| SDG 3: To ensure health and well-being for all, at every stage of life | • Early years nutrition education for mothers  
• Encouraging exclusive breastfeeding  
• Regulating marketing and sale of obesogenic foods  
• Public education campaigns on optimal diets                                                                                                                                            |
| SDG 10: Reduced inequalities | • Nutritional deficits in the early years of life can cause lifelong deficits such as stunting and impaired cognitive development, deepening inequality cycles as malnourished children are unable to participate in the labour force |
| SDG 12: To ensure sustainable consumption and production patterns | • Sustainable use of arable land  
• Sustainable water management practices  
• Limiting agriculture-related pollution and emissions                                                                                                                                       |
| SDG 13: Take urgent action to combat climate change and its impacts | • Agriculture is both a cause of climate change, through the emissions it produces, and a victim as changes in temperature and rainfall impact crop growth and agricultural productivity |
| SDG 15: To protect, restore, and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, halt and reverse land degradation, and halt biodiversity loss | • Managing deforestation related to food and non-food activities, including livestock, soy and biofuels  
• Lower use of harmful chemicals and related substances in agriculture                                                                                                                      |

**FOOD SUSTAINABILITY INDEX 2017**

**KEY GLOBAL FINDINGS**

The Food Sustainability Index (FSI) ranks 34 countries according to their food system sustainability. The FSI aims to highlight issues of concern across three pillars: food loss and waste; sustainable agriculture; and nutritional challenges. It is a quantitative and qualitative benchmarking model that allows for comparison between countries and pillars, thus contributing to the shift towards more sustainable food systems.

More details on the findings, scope and methodology can be found here: foodssustainability.eiu.com

**FOOD AND NUTRITION ARE RELEVANT FOR ACHIEVING ALL SUSTAINABLE DEVELOPMENT GOALS (SDGS)**

Food and nutrition represent a common thread linking the 17 SDGs adopted by UN member states in 2015. The UN’s 2030 Agenda for Sustainable Development incorporates a number of far-reaching goals, including an end to poverty and hunger, improvements in health and the protection of the environment.

**GLOBAL RESULTS**

**HUMAN DEVELOPMENT AND FOOD SUSTAINABILITY: MODERATE POSITIVE CORRELATION**

The Human Development Index (HDI) combines three broad indicators: 1) health, 2) education, and 3) income. Countries with a high HDI tend to also perform relatively well in the FSI (the correlation coefficient is 0.46, with -1 representing a perfect negative correlation and 1 a perfect positive correlation).

**URBANISATION AND FOOD SUSTAINABILITY: MODERATE NEGATIVE CORRELATION**

Countries experiencing rapid urbanisation tend to do moderately worse in the FSI ranking than countries with slower urban population growth (the correlation coefficient is -0.41, with -1 representing a perfect negative correlation and 1 a perfect positive correlation).

**SOURCES**

Sources: Economist Intelligence Unit data searches (national policy documents, literature searches, primary research); UN, UNDP, World Bank.
CHAPTER 1:
KEY FOOD-SUSTAINABILITY CHALLENGES FACING THE MEDITERRANEAN

The Mediterranean marks a confluence of three continents (Africa, Asia and Europe). With a coastline measuring 46,000 km, it is the world’s largest semi-enclosed sea. The northern Mediterranean countries included in the study are all EU members and had an average per-head income of US$26,100 (at market exchange rates) in 2016. This was nearly fivefold the average of US$5,430 for all EU members and had an average per-head income of US$37,190. Population growth in the five EU members averaged just 0.1% a year in 2007-16 (although this masks declines in both Greece and Portugal). By contrast, the population of the SEMCs (excluding Israel) expanded at an average rate of 2.5% a year over the same period, while Israel’s population grew by an average of 1.9%. These significant income and demographic differences are, in turn, among the key explanatory factors for the wide variations in food sustainability and nutritional standards that exist between the northern countries and the SEMCs.

Despite these divergences, the Mediterranean countries also face a common set of challenges. These include climate change, soil and environmental degradation, water shortages, and rural depopulation.

Rapid urbanisation (nearly 40% of the coastline now consists of built-up areas), the region’s popularity as a global tourist destination and (in recent years) significant migration flows only add to these pressures. Nutrition is also a topic of vital importance to all countries in the region. A continuing shift away from the traditional Mediterranean diet is leading to rising risks of obesity, diabetes, heart diseases and other non-communicable diseases, and therefore places an increasing burden on health systems.

The Mediterranean is widely acknowledged to be a “hot spot” for global climate change. As noted by Andrea Toreti, senior scientist at the Joint Research Centre of the European Commission (EC), mean temperatures in the region are rising at a faster pace than the global average. Mediterranean farmers, therefore, face a daunting challenge as they seek to adapt to the consequences of higher temperatures, changes to seasonal rainfall and possible new threats from pests and disease. With rapid population growth and urbanisation also fuelling increased demand for water for non-agricultural purposes, it will be the SEMCs that face the biggest threat of growing water shortages. Rising sea levels pose a further challenge, including the potential loss of arable land, under heavy environmental strain from tourism, port development and expanding coastal cities. Urbanisation is also resulting in a loss of agricultural land. The displacement of smallholder farmers in the environs of rapidly growing cities, such as the Tunisian capital, Tunis, is a region-wide phenomenon.

Huge migration flows are adding to population pressures in the region. Around 1.7m migrants have arrived on European shores since 2014—many of which are refugees fleeing conflict in countries such as Syria and Iraq—leading to the need for emergency relief and creating sharp divisions among EU governments on how best to handle the inflow.

Andrea Toreti, senior scientist at the Joint Research Centre in Barcelona, Spain, climate change is also leading to “an acceleration in the number of invasive species entering the Mediterranean, from both the Red Sea and the Atlantic”, thereby placing additional pressure on indigenous fish species. However, the main driver of the overall decline is over-fishing. Over 90% of the assessed stocks of fish in the European Mediterranean areas, and around half in the southern Mediterranean, are now estimated to be over-exploited, according to Dr Coll.

To address these issues, in March 2017 the EC secured a ten-year pledge on measures aimed at saving the Mediterranean fish stocks and protecting the region’s ecological and economic wealth (the “Malta MedFish4Ever Declaration”).

The protection of fragile ecosystems along the Mediterranean coast represents one of the biggest challenges facing policymakers in the region. The coastline and adjacent marine areas remain under heavy environmental strain from tourism, port development and expanding coastal cities. Urbanisation is also resulting in a loss of agricultural land. The displacement of smallholder farmers in the environs of rapidly growing cities, such as the Tunisian capital, Tunis, is a region-wide phenomenon.


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Against this backdrop, there is a growing realisation that a shift towards more sustainable agricultural practices is urgently needed. Given that food loss and waste (FLW), as well as nutritional challenges, also need to be tackled, it is apparent that changes will need to occur across the entire food system. To this effect, the Mediterranean Strategy for Sustainable Development (MSSD) for 2016-25 was adopted by 21 Mediterranean countries, together with the EU, in February 2016. The strategy, which was formulated by the UN Environment Programme (UNEP) in conjunction with the co-ordinating unit of the Mediterranean Action Plan (MAP), is based on the principle that socio-economic development needs to be harmonised with the environment and protection of natural resources. It draws heavily on the Sustainable Development Goals (SDGs) agreed by UN member states in September 2015.

The SDGs stress the importance of fostering the green economy in the context of sustainable development and poverty eradication. Food has important linkages with all 17 SDGs. Specifically, SDG 2 urges countries to “end hunger, achieve food security and improved nutrition, and promote sustainable agriculture” by 2030. Moreover, a reduction in poverty (SDG 1) is required in order to ensure better access to adequate nutrition. The availability of food, the quality of nutrition and agricultural practices are also closely connected with SDG 3 (good health and wellbeing), SDG 12 (responsible production and consumption) and SDG 13 (climate action).

Similarly, the MSSD highlights the interdependence of sustainable agriculture, development and food security: “the sustainable use, management and conservation of natural resources, rural development and food production and security are interdependent aspects that ensure the wellbeing of rural communities.” The MSSD also emphasises the importance of adapting to climate change, and calls for development in marine and coastal areas in the Mediterranean to be undertaken on a more sustainable basis.

The current MSSD represents the latest in a series of regional initiatives that commenced with the MAP of 1975, followed by the Barcelona Convention of 1995 (Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean). The adoption by the Mediterranean countries of the Integrated Coastal Zone Management (ICZM) protocol, as part of the Barcelona Convention, has been hailed as a significant step forward in protecting fragile coastal ecosystems, for example. As noted by Ivica Trumbic, the former director of the Priority Actions Programme Regional Activity Centre for UNEP-MAP (with special responsibility for the ICZM), initiatives such as these have been based on the premise that an effective response to common challenges, such as environmental degradation, require a high level of regional and institutional co-ordination.

A number of projects undertaken in recent years have indicated that it is possible to mitigate some of the negative effects of climate change. One example is the ACLIMAS project conducted in six Mediterranean countries (Morocco, Algeria, Tunisia, Egypt, Jordan and Lebanon) between 2012 and 2015. This showed that it is possible to achieve higher yields while simultaneously making significant water savings by adopting varieties of cereals and legumes more resistant to drought and by altering cultivation methods.

That said, the goal of establishing a zone of “shared prosperity” (as set out in the original Barcelona declaration) remains elusive. Moreover, uniform sustainable development can hardly be expected in a region characterised by differing resource endowments, large income inequalities (both among and within countries) and significant variations in administrative capacity. The MSSD acknowledges that a “one policy fits all” approach would not be appropriate and that solutions will need to be tailored to specific needs and contexts.

Balancing the need for food production and security against environmental concerns and the preservation of rural communities clearly represents a formidable challenge. There has already been a wide range of different responses and outcomes, as the examples from the 12 countries featured in this study will demonstrate.
HOW CLIMATE CHANGE THREATENS FOOD SUSTAINABILITY IN THE MEDITERRANEAN

The Mediterranean is one of the most vulnerable regions in the world to the impacts of climate change, as well as one of the most affected by human demand for water. It includes some of the most water-scarce countries in the world. Rapid urbanisation, tourism, migration flows, port developments and competition for energy put further pressures on fragile ecosystems.

CHAPTER 2:
THE FOOD SUSTAINABILITY INDEX: HIGHLIGHTS FOR THE MEDITERRANEAN

The first edition of the Food Sustainability Index (FSI), published in 2016, ranked 25 countries according to their food system sustainability. In the 2017 edition The Economist Intelligence Unit is adding nine new countries—including seven from the wider Mediterranean region (Greece, Jordan, Lebanon, Morocco, Portugal, Spain and Tunisia), plus Hungary and Sweden. The FSI is not intended to be judgemental, but rather offers a benchmark against which the performance of countries can be evaluated vis-à-vis the main challenges confronting the global food system. The FSI’s three pillars—sustainable agriculture, nutritional challenges, and FLW—remain the same, but a weighting scheme based on consultations with experts has been added. This has an impact on the indicator results and rankings. A more detailed explanation of the methodology and indicators included in the 2017 edition can be found in the appendix. In future, it is envisaged that the FSI will be expanded further and an even more longitudinal analysis created.

France leads the way, both regionally and globally

EU countries in the north of the region secure the first four places in the overall FSI ranking for the Mediterranean (see Table 1). France is in top position (both regionally and globally), reflecting its high scores in terms of controlling food waste and achieving high levels of nutrition; it is also a leading proponent of sustainable agriculture. Spain follows in second place regionally (and fourth place globally), helped by a particularly strong performance on the food waste criterion and its high rankings for both sustainable agriculture and nutrition. Portugal (in third place regionally) emerges ahead of Italy by virtue of its superior showing in terms of nutrition; this is despite Italy’s high ranking for sustainable agriculture (where it is the regional and global leader).

Israel and Turkey follow in, respectively, fifth and sixth positions in the index. Israel has a slight edge over Turkey in terms of both sustainable agriculture and nutritional challenges. However, it falls just behind Turkey with respect to FLW.

Lebanon is the lowest-ranked country in the region (and 31st out of 34 countries globally); it scores particularly badly with respect to FLW. Jordan, Egypt, Morocco and Tunisia are also in the bottom half of the overall ranking (25th, 27th, 29th and 30th, respectively). In terms of sustainable agriculture, Jordan (18th globally) and Egypt (23rd) actually do better than their overall global ranking would suggest. Morocco’s ranking is affected by a comparatively weak performance in food loss and waste (31st), while Tunisia has significant room for improvement in sustainable agriculture (33rd), in particular.

25 The full index, including data sources, methodologies and interactive tools to explore results, can be accessed on the FSI hub at www.foodsustainability.eiu.com.
### TABLE 1
FOOD SUSTAINABILITY INDEX 2017: RANKINGS AND SCORES FOR MEDITERRANEAN COUNTRIES

<table>
<thead>
<tr>
<th>FSI RANKING</th>
<th>OVERALL</th>
<th>SUSTAINABLE AGRICULTURE</th>
<th>NUTRITIONAL CHALLENGES</th>
<th>FOOD LOSS AND WASTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>France</td>
<td>74.8</td>
<td>France</td>
<td>France</td>
</tr>
<tr>
<td>2</td>
<td>Spain</td>
<td>70.4</td>
<td>France</td>
<td>Portugal</td>
</tr>
<tr>
<td>3</td>
<td>Portugal</td>
<td>69.5</td>
<td>Spain</td>
<td>Italy</td>
</tr>
<tr>
<td>4</td>
<td>Italy</td>
<td>69</td>
<td>Israel</td>
<td>Spain</td>
</tr>
<tr>
<td>5</td>
<td>Israel</td>
<td>63.1</td>
<td>Portugal</td>
<td>Spain</td>
</tr>
<tr>
<td>6</td>
<td>Turkey</td>
<td>62.9</td>
<td>Turkey</td>
<td>Turkey</td>
</tr>
<tr>
<td>7</td>
<td>Greece</td>
<td>61.6</td>
<td>Greece</td>
<td>Tunisia</td>
</tr>
<tr>
<td>8</td>
<td>Jordan</td>
<td>58.9</td>
<td>Jordan</td>
<td>Italy</td>
</tr>
<tr>
<td>9</td>
<td>Egypt</td>
<td>57.1</td>
<td>Lebanon</td>
<td>Jordan</td>
</tr>
<tr>
<td>10</td>
<td>Morocco</td>
<td>53.9</td>
<td>Egypt</td>
<td>Lebanon</td>
</tr>
<tr>
<td>11</td>
<td>Tunisia</td>
<td>53.1</td>
<td>Morocco</td>
<td>Egypt</td>
</tr>
<tr>
<td>12</td>
<td>Lebanon</td>
<td>53.1</td>
<td>Tunisia</td>
<td>Morocco</td>
</tr>
</tbody>
</table>

Note: Scores are scaled from 0 to 100, where 100 = the highest sustainability and greatest progress towards meeting environmental, societal and economic Key Performance Indicators.

Source: Economist Intelligence Unit, Food Sustainability Index 2017.

In terms of the global FSI, the EU economies (with the exception of Greece) are again the strongest performers. France secures the premier position in the world ranking, helped by a solid performance across all three pillars of the index: it is first globally for FLW, third for sustainable agriculture and fourth for nutritional challenges. Spain is in fourth place in terms of the overall global ranking, followed by Portugal (sixth) and Italy (seventh).

The other Mediterranean member of the EU, Greece—a country that has been in economic crisis since 2009—is much further down the global ranking, in 20th position. Israel (15th) is ranked just ahead of Turkey (16th) in the global league table. The remaining countries to the south and east of the Mediterranean—including Jordan (25th), Egypt (27th), Morocco (29th) and Tunisia (30th)—linger in the bottom half of the global FSI. Lebanon (31st) is the lowest-placed Mediterranean country in the worldwide ranking, dragged down by its poor score for FLW (where it is ranked 32nd out of 34 countries globally).

As mentioned previously, there is considerable economic, social, political and demographic heterogeneity among countries included in the FSI. Looking at the global rankings, observers will notice that there is little correlation between FSI ranking and population size: countries with relatively large population sizes are not more or less likely to do well in food sustainability. In terms of size of the economy (measured in GDP), larger economies generally perform better in the FSI, but some medium-sized economies such as Sweden, Portugal and Hungary, and even small economies such as Ethiopia, do well too, while large economies such as Brazil and India are relatively lowly ranked. Income (in terms of GDP per head) is more strongly correlated with a high ranking in the FSI, but again there are outliers such as the relatively well-performing Colombia (medium-income) and Ethiopia (low-income) and the relatively low-ranked UAE (high-income).

Although the Human Development Index (HDI), published by the UN, and the FSI are not directly comparable due to different underlying methodologies, comparing them may provide some interesting insights that can shed light on the development and sustainability challenges of today. The FSI shows a slightly stronger correlation with the HDI than with the size of either the population or the economy. However, there are once more a number of clear exceptions: Ethiopia, which is ranked in the lowest HDI category by the UN, secures 12th place in the FSI, while UAE, ranked “very high” by the UN in its HDI index, is in bottom place in the FSI.

There is a weaker correlation between the pace of urbanisation and the overall standings in the FSI. Nevertheless, there is a clear tendency for countries with rapid expanding urban populations (such as India and Indonesia) to fare less well in terms of food sustainability than economies (such as Japan and Spain) where urban population growth is more modest (see Table 2).
# TABLE 2

**FOOD SUSTAINABILITY INDEX 2017: FSI RANKINGS AND OTHER KEY INDICATORS**

<table>
<thead>
<tr>
<th>FSI RANKING</th>
<th>COUNTRY</th>
<th>POPULATION (M)</th>
<th>GDP (US$ BN)</th>
<th>GDP PER HEAD (US$)</th>
<th>HDI</th>
<th>URBAN GROWTH RATE (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>France</td>
<td>High</td>
<td>64.7</td>
<td>High</td>
<td>2,464</td>
<td>High</td>
</tr>
<tr>
<td>2</td>
<td>Japan</td>
<td>High</td>
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<td>Medium</td>
<td>349</td>
<td>Low</td>
</tr>
</tbody>
</table>

Notes:
- Population: Low = <10m; Medium = 10-49m; High = >50m
- GDP: Low = <100m; Medium = 101-1,000m; High = >1,000m
- GDP per head: Based on World Bank definitions (low-income and lower middle-income economies are those with a GNI per head between $1,006 and $3,955 in 2016; upper-middle-income economies are those with a GNI per head between $3,956 and $12,235; and high-income economies are those with a GNI per head of $12,236 or more. See: https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups.
- Classification of countries by HDI follows the definitions used by the UN.
- Urban growth rate: Low = <0.5% per annum; Medium = 0.5-1.5% per annum; High = >1.5% per annum

Sources: Economist Intelligence Unit, UN, UNDP, World Bank.
CHAPTER 3: SUSTAINABLE AGRICULTURE

Italy, France and Spain are the top three performers in the FSI in terms of sustainable agriculture (see Table 3). All three countries have shown a growing inclination to adopt sustainable farming practices that ensure a low environmental impact, such as organic farming, combined with a limited use of manufactured fertilisers. Although Israel (in fourth position) suffers from a scarcity of freshwater, the country’s farmers have developed innovative ways of overcoming this particular deficiency. Portugal (fifth) is the top performer in the region in terms of environmental impact of agriculture on the atmosphere. Its biggest weaknesses are in the water category, especially water management and sustainability of fisheries.

Turkey (in sixth position) is continuing to make significant progress with respect to the adoption of techniques such as conservation agriculture (CA), 26 Assuming this trend is maintained, it should help mitigate the impact of desertification and pollution, as well as encouraging biodiversity. Greece (in seventh place in the regional ranking) fares relatively poorly in terms of water scarcity and water management. In particular, initiatives to recycle water for agricultural use need to be strengthened, as reflected by the lower score that Greece secures under this particular heading compared with countries in the top half of the ranking.

Meanwhile, Jordan, Lebanon, Egypt, Morocco and Tunisia trail at the bottom end of this category in the index. Soil erosion and low soil fertility—together with shortages of freshwater—represent serious constraints on agriculture in all of these countries. With the exception of Egypt (and, to a lesser extent, Tunisia), the use of sustainable agricultural methods (including organic farming) is also limited.

### Table 3: Food Sustainability Index 2017: “Sustainable Agriculture” Category

<table>
<thead>
<tr>
<th>RANK</th>
<th>COUNTRY</th>
<th>SCORE (OUT OF 100)</th>
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</thead>
<tbody>
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<tr>
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<td>Morocco</td>
<td>60.6</td>
</tr>
<tr>
<td>12</td>
<td>Tunisia</td>
<td>51</td>
</tr>
</tbody>
</table>

Note: Scores are scaled from 0 to 100, where 100 = the highest sustainability and greatest progress towards meeting environmental, societal and economic Key Performance Indicators.

Source: Economist Intelligence Unit, Food Sustainability Index 2017.

Sustainable and integrated land and water management practices are a vital necessity in a region where climate change poses an increasing threat (see Chapter 1). A number of initiatives are under way, both at the national and regional levels. The EU-funded SwitchMed programme has been an important vehicle for encouraging the shift towards sustainable consumption and production (SCP) in the SEMCs. 27 As explained by Spyros Kouvelis, senior advisor for sustainable development at UNEP-MAP, SwitchMed has developed a regional roadmap that is used by the participating countries to formulate national action plans. A key aim of the SwitchMed programme is to educate consumers and civil society about the benefits of SCP.

Reflecting the need for a more sustainable management of water and agro-food systems, a new Partnership on Research and Innovation in the Mediterranean Area (PRIMA) is due to be launched in early 2018. Partly funded by the EU’s research and innovation programme Horizon 2020, the partnership is made up of 19 participating countries (including all of those covered by our study). The initiative (which will run for ten years until 2028) stems from a recognition that the health and stability of communities in the region will suffer unless a more concerted attempt is made to ensure the provision of clean water and nutritious food. 28

Traditional methods of farming, as practised in the Mediterranean for many generations, provide some important lessons on how to ensure that food security does not come at the expense of preserving the environment and maintaining biodiversity. For example, techniques such as rainwater harvesting have been deployed for many centuries by farmers in the region. 29 The use of terracing (often bounded by dry stone walls) is also a common and longstanding feature of Mediterranean agricultural landscapes, partly reflecting the benefits it brings in reducing soil erosion. 30 Nonetheless, technological solutions—such as precision agriculture—also have an important role to play in ensuring the success of sustainable agriculture practices. As noted by Mr Kouvelis, the uptake of agri-tech and biotechnology has so far been much more widespread in the northern Mediterranean countries, by dint of their more developed status. But technological innovation clearly has the potential to provide important benefits in the southern Mediterranean countries, too, given the problems they face of drought, soil degradation and low agricultural productivity. For example, advanced engineering solutions can be utilised to alleviate water shortages. Plant science can also assist in developing crop varieties suitable for arid conditions. However, it should be noted that serious concerns exist regarding the introduction of genetically modified organisms (GMOs), as mentioned in UNEP-MAP’s strategy for sustainable development. 31

26 Promoted by the FAO, conservation agriculture seeks to secure high crop yields while reducing production costs, maintaining soil fertility and conserving water. It is based on an integrated approach to soil management, including minimum mechanical soil disturbance, permanent organic cover and crop diversification. See also FAO, Conservation Agriculture. Available at: http://www.fao.org/ag/ca/

27 SwitchMed website, SwitchMed Programme In Short. Available at: https://www.switchmed-eu.org/switchmed-programme-in-short


31 UNEP-MAP: Mediterranean Strategy for Sustainable Development 2016-2025
In the northern Mediterranean, an agro-ecology project launched in France in 2012 is an attempt to promote a more sustainable approach to farming in which improvements in agricultural performance do not come at the expense of environmental and social conditions. Meanwhile, in Greece, the Mediterranean Agronomic Institute of Chania is heading a three-year research project into sustainable olive oil production, as intensified olive farming has been one of the factors leading to widespread soil erosion and desertification in the Mediterranean region. In Italy, the Consiglio per la ricerca in agricoltura e analisi dell’economia agraria (the Council for Agricultural Research and Agricultural Economic Analysis, CREA), a specialised research centre in the capital, Rome, is carrying out a three-year research programme into sustainable biotechnology-applied techniques. CREA is collaborating with the Italian Ministry for Agricultural Policy and Forestry on this project.

In Portugal, where over 700,000 ha of land are sown with annual crops, such as wheat, using CA techniques, a significant improvement in soil structure and fertility—and consequently agricultural productivity—has been observed. Meanwhile, CA techniques are applied to nearly 8% of the land used for crop cultivation in Spain: the highest proportion among the EU Mediterranean countries. Rapid growth in organic farming and CA have been combined with (unusually for Europe) a relatively relaxed attitude on the part of the Spanish government towards the use of GMOs.

Meanwhile, farmers in the SEMCs face a number of daunting challenges, including climate change, desertification and environmental degradation. Notwithstanding a shortage of land available for cultivation, in Egypt SwitchMed is collaborating with the country’s Ministry of Environment and the Centre for Environment and Development for the Arab Region and Europe in devising a national action plan based on sustainable principles. The Ministry of Agriculture and Land Reclamation is also helping to support the shift towards sustainable agriculture through a variety of measures, including a phasing out of subsidies on chemical fertilisers.

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33 “Sustainable Olive Oil Production in Greece”, Ecozine, January 16th 2015. Available at: https://hmdecozine.com/2015/01/16/sustainable-olive-oil-production-greece/


37 European Conservation Agriculture Federation, Uptake of Conservation Agriculture in Europe


Israel lacks favourable natural resources for agricultural production, but has nevertheless transformed itself into a successful food producer.

This is thanks to different innovations, including the drip irrigation system combined with the application of fertilisers (“fertigation”), and the construction of terraces and contour ploughing in order to enhance soil conservation in arid areas.43 In Jordan, agricultural experts are calling for the authorities to promote a shift to more sustainable farming methods, including CA, in order to mitigate the effects of climate change and intensive tillage (the dominant method of farming).44

Meanwhile, SOILS is a non-profit organisation in Lebanon that encourages the country’s farmers to adopt the ethics and principles of permaculture. That encourages the country’s farmers to adopt the ethics and principles of permaculture.45

Morocco encapsulates many of the problems facing the agricultural sector in the SEMCs generally, including regular droughts, soil degradation, intensive cropping under irrigation and problems with land registration (leaving many smallholders without access to official agricultural support programmes or credit). In its Green Morocco Plan, launched in 2008, the government has adopted a two-pronged approach, which is trying to balance the needs of the large-scale intensive farms with those of smaller producers.46 Nonetheless, critics claim that the government is failing to give sufficient support to smaller producers and those who wish to transition from intensive methods to a more sustainable approach, with a lack of training and finance frequently cited as key constraints.47

In Turkey, one of the main structural problems impeding the performance of the agricultural sector has been the fragmentation of agricultural lands through inheritance. In response, new legislation aiming at preventing land fragmentation was introduced in 2013. Efforts are also being made to encourage the consolidation of existing holdings.48 Meanwhile, CA is on track to become the national standard for farming in Turkey.49

France and Portugal secure the top two places in the region for the FSIs nutrition category (see Table 4). Their elevated ranking reflects high scores for nutritional adequacy, low levels of micronutrient deficiency and relatively low rates of obesity. Greece is in third place: its comparatively poor performance in terms of obesity is more than offset by a low prevalence of malnourishment (reflected in low levels of stunting and wasting in children under the age of five).

Spain and Israel follow in fourth and fifth places respectively. Their lowing rankings compared with the regional leaders, Portugal and France, largely reflect an inferior performance in terms of the overnutrition component of the index (reflected in a higher prevalence of overweight children and adults). Turkey and Tunisia (in sixth and seventh place respectively) achieve broadly similar overall scores for nutrition, despite a varying performance in terms of individual indicators. Turkey scores more highly with respect to prevalence of malnutrition and dietary patterns, but fares worse than Tunisia in terms of micronutrient deficiencies and prevalence of overweight children and adults.

Italy’s surprisingly low ranking (eighth) is largely due to its underperformance in terms of childhood obesity (despite a slight improvement in recent years), as well as a relatively low score for dietary patterns (in particular, relatively weak nutrition education and a relatively high number of people per fast food restaurant). Partly as a result of the 2008–09 global financial crisis, the high number of people in Italy living below the national poverty line (29%, compared with 14% in France and 19% in Portugal) could be a factor influencing its low score for dietary patterns.50

<table>
<thead>
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<th>SCORE (OUT OF 100)</th>
</tr>
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Note: Scores are scaled from 0 to 100, where 100 = the highest sustainability and greatest progress towards meeting environmental, societal and economic Key Performance Indicators.

Source: Economist Intelligence Unit, Food Sustainability Index 2017.
MEDITERRANEAN DIET UNDER THREAT

The beneficial health effects of the Mediterranean diet have long been recognised. UNESCO, for example, has recognised the diet as an intangible cultural heritage, given strong links between local food and local heritage and identity. Together with olive oil, the key ingredients in the Mediterranean diet are vegetables, fruits, legumes, cereals (mostly unrefined) and whole grains. Dairy products (mainly cheese and yoghurt), seafood and poultry are consumed in low to moderate quantities, while red meat plays a minor role. Numerous studies have indicated that this traditional dietary pattern is closely associated with a lower incidence of chronic disease—in particular, coronary heart disease (CHD) and type-2 diabetes—compared with a Western diet. Another important consideration is that, unlike a meat-based, high-protein Westernised pattern of consumption, the Mediterranean diet is also less resource-intensive (in terms of soil, water and energy inputs) and has a much lower carbon footprint.

The origins of the Mediterranean diet have their roots in traditional patterns of rural life, agricultural production and food preparation. And all of these are now under increasing threat. Around two-thirds of the inhabitants of Mediterranean countries now live in urban areas.

Most of the population growth is occurring along the coast, where the majority of economic activity is concentrated and employment opportunities are at their greatest. Increased urbanisation and changing working and social habits have also been accompanied by the expansion of large supermarket chains. In combination, these factors have resulted in a “nutrition transition” towards an energy-rich Westernised diet that contains large amounts of animal proteins, fats and refined cereals. Combined with lower levels of physical activity, the change in dietary patterns has been accompanied by rising levels of obesity.

This is also resulting in the “multiple burden” of malnutrition. In Egypt, for example, figures published by the Food and Agriculture Organisation of the UN (FAO) reveal a high level of stunting (with over 22% of children under five too short for their age) due to a chronic state of undernutrition. At the same time, the prevalence of overweight children under the age of five is starting to increase (it is currently around 16%), while over 29% of adults in Egypt are categorised as obese.

HOW MEDITERRANEAN COUNTRIES ARE RESPONDING TO THE “NUTRITION TRANSITION”

Shift away from traditional Mediterranean diet: olive oil; vegetables; fruits; legumes; cereals (mostly unrefined); whole grains; moderate amounts of dairy products (preferably cheese and yoghurt); low to moderate quantities of seafood and poultry. Towards energy-rich diet containing large amounts of animal proteins, fats and foodstuffs deficient in fibre.

REASONS
- Increased urbanisation and rising incomes
- Changing working and social habits
- Expansion of large supermarket chains
- Higher risk of micronutrient deficiencies (such as lower intake of some vitamins, especially folates, vitamins A and D)

CONSEQUENCES
- Rising levels of people who are overweight or obese
- Higher incidence of coronary heart disease, type-2 diabetes and other chronic diseases
- Western diet is more resource-intensive (in terms of soil, water and energy inputs) and has a much higher carbon footprint

GENERAL RESPONSES
- Imposition of taxes on sugar-sweetened beverages
- Restrictions on advertising and marketing of unhealthy foods (particularly those targeted at children)
- Food fortification and vitamin supplementation to address micronutrient deficiencies
- Nutrition education programmes targeting school curricula, cities, workplaces and food providers

EXAMPLES OF INITIATIVES IN NORTHERN MEDITERRANEAN COUNTRIES

FRANCE: Ensemble Prévenons l’Obésité Des Enfants (Together Let’s Prevent Childhood Obesity), a multi-faceted, multi-stakeholder approach to promote healthy lifestyles in children

ITALY: Guadagnare salute: rendere facili le scelte salutari (Gaining health: making healthy choices easier), a programme by the Ministry of Health that promotes fruit and vegetable intake; reducing the concentration of salt, sugars and fats in foods; and reducing alcohol abuse

EXAMPLES OF INITIATIVES IN SOUTHERN AND EASTERN MEDITERRANEAN COUNTRIES

LEBANON: Agency for Technical Co-operation and Development promotes “vertical gardening” to cultivate a diverse range of fresh food in urban areas

TUNISIA: World Food Programme provides nutritious local produce to school canteens and encourages the creation of school gardens

Sources: Economic Intelligence Unit data searches (national policy documents, literature searches, primary research), UN.
To counter these trends, a number of measures are needed. In particular, there is a compelling case for early intervention. By raising the awareness of young people about the importance of good nutrition, there will be a greater chance of ensuring that they adopt healthy eating habits when they become adults. According to Francesco Branca, director at the Department of Nutrition for Health and Development at the World Health Organisation (WHO), “the negative trends in poor nutrition and childhood obesity evident in a number of countries are not irreversible if effective public policies [are] put in place.”

Dr Branca cites France as a stand-out country in this respect. Ensemble Prévenons l’Obésité Des Enfants (EPODE, Together Let’s Prevent Childhood Obesity) is a prime example of the kind of public intervention that is helping to make a real difference. First launched in France in ten pilot communities in 2004, EPODE is now being copied by more than 500 communities worldwide. Recognising the complex nature of the obesity problem, EPODE adopts a multi-faceted, multi-stakeholder approach in which local communities and families are directed and encouraged to promote the adoption of healthy lifestyles in children (notably, improved eating habits and increased physical activity).56

Moreover, in January 2017, ANSES (the French Agency for Food, Environmental and Occupational Health and Safety) released a national survey being undertaken to assess the risk of malnutrition among citizens aged above 65, including those living in nursing homes.57 With around one-fifth of the EU population already in this particular age-group — and the proportion steadily rising — the promotion of a healthy diet for senior citizens clearly represents a wider European challenge.

Around a quarter of Spaniards are now obese,58 so it is surprising that obesity in Spain had, until recently, received little attention among policymakers and the public. However, with child obesity on the rise, policymakers have focused on promoting healthier diets and lifestyles (for example, as part of the Strategy for Nutrition, Physical Activity and the Prevention of Obesity), as well as restrictions on advertising to young people.53 As far as the SEMCs are concerned, undernutrition and obesity increasingly exist side by side, paradoxically. In Egypt, for example, the quality of the diet is skewed heavily towards subsidised wheat and sugar. Although the risk of famine may have decreased, fruit and vegetables remain expensive. A subsidy programme still favours food items rich in simple carbohydrates (such as sugar), exacerbating the risk of obesity.54

In Portugal, a national survey is being undertaken to estimate the amount of its malnutrition among citizens aged above 65, including those living in nursing homes.54 With around one-fifth of the EU population already in this particular age-group — and the proportion steadily rising — the promotion of a healthy diet for senior citizens clearly represents a wider European challenge.

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In Morocco, nutrient deficiencies are a major problem, particularly among women and children, amid a lack of food diversity and an overreliance on sugar, refined flour and fatty foods. The Global Alliance for Improved Nutrition has been targeting vulnerable groups by supporting programmes providing fortified food supplements.

Despite Turkey’s relatively high regional ranking in the FSI’s nutrition category (sixth position), nutrition-related education remains an issue, with primary-school children failing to receive sufficient guidance regarding the importance of good nutrition from their teachers. For example, the topic of nutrition is absent from the curriculum in the training courses for primary-school teachers.

Across the whole region, efforts to increase agrobiodiversity at the local level can play an important role in raising nutritional standards, especially in the SEMCs, where micronutrient deficiencies are a particular problem. For example, wild plant varieties, which have traditionally played a key role in the Mediterranean diet, are much richer than the corresponding cultivated ones in terms of micronutrients. Plant breeding can also be used to increase the micronutrient content of crops through a process known as bio-fortification.

The most effective way of addressing such deficiencies in the short term is through programmes deploying food fortification and vitamin supplementation—targeted especially at children and adolescents. Such an approach is well established in a number of the SEMCs, including Egypt, Jordan, Lebanon and Morocco. As noted by Dr Branca, however, such programmes do not always reach all of the intended beneficiaries.

Much stronger public interventions will be needed in order to tackle the problem of overnutrition and rising obesity, the latter is a general trend throughout the region. This could include education programmes on food, better dissemination of information on food and nutrition (for example in schools, by parents and in the media), and improved access to healthier foods. National governments will also need to ensure that they have an effective nutritional surveillance programme in place. Without regular monitoring of nutritional data (across the population as a whole, as well as different socio-economic groups) it will be difficult for the public health authorities to determine whether progress is being made towards meeting recommended dietary standards. Improved data and monitoring will also make it easier to devise specific interventions. For example, evidence of a continuing rise in childhood obesity could point to the need for stricter regulations on the marketing of unhealthy foods.


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CIHEAM and FAO, Zero Waste in the Mediterranean

CHAPTER 5:
FOOD LOSS AND WASTE

Four of the five EU members in our regional study emerge as the best performers in the FSI for FLW. The exception among the EU members is Greece, which falls into the lower half of the ranking. France leads the region (see Table 5), supported by robust government initiatives to combat FLW. Its food losses at the farm and pre-market stage are very low. This is also the case at the end-user (retail and consumer) level, where it achieves the highest score in the region for the effectiveness of its policy response.

Spain, Italy and Portugal take up the next three slots in the ranking. Like France, food losses at the pre-market stage are low, reflecting their relatively good storage and transport infrastructure. That said, Spain and Portugal have a slight edge over Italy in terms of the quality of their road infrastructure. Spain also comes out ahead of both Italy and Portugal with regard to the amount of investment in transport with private participation (measured as a percentage of GDP). Meanwhile, end-user per-head food waste in Italy (at 145 kg/person/year) is slightly above that in Portugal (135 kg/person/year) but falls below that in Spain (165 kg/person/year). Italy also scores more highly than Spain and Portugal in terms of its relatively strong policy response to end-user waste.

Turkey (in fifth position) achieves a higher ranking than Israel (in sixth position) despite incurring much larger pre-market food losses. Although the quality of Turkey’s response to these food losses is judged to be weaker than in Israel, Turkey has a clear lead over Israel when it comes to dealing with food waste at the end-user level. Food waste in Israel (at 294 kg/person/year) is the highest in the region, and nearly double the level in Turkey (168 kg/person/year). Turkey also scores more highly than Israel in terms of the quality of its policy response to food waste.

The final six positions in the ranking are occupied by the poorer countries in the SEMCs, together with Greece. All of these countries suffer from high food losses at the pre-market stage. This reflects a combination of climatic factors (such as drought), poor transport infrastructure and inadequate storage and refrigeration facilities. The policy response in terms of addressing end-user food waste is also generally weak—especially in Morocco and Lebanon.

<table>
<thead>
<tr>
<th>RANK</th>
<th>COUNTRY</th>
<th>SCORE (OUT OF 100)</th>
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<tbody>
<tr>
<td>1</td>
<td>France</td>
<td>84.9</td>
</tr>
<tr>
<td>2</td>
<td>Spain</td>
<td>77.1</td>
</tr>
<tr>
<td>3</td>
<td>Italy</td>
<td>76.7</td>
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<tr>
<td>4</td>
<td>Portugal</td>
<td>72.1</td>
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<tr>
<td>5</td>
<td>Turkey</td>
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<tr>
<td>6</td>
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<td>58</td>
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<tr>
<td>7</td>
<td>Jordan</td>
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<td>8</td>
<td>Egypt</td>
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</tr>
<tr>
<td>9</td>
<td>Greece</td>
<td>51.5</td>
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<td>10</td>
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<tr>
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<td>Morocco</td>
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</tr>
<tr>
<td>12</td>
<td>Lebanon</td>
<td>42.3</td>
</tr>
</tbody>
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Note: Scores are scaled from 0 to 100, where 100 = the highest sustainability and greatest progress towards meeting environmental, societal and economic Key Performance Indicators.

Source: Economist Intelligence Unit, Food Sustainability Index 2017.
GROWING PUBLIC PRESSURE TO ACT ON FOOD LOSS AND WASTE

The high rankings achieved by the EU countries have been helped by growing public support in recent years for measures designed to reduce FLW. Pressure from citizens’ groups has played an important role in raising public awareness of the high economic and environmental costs. For example, more than 50 organisations in 18 EU countries—led by the campaign group “This is Rubbish”—have been pressing for the EU to adopt binding targets to cut food waste.81 Then, in March 2017, the European Parliament approved a motion calling on the EC to set binding targets for the reduction of food waste by the end of 2020.82

Although food waste in richer countries typically occurs mostly at the retail and consumer level, it is losses at the farm and pre-market stage that constitute the main problem in poorer countries. Such losses can be considerable. In Egypt, for example, the FAO estimates that around 15% of cereals are lost between harvesting and final consumption. Perishable foods are also subject to significant losses as a result of a deficient transport infrastructure and a lack of storage capacity.83

An obvious way of tackling this problem would be to step up the level of investment in transport and storage infrastructure.

However, this is not always an easy option, particularly in those countries (such as Jordan and Lebanon) that are still struggling to cope with the economic fallout from the conflict in Syria and political turbulence in the Middle East.

Food banks—spurred by civil-society initiatives—have been a long-established feature of the more developed countries of the region. The 2008-09 global financial crisis provided added impetus, particularly in those countries suffering from a sharp rise in unemployment (Greece, Italy, Portugal and Spain). However, food banks have also sprung up in the SEMCs in recent years. Rapid urbanisation—together with changes in the way that food is consumed and distributed (including the spread of supermarkets)—means that food waste at the consumption stage is on a rising trajectory. With food shortages among vulnerable groups even more pressing than in the developed northern countries, the network of food banks in the SEMCs is set to grow.

Meanwhile, surveys indicate that food losses increase sharply at the time of religious festivals.84 Publicity campaigns aimed at encouraging more efficient planning by households in the lead-up to such festivals could therefore do much to reduce food wastage.

RESPONSES IN INDIVIDUAL COUNTRIES

France

France has been in the vanguard of attempts to reduce food losses, launching in mid-2013 its National Pact against Food Waste.85 In 2016 it approved legislation making it compulsory for supermarkets and grocery stores that exceed 400 sq metres to pass on unsold food to food banks or charities.86 Restaurants above a certain size are also obliged to recycle left-over food, and must issue “doggy bags” to customers if they request them.87

In Greece, the National Waste Prevention Strategic Plan for 2014-20 cites a reduction in food waste as one of its four main objectives.88 However, it is non-government organisations (NGOs) that have been taking the lead—by channelling unsold food from shops and restaurants to the needy via sophisticated logistics networks staffed by volunteers.89

A number of major official initiatives aimed at reducing food waste in Italy have been launched in recent years, including the establishment of a national task force by the Ministry of the Environment in 2013.90 In August 2016 a law against food waste was approved by parliament. Unlike the French law, however, the Italian one operates through incentives, while in France violators are subject to fines.91

In Portugal, NGOs have taken the lead in tackling the problem of food waste. DARIACORDAR—a civil society non-profit association—was instrumental in launching the Zero Waste Movement in April 2012. Surplus food (with an emphasis on cooked food) is collected and distributed through a network.92 In early 2017 Luís Capoulas Santos, Portugal’s agriculture minister, announced that a national commission would be tasked with developing a strategy for cutting food waste in the corporate and public sectors.93

Operating under the umbrella of the Spanish Federation of Food Banks (FESBAL), Spain’s 56 food banks distributed a record 53 kg of food to 1.5m recipients in 2015.94 For its part, the government has issued a series of practical guides aimed at specific groups—including the retail sector, education centres and the consumer—as part of its “More food, less waste” initiative, based on recommendations and voluntary agreements rather than compulsion (as in France).95,96

80 CIHEAM and FAO, Zero Waste in the Mediterranean
81 “Array of campaign groups call for EU to get tougher on waste”, The Grocer, June 1st 2017. Available at: https://m.thegrocer.co.uk/home/topics/waste-not-want-not/array-of-campaign-groups-call-for-eu-to-get-tougher-on-waste/553479.article
83 CIHEAM and FAO, Zero Waste in the Mediterranean
89 “Greek crisis prompts a rethink on food waste”, ekathimerini.com, September 7th 2015. Available at: http://www.ekathimerini.com/2015/09/07/issue255679/article
91 “Greek crisis prompts a rethink on food waste”, ekathimerini.com, September 7th 2015. Available at: http://www.ekathimerini.com/2015/09/07/issue255679/article
92 CIHEAM and FAO, Zero Waste in the Mediterranean
96 “FESBAL grants BBVA its Espiga de Oro award for its support for food banks”, BBVA website, November 7th 2016. Available at: http://www.bancoresponsable.com/en/bbva-espiga-de-oro-award-food-banks
97 CIHEAM and FAO, Zero Waste in the Mediterranean
98 “Food Losses and Waste in the Mediterranean”, CIHEAM Watch Letter No 30
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ith regard to the SEMCs, the authorities in Egypt launched a smartcard system in April 2015, covering nearly 80% of the country’s population and setting a maximum limit for the daily amount of subsidised bread that can be claimed by each family member. The new approach has reportedly reduced the demand for bread by around 15-20% and led to significant savings in the amount of food waste and subsidies.97

According to Leket, the largest food bank in Israel, 2.4m tonnes of food (equivalent to around a third of domestic food production) were wasted in the country in 2016. Around half this amount could be rescued. New proposed legislation—in the form of the Law to Encourage the Rescue of Food Surpluses—could address the issue.98 Jordan has expressed interest in following the example of Egypt in adopting a smartcard system to reduce the wastage frequently associated with subsidised basic food items.99 The country is also taking steps to ensure that non-rescuable food is also put to use. A waste-to-energy plant is being built with support from the EU and the European Bank for Reconstruction and Development (EBRD).100

In Lebanon, civil-society organisations—such as Food Establishments Recycling Nutrients, Food Blessed and the Lebanese Food Bank (LFB)—have taken the lead in tackling the problem of food waste. As well as distributing surplus food, the LFB promotes an awareness campaign, “Not to Waste Food”, aimed at businesses (hotels, restaurants and food-processing companies), schools and households. Meanwhile, the Med-3R project, financed by the EU, is seeking to encourage Lebanese restaurants and their customers to adopt the doggy bag habit.101 As far as Morocco is concerned, the government—supported by the FAO—is planning to develop an action plan aimed at halving FLW by 2024.102

In Tunisia, the National Consumer Institute (INC), operating under the Ministry of Industry and Trade, was created in 2008 to provide technical assistance and information on the consumer culture in the country. The INC has calculated that around 900,000 loaves of bread are thrown away on a daily basis, with a spike during Ramadan.103 A good example of the progress that can be made on combatting food waste simply by raising public awareness is provided by Turkey. In January 2013 the authorities launched the Campaign for Preventing Bread Waste. Although implemented on a voluntary basis without any legal sanctions, the campaign is estimated to have reduced the number of discarded loaves by 384m in its first year of operation.104

A number of these problems will require close collaboration between Mediterranean countries themselves, as well as regional and multilateral institutions. Through its European Neighbourhood Policy (ENP), the EU will have a particularly crucial role to play in fostering regional co-operation.105 One of the key goals of the ENP is to reduce intra-regional disparities while safeguarding the environment. This approach is also closely aligned with the objectives of the MSSD for 2016-25 and the UN’s 2030 Agenda for Sustainable Development. Sustainable agriculture, improved nutrition and a reduction in food loss and waste constitute key elements in the SDGs.

The adoption of more sustainable agricultural practices will depend heavily on the effectiveness of national public institutions, both at the central and local levels. In this respect, weak governance and a lack of institutional capacity are longstanding constraints in the SEMCs. Recent political instability in a number of countries has added to these difficulties. Multilateral and regional institutions will therefore need to ensure that the SEMCs receive sufficient financial and technical support. Without such assistance, the authorities in these countries will have little incentive to press ahead with more sustainable policies.

Close co-operation will be required with research institutions, which have a vital role in facilitating knowledge transfer and ensuring the spread of best practice. Private-sector involvement will also be essential if new technologies are to be rolled out successfully, and financing mechanisms put in place to support increased investment in sustainable solutions.

Governments will also need to continue the process of educating their own citizens about the benefits of sustainable development. Public awareness campaigns have been shown to be effective in cutting food waste and loss in a number of countries. However, these efforts may need to be reinforced by more concerted moves; legislation passed in France that obliges supermarkets and restaurants to recycle left-over food serves as a prime example.

CONCLUSION
Public education campaigns can also help to address the problem of rising obesity. In Turkey, for example, the Ministry of Health is attempting to overcome a general lack of knowledge about nutrition through a series of publicity campaigns. According to the health authorities, a poor understanding of nutrition is one of the main reasons why individuals make the wrong food choices. But again, this will need to be backed up by additional measures. A recent study carried out on behalf of the WHO reveals that, at a global level, childhood obesity has increased tenfold over the past four decades. Some of the highest rates of childhood obesity can be found in the SEMCs, including Egypt. Against this backdrop, much stronger public interventions are needed. These could include the imposition of taxes on sugar-sweetened beverages and the introduction of regulations that prohibit the marketing of unhealthy foods to children.

NGOs and professional membership associations, such as the European Association for the Study of Obesity (EASO), also have a vital part to play in publicising the health risks associated with a poor diet and fostering collaboration with government agencies and other stakeholders. EASO, together with the SIO and the Center for Study and Research on Obesity of the University of Milan, played a key role in formulating the 2015 Milan Declaration: A Call to Action on Obesity.

Local initiatives can also help to encourage the shift back to healthier diets. An obvious example is the establishment of farmers’ markets. As well as strengthening civic engagement and reducing transport and storage costs, these can help to spur the consumption of more locally produced and fresh foods.

Meanwhile, the private sector—for example, in the form of food processors, supermarkets and fast-food chains—has a shared responsibility for ensuring that consumers are offered a range of healthy and nutritious foods. There is a need to replicate good practices and accelerate innovative thinking in order to scale up best-practice solutions. Increased urbanisation has inevitably coincided with a proliferation of supermarkets, low-cost “convenience” foods and fast-food outlets. This is an ongoing trend, particularly in the SEMCs. Nonetheless, popular convenience foods can often be reformulated to improve their nutritional value. Improved nutritional labelling has a role to play in this regard. Again, this will need to be backed up by additional measures. A recent study carried out on behalf of the WHO reveals that, at a global level, childhood obesity has increased tenfold over the past four decades. Some of the highest rates of childhood obesity can be found in the SEMCs, including Egypt. Against this backdrop, much stronger public interventions are needed. These could include the imposition of taxes on sugar-sweetened beverages and the introduction of regulations that prohibit the marketing of unhealthy foods to children.

APPENDIX: METHODOLOGY

The Food Sustainability Index (FSI), developed by The Economist Intelligence Unit with the Barilla Center for Food & Nutrition (BCFN), measures the sustainability of food systems in 34 countries around three key issues outlined in the 2015 BCFN Milan Protocol and related to the SDGs: food loss and waste (FLW), sustainable agriculture and nutrition. The index looks at policies and outcome around sustainable food systems and diets through a series of Key Performance Indicators that consider environmental, social and economic sustainability.

The three primary categories in the index—FLW, sustainable agriculture, and nutritional challenges—were defined in the Milan Protocol. The individual indicators and underlying metrics have been selected on the basis of Economist Intelligence Unit expert knowledge and analysis, consultation with external food sustainability and nutrition experts, and with input from the BCFN and their Advisory Board members.

The FSI evaluates food sustainability in 34 countries that were carefully selected by The Economist Intelligence Unit and the BCFN, in consultation with experts. The country choice reflects a mix of high-income, middle-income and low-income countries, with geographic representation. These countries make up over 85% of global GDP and two-thirds of the global population.

The index contains 35 indicators, and over 55 sub-indicators, organised across these three categories. Each category receives a score, calculated from a weighted mean of the underlying indicator scores, and scores are scaled from 0 to 100, where 100 represents the highest sustainability and greatest progress towards meeting environmental, societal and economic Key Performance Indicators.

Indicator scores are normalised and then aggregated across categories to enable a comparison of broader concepts across countries. Normalisation rebases the raw indicator data to a common unit so that it can be aggregated. All indicators in this model are normalised to a 0 to 100 scale, where 100 indicates the highest sustainability and 0 represents the lowest.

The list of indicators and how to interpret the scores, as well as full definitions and sources of the indicators, are available in the downloadable Excel workbook on the FSI content hub. A full index methodology is also available.

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289 Food Sustainability Index. Available at: http://foodsustainability.eiu.com/
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