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# In the Mediterranean region: overall food security in quantitative terms but qualitative insecurity ?

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The countries in the eastern and southern Mediterranean are only just overcoming food insecurity or still have pockets where the food situation is precarious. In the south of France it was not until the 1920s that the population no longer sought to economise on food; in Italy or Spain, this was not the case until the 1950s, and in Portugal and Greece the 1960s. In the early 1990s, food consumption in the Maghreb and Mashraq countries barely exceeded what was estimated as necessary to cover people's food needs, leaving large fringes of the population in difficulty (Allaya, 1993). Active policies to improve the supply of agricultural commodities and to enhance purchasing power by controlling prices and introducing subsidies for staples in the 1970s and 1980s resulted in a marked increase in average food intake in quantitative terms. So what is the situation now that subsidies have been abolished and internal markets have been opened to products from the rest of the world? Has the food security of the populations improved?

Food insecurity exists when people lack access to sufficient amounts of safe and nutritious food and are therefore not consuming the food required for normal growth and development and for an active and healthy life. This is manifested by signs of general undernourishment or of deficiencies of a variety of nutrients and/or micronutrients. The prevalence of undernourishment is usually reported as a percentage of the total population as well as the total number of undernourished in a country.

## 1. Food insecurity in the Mediterranean region

Ranging from the high income countries of the north Mediterranean (NM) to the middle income countries of the south Mediterranean (SM), the CIHEAM countries do not fall in the group of high food insecurity countries of South East Asia and sub-Saharan Africa. Firstly, there is no extreme poverty and, secondly, the incidence of the major infectious diseases, namely malaria, tuberculosis and HIV/AIDS, is limited. Also, the high incidence of major emergency situations arising from natural or man-made disasters such as wars and civil strife are uncommon and tend to be limited. The capacity to mitigate the impact of natural disasters such as drought, flash floods and fires is considered adequate. The challenges lie more in the domain of keeping a balance between free markets and a more regulated approach to nutritional goals; between increasing productivity and environmental restraint and sustainability; and between the health-giving potential of bio-engineering and the dangers of unknown side effects (WHO 1998). The food production

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<sup>1</sup> This analytic paper is extracted from the CIHEAM annual report Agrimed 2005

index for almost all CIHEAM countries (Table 1) shows progression above the base value of 100, attributed to the 1989-1991 production level, when calculated per habitant. Managing the transition of modernising its agricultural practices and their technical level without undermining the traditional food system (in both quantity and quality) is the challenge that faces Albania, a medium-income country that has made significant progress over the greater part of the last two decades in all development domains (CIHEAM Country Report 2002). The SM countries are at varying stages of this same transition, though progressing at a slower pace. Countries which are implementing partnership agreements with the EU may be more favoured in this respect.

Table 1  
Recent trend in food production among CIHEAM countries 2000-2001

Country	Population in thousand		Food production* index		Food production index per capita	
	2000	2001	2000	2001	2000	2001
Albania	3 314	3 145	135	139	141	145
Algeria	30 291	30 841	129	142	106	114
Egypt	67 884	69 080	152	149	126	121
France	59 238	59 453	106	101	101	96
Greece	10 610	10 623	105	102	100	98
Italy	57 530	57 503	102	104	103	101
Lebanon	3 496	3 556	154	148	120	113
Malta	390	392	130	128	120	118
Morocco	29 878	30 430	97	104	80	84
Portugal	10 016	10 033	102	99	101	79
Spain	39 910	39 921	119	119	117	117
Tunisia	9 459	9 562	132	119	113	101
Turkey	66 668	67 632	118	109	100	91

\* Based on 1989-1991=100

Source: FAOSTAT food balance sheets 2001.

The trends observed can provide a means of monitoring progress with a view to improving the nutritional situation in a country and among the most vulnerable groups of the population. However, the situation in a country is far from homogeneous, and there may be communities or segments of the population that are more exposed to factors which make them vulnerable to developing food insecurity, whether transitory or chronic. Short-lived states of food deprivation can usually be compensated when sufficient food intake is restored or when there are coping mechanisms. Chronic exposure to food deprivation is manifested by more permanent changes such as stunting among children. Depending on the age at which the deprivation occurs, the impact may be irreversible and may even cross generations as is the case with malnourished mothers and low-birthweight babies.

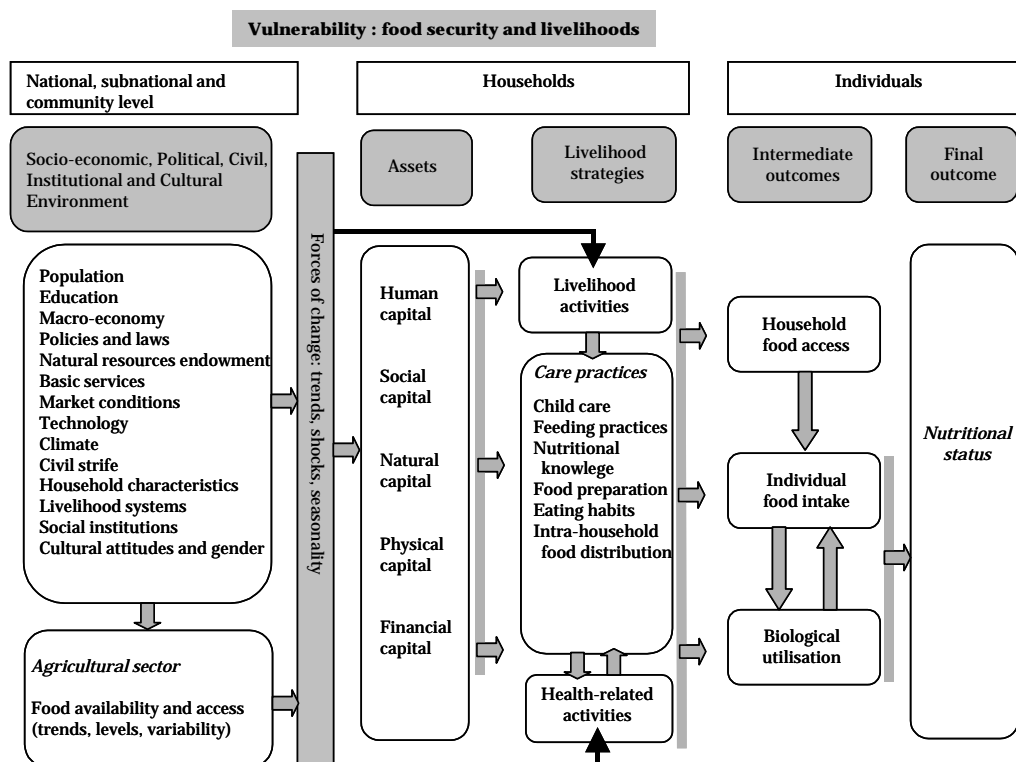
The changes in the dietary intake which accompany market influences, purchasing power and food availability may be insidious in their onset and the manifestations of undernourishment may not be immediately evident. The erosion of human capital resulting from food insecurity can be considerable and can diminish the country's potential for development. The fact that it will be felt in the medium and long term means that it rarely ranks high on the development agenda of countries whose politicians are more preoccupied with development problems which are more evident and more pressing in nature. The benefits of reducing hunger and malnutrition are many (Behrman et al). Better fed people can contribute longer to GDP and are even likely to have healthier babies. According to one study, an additional pound at birth reduces infant mortality rate by 14%. Labour productivity can be strongly influenced by malnutrition at an early stage, since it can affect people's size and strength. Stunted growth often leads to lower earnings. One study in Brazil showed that a 1% increase in height is associated with a 2-2.4 % rise in wages. Furthermore, eliminating hunger can allow children to perform better in school and in turn increase the prevalence of skills needed for higher value-added jobs.

## 2. Poverty and food insecurity

A number of conceptual frameworks have been elaborated showing the complex inter-relations amongst all of the factors that influence the development of food insecurity in a given population. Figure 1, developed by the Inter-Agency Working Group (IAWG) on Food Insecurity, shows the salient causes that influence people's access to and utilisation of safe and nutritious food. No single factor can be considered alone, since they are all interdependent in one way or another (Fig. 1).

Combining the fight against hunger with efforts to eradicate extreme poverty (which is the first of the eight Millennium Development Goals) is recognition of the fact that poverty and food deprivation are closely linked. Poverty can be both the outcome and a cause of perpetuating hunger. The higher share of the world's population that remains in poverty and lacks the necessary income to translate its needs into effective demand masks the real food insecurity situation and gives a false reading of the decline in the demand for agricultural products noted over the recent years.

Figure 1  
**Vulnerability: food security and livelihoods**



At the local level, this situation may worsen unless focused efforts are made to target the poorer groups of the population. Lifting people out of poverty remains a crucial strategy for overcoming food insecurity.

Analysis of the factors that influence progress in reducing food insecurity and strengthening food security has identified a combination of six indicators, which have proved most successful in differentiating among countries grouped according to their performance during the 9-year period from 1990-1992 to 1995-1997 and from 1995-1997 to 1999-2001. These indicators include population growth, GDP growth per person, health expenditure as the proportion of adults infected with HIV/AIDS, the number of food emergencies and the United Nations Development Programme's Human Development Index (itself a composite of several economic and social indicators). It was observed that a rate of growth of the per capita GDP of at least 2.5% was a determining factor in countries which succeeded in reducing the numbers of undernourished in their populations. The most successful countries also demonstrated more rapid agricultural growth (3.3% per year compared to countries where hunger increased throughout that period. Lower rates of HIV/AIDS infection and slower population growth were also exhibited by those countries.

The situation of the 12 CIHEAM countries with respect to some of these indicators is shown in Table 2. A number of SM countries which show weaker indices for more that one of the indicators include Algeria, Egypt and Morocco. One of the pronounced differences between N and SM countries lies in the field of adult literacy and expenditure on health. The countries in the south have lower achievements in areas (not shown in the table) relating, inter alia, to higher levels of technical and scientific education, the use of communication technologies and gender empowerment measures. The Human Development Index which combines economic performance with social indicators is also lower for the same three countries cited above.

Table 2  
Economic education and health indicators among CIHEAM countries 2000-2001

	Health expenditure per capita	Population below the poverty line		Unemployment rate	Adult literacy rate	Infant mortality rate per live births	HDI	GDP per capita
	2001 in PPP	in % *		% of labour force	In %		**	in PPP
		< 1\$	< 2\$					
Albania	150	--	--	--	--	26	M	4 830
Algeria	169	< 2	15.1	--	31.1	39	M	5 760
Egypt	153	3.1	43.9	8.2 (2001)	44.4	35	M	3 810
France	2 567	8.0	--	3.0 (2002)	--	4	H	26 920
Greece	1522	--	--	5.0 (2002)	97.3	5	H	18 720
Italy	2 204	12.7	--	5.3 (2002)	98.5	4	H	26 430
Lebanon	673	--	--	8.6 (2000)	86.5	28	M	4 360
Malta	813	--	--	6.8 (2001)	92.3	5	H	17 640
Morocco	199	< 2	14.3	12.5 (2001)	49.3	39	M	3 810
Portugal	1618	--	--	5.0 (2002)	92.5	05	H	18 280
Spain	1 607	10.1	--	4.6 (2002)	--	4	H	21 460
Tunisia	463	< 2	6.6	14 (2002)	72.1	21	M	6 760
Turkey	294	< 2	10.3	8.5 (2001)	85.5	36	M	6 390

\* In the case of the European countries, 50 % of the median income

\*\* HDI = Human Development Index ; H = high HDI 0.8 and above ; M = Medium HDI 0.500-0.799

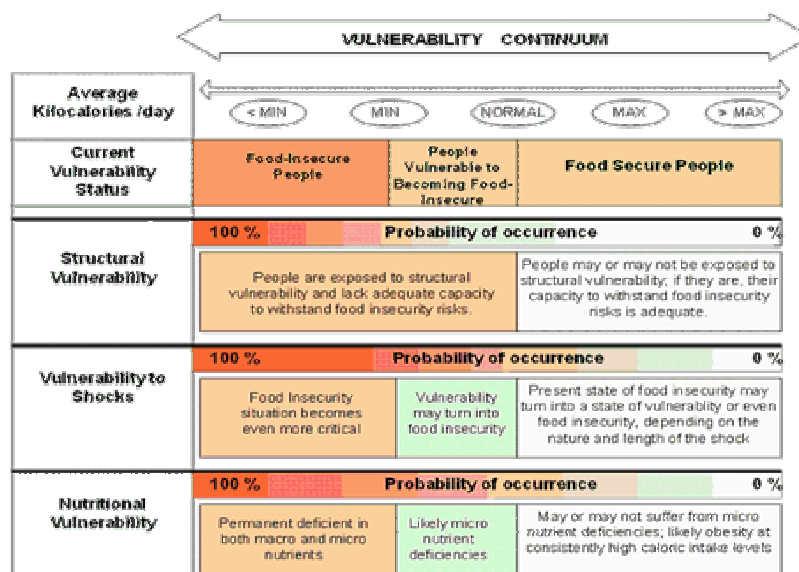
Source: Human Development Report, UNDP 2004.

### 3. Vulnerability to food insecurity

Vulnerability is defined as the full range of factors which place people at risk of becoming food-insecure. The degree of vulnerability of individuals, households or groups of people is determined by their exposure to risk factors and their ability to cope with or withstand stressful situations. Vulnerability can be structural or transitory.

Although the industrialised countries in the north may not have food availability problems, a combination of some of the factors that are shown in Figure 1. may have an impact on a particular population group. The groups that may be at a higher risk of food insecurity can be pensioners with limited incomes, the unemployed and the marginalised segments of the population who do not benefit from social security and do not have sustainable livelihoods. In the NM, the problem of food insecurity is more one of food safety and quality than of food deprivation. (Fig. 2).

Figure 2  
Food insecurity in the north Mediterranean countries



Improving food insecurity in the SM countries depends not only on adequate food production and supplies but to a large extent on improvements in the economic and social indicators which together are expected to raise the HDI values and also on the capacity to meet the challenges of the “high tech” world of the 21st century. Universal access to sustainable livelihoods, to basic social services and to drinking water supply and safe sanitation disposal systems are basic ingredients for decreasing the vulnerability of the people in SM countries where the issue is not one of low productivity. Emerging issues constituting future if not current challenges which can influence both food production and food availability in some of the SM countries include the projected progressive depletion of water resources (Hamdy A.) and the degradation in the quality of both soil and water as reported by many of the northern and southern Mediterranean countries in the country reports they submitted to the UN in the context of the Convention to Combat Desertification (UNCCD Country Reports).

The health and nutritional status of the people, in particular of children, has been shown to be dependent on the health of the agro-ecosystem. One of the results of unhealthy agro-ecosystems that is by no means insignificant is the inability to export food products to the NM countries, since they do not meet the European food safety and quality norms and standards. A potentially dangerous reaction to the perceived high pollution of waterways, particularly in the northern governorates of Egypt, has given rise to a recently observed change in food consumption patterns with a decrease in the consumption of fresh dark green leafy vegetables. These vegetables are one of the pillars of the traditional Egyptian diet, which is based essentially on a combination of cereals and legumes. If allowed to continue unhindered, the outcome of this decrease in the daily intake of fresh dark green leafy vegetables will manifest itself in various ways over the coming years, since these green vegetables supply a number of protective nutrients that are a vital complement to the traditional dietary system. The methods currently available for assessing food insecurity do not show intra-country variations by means of disaggregated data.

#### 4. Measuring food insecurity

Building a consensus among countries (as well as between the UN and its partners who are engaged in the fight against hunger) on the most appropriate methods for measuring and assessing food deprivation and undernutrition has, for the past few years, been at the forefront of efforts of the inter-agency initiative for establishing a global Food Insecurity and Vulnerability Information and Mapping System (FIVIMS). A series of consultations are being organised by FAO to promote the development of national and international networks of systems that collect, analyse and disseminate information on problems of food insecurity and vulnerability, and to support improved action. Albania and Turkey already participated in the meeting held in Romania in March 2004 on the measurement and assessment of food deprivation and vulnerability. The southern Mediterranean CIHEAM countries will have the opportunity to participate in the forthcoming

meeting scheduled to be held in Cairo in February 2005 for Middle Eastern and North African countries. These would include Morocco, Tunisia, Egypt and Lebanon. The fundamental goal of the FIVIMS initiative is to enhance the use of existing national data, to support networks, and to promote capacity-building at the national level.

The International Scientific Symposium held in Rome in 2002 to agree on the most appropriate method for measuring and assessing food deprivation and under-nutrition agreed that no individual measure suffices on its own to capture all aspects of hunger and food deprivation. A suite of indicators was proposed to cover the different dimensions of food security, namely, availability, utilisation and stability of access (Proceedings of the Symposium, FAO 2002). The participants also concluded that absolute figures are less important than trends; however accurate they may be, they only represent a value for a point in time and may not necessarily be comparable because of the differences in methodologies and approaches used in the various countries. Trends that reflect progress and performance over time (Table 3) have greater interpretative value. Preliminary information obtained from an ongoing longitudinal survey on food consumption patterns (Ibrahim N.I. et al, 2003) showed that evidence of deficiencies of some essential nutrients including vitamin A and vitamin C as well as calcium, iron and zinc was caused by lowered intakes of dark green leafy vegetables.

Table 3  
Trends and prevalence of malnutrition in CIHEAM countries

	Undernourished people as % of total population		% of children under age 5			% of infants with low birth weight
	1993-1995	1999-2001	under weight	Stunting	Wasting	1998-2002
<b>High human development index*</b>						
France	4	3	--	--	--	7
Greece	--	--	--	--	--	8
Italy	--	--	1.5	2.7	0.8	6
Malta	--	--	--	--	--	6
Portugal	--	--	--	--	--	8
Spain	--	--	--	--	--	6
<b>Medium human development index</b>						
Albania	5	4	14.3	31.7	11.1	3
Algeria	3	3	6.0	18.0	2.7	7
Egypt	6	6	10.7	20.6	5.1	12
Lebanon	--	--	3.0	12.2	2.9	6
Morocco	7	7	9.5	24.2	2.2	11
Tunisia	--	--	4.0	12.3	2.2	7
Turkey	--	--	8.3	16.0	1.9	16

-- Data not available

\* The human development index (HDI) is computed according to the standard procedure developed by the UNDP

Source: 5th Report on the World Nutrition Situation, SCN 2004.

### **Actual food intake and recommended dietary allowances**

The merits of the traditional Mediterranean diet have gained global recognition over the years, a diet which is often used as the yardstick for measuring and assessing deviations regarded as unhealthy. The basic Mediterranean pattern of food consumption has been used as a reference for both FAO and WHO in the global strategy on diet, physical activity and health adopted by the World Health Assembly (WHO 2004) (Table 4). The same Mediterranean pattern was also used as a reference diet in the 1990s within the WHO European Region's initiative (WHO 1998) for promoting the development of nutrition policies in member states.

Table 4  
**Ranges of population dietary intake goals**

Dietary factor	Goals
Total fat	15-30% energy
Saturated fatty acids	< 10% energy
Polyunsaturated fatty acids (PUFAs)	6-10% energy
n-6 Polyunsaturated fatty acids (PUFAs)	5-8% energy
n-3 Polyunsaturated fatty acids (PUFAs)	1-2% energy
Transfatty acids	<1% energy
Monounsaturated fatty acids (MUFAs)	By difference <sup>a</sup>
Total carbohydrates <sup>b</sup>	55-75% energy
Free sugars <sup>c</sup>	< 10% energy
Energy	
Protein	10-15% energy
Cholesterol	< 300 mg/day <sup>d</sup>
Sodium chloride (sodium) <sup>e</sup>	<5 g/day (<2g/day)
Fruit and vegetables	≥ 400 g/day
Total dietary fibre	From foods
Non-starch polysaccharide (NSP)	

- a This means “total fat – (saturated, polyunsaturated fatty acids and trans fatty acids)”.
- b The percentage of total energy available after taking into account that consumed as protein, hence the wide range.
- c The term “free sugars” refers to all monosaccharide and disaccharides added to food by the manufacturers, cook or consumer, plus sugars naturally present in honey, syrups and fruit juices.
- d The suggested range should be seen in the light of the Joint WHO/FAO/UNU Expert Consultation on Protein and Amino Acid Requirements in Human Nutrition, held in Geneva, 9-16 April 2002.
- e Salt should be iodised appropriately.

Source: FAO/WHO 2003.

Food consumption expressed in kilocalories (kcal) per capita per day is a key variable used for measuring and evaluating the evolution of global and regional food insecurity. When studying the diet in Mediterranean countries, two questions arise: “Does a common Mediterranean diet really exist?” and “Will food consumption patterns in Mediterranean countries tend to become more similar over time?”. Gil et. al (1995) answer both questions to a certain extent by analysing diet evolution in Mediterranean countries during the 1968-70, 1978-80 and 1988-1990.

The evolution of the calories consumed in different Mediterranean countries and the proportion of animal calories, as presented in Table 5, reflect the differences existing between developed and developing countries. The main difference lies in the percentage of animal calories out of total calories. In France, about 40% of the calories come from animal origin. For Spain the percentage is over 32%, while in Greece, Italy and Portugal, it is around 25%. In other countries, this figure barely reaches 10%.

Table 5  
Evolution of total and animal calorie intake (1970 – 2000)

Country	Total calories*				Animal calories (%)**			
	1968-70	1978-80	1988-90	2000	1968-70	1978-80	1988-90	2000
Algeria	1 819	2 531	2 944	2 944	9.8	10.0	10.9	9.8
Egypt	2 431	2 990	3 310	3 336	7.3	7.3	7.7	7.9
France	3 330	3 424	3 592	3 601	35.4	39	38.5	37.6
Greece	3 123	3 423	3 775	3 648	19.1	24.1	25	22.6
Italy	3 322	3 558	3 498	3 701	18.1	22.7	25.7	26.3
Lebanon	2 377	2 609	3 142	3 185	14.2	15.8	16.0	15.4
Libya	2 350	3 458	3 293	3 324	14.0	16.2	14.1	10.9
Morocco	2 344	2 699	3 030	3 026	8.1	7.0	6.1	7.2
Portugal	2 988	2 915	3 342	3 751	15.9	19.4	23.6	28.7
Syria	2 345	2 816	3 122	3 034	11.6	14.8	12.0	13.3
Spain	2 793	3 242	3 472	3 370	22.3	27.5	32.2	27.9
Tunisia	2 247	2 762	3 122	3 304	7.7	8.5	9.0	10.3
Turkey	2 814	3 067	3 196	3 372	10.4	9.7	7.6	10.7
Ex-Yugoslavia	3 318	3 526	3 545	2 703	18.4	23.3	23.8	29.3

\*kcal/capita per day

\*\*Percent energy derived from animal source

Data source: Options Méditerranéennes, série. A/n26, 1995 - Sécurité alimentaire en Méditerranée, FAO Stat.

Analysis of FAO statistical data shows that dietary energy measured in kcals per capita per day has been steadily increasing on a worldwide basis; availability of calories per capita from the mid-1960s to the late 1990s increased globally by approximately 450 kcal per capita per day and by over 600 kcal per capita per day in developing countries. In short, it would appear that the world has made significant progress in raising food consumption per person. It is generally agreed, however, that growth in food consumption has been accompanied by significant structural changes and a shift in diet away from staples such as root vegetables and tubers towards more livestock products and vegetable oils. Analysis of FAOSTAT data shows that current energy intakes range from 2681 kcal per capita per day in developing countries, to 2906 kcal per capita per day in transition countries and 3380 kcal per capita per day in industrialised countries.

Regarding consumption of total calories, it can be stated that in fact, the countries which in 1970 had the lowest caloric diet grew, on average for the period considered, at higher rates than the countries with a richer caloric diet. It is observed, however, that as the development level of a country increases, so does the per capita caloric intake. Table 6 shows trends in percent of energy intake derived from animal products in the different Mediterranean countries. There has been a remarkable increase in the consumption of animal products in almost all countries. It is interesting to note the decline in energy derived from animal products in countries such as Egypt, Morocco and Turkey. For the large majority of people in the world, particularly in developing countries, livestock products remain a desired food for their nutritional value and taste. Excessive consumption of animal products in some countries and among certain social classes can, however, lead to excessive intakes of fat.

Table 6  
Trends in animal product supplies in selected CIHEAM countries

	Meat (kg/person)			Milk (kg/person)		Animal fat (kg/person)	
	1961	2002	2003*	1961	2002	1961	2002
<b>Egypt</b>	10.8	22.4	--	30.8	50.2	2.1	2.4
<b>France</b>	77.1	102.3	91.5	220	275.5	10.4	18.7
<b>Greece</b>	21.1	83.2	82.5	101	255	1.9	3.1
<b>Italy</b>	30.5	92.1	82	144.7	255.9	3.4	11
<b>Morocco</b>	13.8	20.7	--	28.6	42	1.9	2.5
<b>Portugal</b>	20	89.2	93.8	60.7	219.7	3.3	13.6
<b>Spain</b>	21.8	118.5	128.9	83.2	158.3	1.5	5.2
<b>Turkey</b>	16.5	19.2	--	174.7	98	3.3	1.9

\* Consumption data in kg carcass equivalent; source: OFIVAL Sept. 2004: Consumption of processed meat in 2003.

Source: Table based on data from FAO Stat.

## 5. Is qualitative food security declining?

The Mediterranean countries are reputed for their healthy and balanced diet. But do all of the CIHEAM member countries share that feature? To answer this question we have developed a Food Quality Indicator modelled on Gerber et al. (2000). As knowledge has progressed in the nutritional sciences a number of recommendations have been made as to the quantities of certain foods to be eaten on a daily basis or to the proportions of nutrients to be adhered to in food intake. A Food Quality Indicator (FQI) has thus been calculated on the basis of the recommendations of the National Research Council, the American Health Association and, in particular, the latest proposals of the FAO/WHO Committee of Experts (2003). For certain foods considered to be important from the prevention point of view, a score has been allocated for each of the 3 consumption levels (Table 7); the sum of the scores indicates the intake quality. The lowest score (0) has been allocated to the quantities that are most beneficial for health, and the highest score (2) has been allocated when the recommended thresholds are exceeded. The lowest FQI indicates the intake that is most beneficial for the health and most preventive.

Table 7  
Scores allocated according to consumption levels

Variables	Scores		
	0	1	2
<b>Meat (gm/day)</b>	<200	200-400	>400
<b>Olive oil (gm/day)</b>	>15	15-5	<5
<b>Fish (gm/day)</b>	>60	60-30	<30
<b>Cereals (gm/day)</b>	>300	300-100	<100
<b>Fruit and vegetables (gm/day)</b>	>700	700-400	<400
<b>% fats in intake</b>	<15	15 - 30	>30
<b>% saturated fats in intake</b>	<10	10-13	>13
<b>% complex sugars in intake</b>	>75	55-75	<55%
<b>% proteins in intake</b>	>15	15-10	<10

- Foods rich in saturated fats are butter, cream, cheese, prepared meat products, meat, palm, cotton and copra oil, and margarine.
- Complex sugars are essentially cereals, pulses, fruit and vegetables.

Source: FAOSTAT, 2003.

Using this table of scores we have calculated the FQIs for the Mediterranean countries over the period from 1960 to 2000 (Table 8).

Table 8  
Number of Mediterranean countries according to food quality indicator scores  
for the period from 1960 to 2000

Year	Scores				
	0 - 4	5 - 6	7 - 9	10 - 12	13 - 18
1960	3	4	3	3	0
1970	1	3	8	1	0
1980	0	1	10	2	0
1990	0	1	9	3	0
2000	0	2	10	1	0
Type of FQI	Very good	Good	Average	Poor	Very poor

Source: FAOSTAT.

The table shows quite clearly that, although the situation in the Mediterranean countries is not disastrous (no FQI above 13), it is worrying, since there is a marked drift in the number of countries with a good or very good FQI in 1960 towards average or even poor FQI levels in 2000. The major preoccupations concern two aspects:

- An increase in the consumption of lipids, particularly saturated fats. This is due essentially to the increase in the consumption of meat, dairy products and industrialised products (in which a large quantity of palm or copra oil is used). In 1960, there were three Mediterranean countries which had a poor score for saturated fats (Albania, France, Malta); there were seven in 2000 (Albania, Spain, France, Greece, Italy, Malta, Portugal).
- There has been a very marked deterioration in the scores for complex sugars due to the sharp increase in the consumption of simple sugars, particularly in processed products (beverages, biscuits, desserts, etc.). Whereas there was only one country with a poor score in this field in 1960 (France), there were 9 in 2000 (all of the European Mediterranean countries plus Malta, Tunisia and Lebanon)!

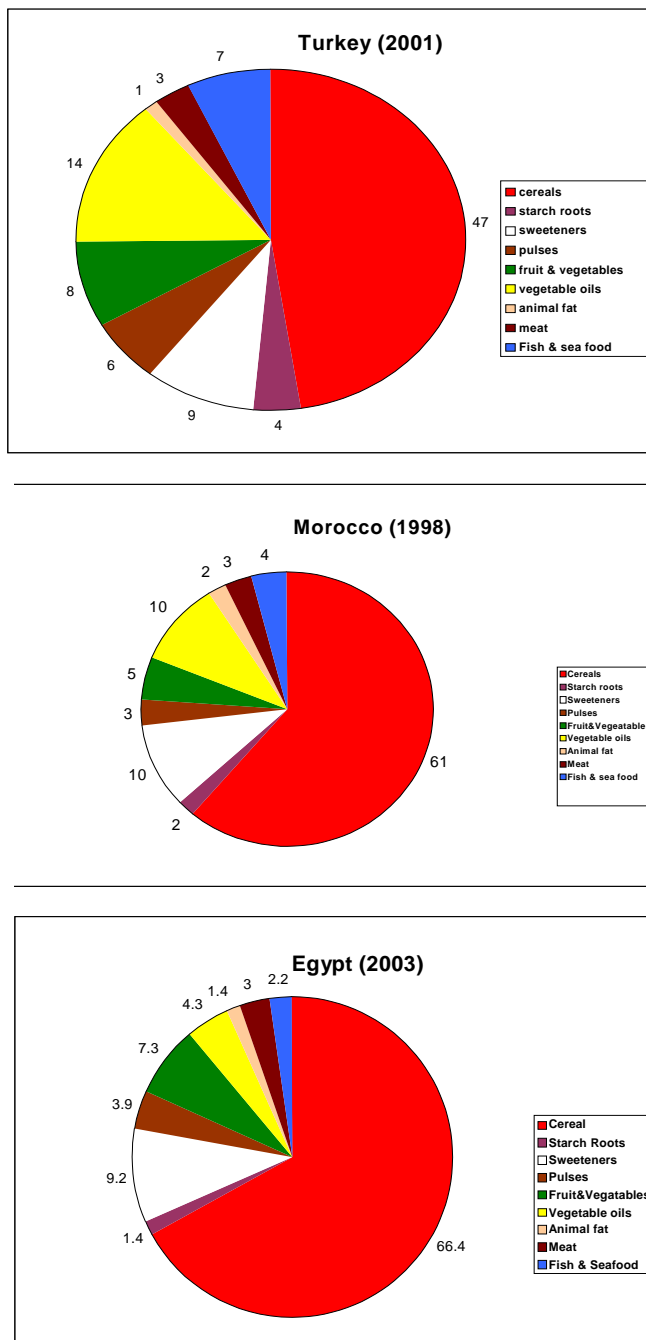
At the same time, scores have improved for the consumption of two Mediterranean products: olive oil and fish oil. However, these two products are becoming increasingly expensive and consumption is thus limited to certain social categories.

These changes in food quality are resulting in a certain degree of food insecurity, which is all the more serious since changes in lifestyle are reducing physical activity both at work and during leisure time (Gil et al, 1995).

### ***The Mediterranean diet and diversity***

Examination of the nutrition country profile for Turkey, Morocco and Egypt (Fig. 3) reveals considerable disparities between the three countries. It draws attention to the fact that the food insecurity situation in each country, which is the outcome of the interaction of several interdependent factors, is specific to that country and that the comparability of the dietary intake in Mediterranean countries is limited to general trends within which some sub-groups of countries may share common features. The share of major food groups in the dietary energy supply (DES) is considered one of the features that can provide an appreciation of food security. The proportion of DES contributed by cereals is higher for Egypt compared to that for Turkey and Morocco, at the expense of other food groups. Also, the share of vegetable oils in the DES, in terms of quantity and quality, varies considerably, since olive oil is consumed mainly in Morocco, to a lesser extent in Turkey and in limited quantities in Egypt, the latter being mainly a consumer of cottonseed oil. Fish consumption also varies considerably amongst the three countries, being highest in Turkey and lowest in Egypt. It can be observed that the diversity of the diet was inversely related to the share of energy derived from cereals. The higher the DES from cereals, the lower the share of energy derived from fruits, vegetables and fish, and the lower the diversity in the diet. Given its high poverty rates, Egypt is an obvious example of dependence of the poor segments of the population on the subsidised staple food (bread) resulting in a high energy content made up of empty calories. This level of poverty allows little room for food diversity or for adequate intakes of other essential nutrients. It is expected that such an unbalanced diet would give rise, in the long term, to signs of food insecurity. This explains the observed high incidence of malnutrition, stunting, and micronutrient deficiencies, notably iron deficiency, as well as obesity among children.

Figure 3  
 Percentage of EDS by major food groups (Turkey, Morocco, Egypt)



Source: FAO Nutrition country profiles, Turkey (2001), Morocco (1998), Egypt (2003).

Diets evolve over time, being influenced by many factors and complex interactions. Income, prices, individual preferences and beliefs, cultural traditions, as well as geographical, environmental, social and economic factors all interact together in a complex manner to shape dietary consumption patterns. Data on the national food consumption pattern provide valuable insight into diets and their evolution over time. Changes in diet patterns often referred to as the “nutrition transition” that are already contributing to the causal factors underlying the observed increase in the non-communicable diseases in both the industrialised and the developing Mediterranean countries (FAO/WHO 2003).

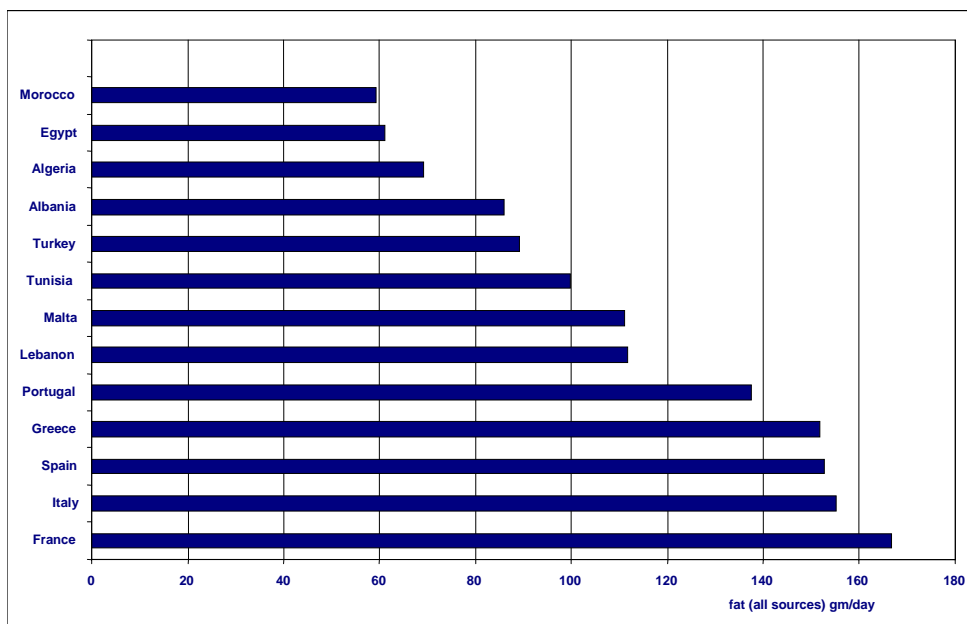
A significant change in diet habits and physical activity level that has occurred as a result of industrialisation, urbanisation, economic development and increasing market globalisation have been at the root of the changes observed in the typical Mediterranean food consumption patterns. The Mediterranean countries are in a privileged position by comparison with other countries in respect of this nutrition transition, which is impacting countries worldwide. Action to protect the basic features of their diet and to adapt to the demands of modern lifestyles without losing much of the diet’s nutritional value is a challenge that can be turned to their advantage. A critical point has been reached at the present time. The 50% share of the dietary energy supplied by cereals (the staple food), which had remained relatively stable over time, is now undergoing subtle changes. A decrease is being observed (FAO/WHO 2003) in the share of the cereals, which is becoming more accelerated and more pronounced in developing countries. There are large variations among countries and within the same country in the amount of total fats (that is the fats in foods and the added fats and oils) available for human consumption. The variations can be related to a number of factors such as food habits, lifestyles or incomes. The fat intake tends to be higher in NM countries than in the south. The per capita supply of fat from animal foods has shown an upward trend in some of the NM countries (Fig. 4, Table 9), more pronounced in the industrialised countries. Rising incomes tend to encourage an increase in the availability and consumption of energy-dense high-fat diets that are characteristic of the fast food culture. Changes in the edible vegetable oil supply, in prices and in consumption patterns, affected both the NM and SM countries in the 1990s. A shift in the proportion of energy from fat over time and its relationship to increasing incomes has been observed (Guo et al, 2000) and is related to higher meat consumption.

Table 9  
Trends in animal product consumption in selected Mediterranean countries

	Year of survey		Meat (kg/person)		Milk (kg/person)		Animal fat (kg/person)	
<b>Egypt</b>		2000		32.6		21.6		
<b>France</b>	1961	1999	28.6	26.2	220	265	28.8	39.6
<b>Greece</b>	1961	1999	5.1	22.3	101	257	9.5	20.8
<b>Italy</b>	1961	1999	14.6	25.6	145	261	12.0	25.4
<b>Morocco</b>	1973	1987	17.9	16.0	28.4	30.4	--	--
<b>Portugal</b>	1961	1999	6.4	16.8	62.0	207	8.6	28.0
<b>Spain</b>	1961	1999	6.0	14.0	83	165	14.5	23.0
<b>Turkey</b>	1977	1987	19.0	28.1	40.7	56.2	--	--

Source: Food and Health in Europe, WHO 2004. FAO Nutrition Country Profile.

Figure 4  
Availability of fat (gm/day) in CIHEAM countries, 1999-2001



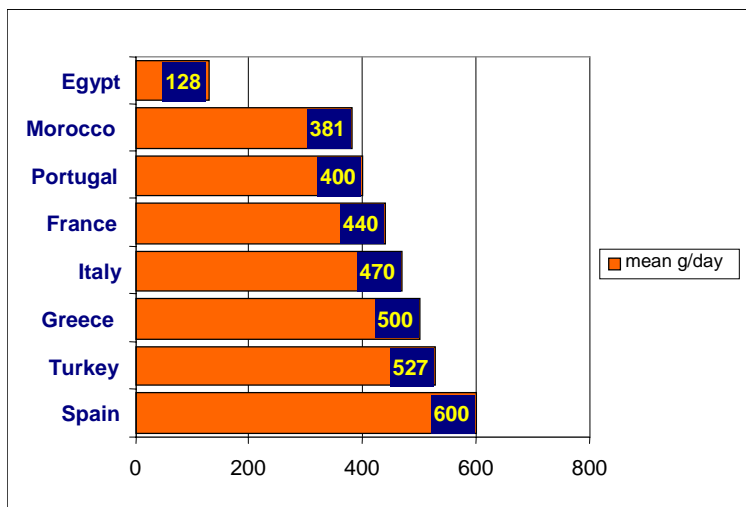
Source: Figure based on data from FAOSTAT food balance sheet, 2001.

An equally important shift in the proportion of energy from added sugar in the diet of the SM countries is also a feature of the nutrition transition because of the trend for higher consumption of refined carbohydrates and sugars (Drewnowski and Popkin, 1997). The intake of saturated fatty acids is at or above 10% of total energy intake in the industrialised NM countries where the dietary fat from animal sources is higher than in the south. The increasing demand for animal protein is a feature shared by both NM and SM countries alike. It is recognised as a result of combination of population growth, rising incomes and urbanisation. The phenomenon, though present, may not be as generalised in the SM countries as it is in the north, being limited to those households with sufficient purchasing power. There is a strong positive relationship between the level of income and the consumption of meat, milk and eggs, which increases with increase in incomes at the expense of the staple food. It is this trend that represents a major deviation from one of the fundamental features of the traditional reference Mediterranean diet. The increase in meat consumption, though pronounced among the higher echelons of the society in SM countries, may not always be discernable in the overall per capita data. It is these privileged groups of the population that are at risk of excessive intakes of fats and meat. The environmental impact of the increasing demand for meat and of establishing intensive livestock production systems has not been estimated. However, it is expected to be high. The low energy conversion ratio from feed to meat and the land and water requirements for meat production are likely to become a major concern in countries of the SM where the reserve capacity of natural resources is low.

The availability and consumption of fish is also undergoing changes and is rather variable in the different Mediterranean. Inland and marine aquaculture has contributed to ensuring availability of supply in both the N and SM countries. The rise in prices and the dependence on the presence of a cold chain infrastructure are factors that affect the level of consumption in some of the SM countries. This results in unequal availability that privileges urban and higher income households and those living in proximity of the fish production source. The traditional dependence on fish among coastal populations continues to be observed.

The consumption of adequate quantities of fruits and vegetables plays an important role in maintaining the diversity and the nutritional quality of the diet. Traditionally, the reference Mediterranean diet is rich in fresh fruits and vegetables. However, the recent data from both the SM and NM countries show a downward trend below the recommended allowance of WHO/FAO of at least 400 gm. Among 8 of the CIHEAM countries, Egypt and Morocco, two SM countries show values less than 400 gm per day (figure 5). The decreasing in consumption of fruits and vegetables is becoming a persistent phenomenon and serious efforts are undertaken by some of the NM countries to reverse the trend, especially among children. It is only a small minority of the world's population that consumes the high average intake recommended by WHO/FAO in spite of the great increase in the vegetable availability recorded between 1980 and 1998 in most parts of the world. Though traditionally Mediterranean countries have been important producers and consumers of fruits, there is a current trend observed in some SM as well as NM countries for a decrease in the consumption of fruits and vegetables. The increase in urbanisation shared by both NM and SM countries is a challenge as it distances people from the primary food production source and negatively influences both availability and access in particular by the urban poor, to a varied and nutritious diet with enough fruits and vegetables. It may seem contradictory but the same urbanisation may, for high income groups, increase their access to a diverse and varied diet though at a much higher cost. The preferred utilisation of peri-urban agricultural lands for horticulture, which is quite a lucrative business for farmers, is vital for guaranteeing a regular supply of fresh vegetables to towns and cities and maintaining the diversity of the diet. The factors underlying the occasionally observed trend of diminished intake of fresh green leafy vegetables among children in Egypt (Ibrahim et al 2003) is of concern to nutritionists. It is associated with the increase in the snacking and nibbling phenomenon and the fear of the risk of infection from the high level of pollution of irrigation waters.

Figure 5  
Vegetable and fruit intake (mean g/day) in selected CIHEAM countries



Source: Figure developed by authors based on data derived from Food and Health in Europe, WHO, 2004 and FAO Nutrition Country Profiles.

**Monitoring food consumption trends**

The need that is felt for measures to establish nutritional surveillance systems and for regular monitoring of food intake is a need that is shared by both the N and SM countries. The differences in the approaches used in nutritional surveillance and in the assessment of food intake has given rise to the FAO initiative to harmonise these approaches in consultation with the countries themselves (FAO 2002). Most of the N and SM countries undertake nutrition surveys that are either limited in time or in coverage. Problems mentioned in CIHEAM country reports and profiles refer to high costs and the lack of an adequate number of trained personnel.

Reporting on the period from 2000 to 2002, the recently established Nutritional Surveillance and Epidemiology Unit of the French Ministry of Health (USEN) focuses on the surveillance of risk factors and on public health measures to control identified risks (BEH 2003). A research group in Tunisia has undertaken extensive work with a view to identifying indicators to be used in nutritional surveillance in Tunisia (Padilla et al 2002). Working with a sample of 16 000 households, Ibrahim et al (2003) are in the final phase of a 12-year programme for developing a nationwide food consumption monitoring system in Egypt using the modified Food Intake Analysis System (FIAS).

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