THE MEDITERRANEAN DIET

The Mediterranean diet, which developed over the centuries as the result of the intermingling of the peoples of the basin, is known and recognised the world over. A series of epidemiological studies has shown, for example, that the dietary characteristics and health of the population of the region are very closely related: there is a lower incidence of cardiovascular disease and certain types of cancer such as lung, stomach, pancreas, bowel, breast and cervical cancer, and according to some research this type of diet is also a factor reducing the incidence of Alzheimer's disease.

THE MEDITERRANEAN DIET, A PARAGON OF HEALTHY EATING

The "Cretan diet" of the 1970s is now regarded as the paragon of the Mediterranean diet. With its high fibre, vitamin, antioxidant, mineral, phytoestrogen and fatty acid content it has many nutritional advantages. This recognition is related to a series of scientific studies which have demonstrated the specific quality of the Cretan diet and its effect on health. This Cretan and, more broadly, Mediterranean, diet, which is much praised for its nutritional and organoleptic qualities as well as its social role, has inspired many international and national recommendations and was officially recognised as an international reference by the World Health Organisation (WHO) in 1994. These recommendations include in particular the food pyramid of the USDA (United States Department of Agriculture), which shows the number of portions of each type of food recommended in daily intake. The lower the food's position in the pyramid, the larger the quantities eaten should be, whereas the foods at the top of the pyramid should be consumed sparingly. The pyramid emphasises that intake of all forms of fat (with the exception of olive oil) should be limited, and it makes a distinction between the various foodstuffs according to their glycaemic index, which measures the capacity of a given carbohydrate to raise the blood sugar level after a meal compared to the reference standard of pure glucose. Whole-grain cereals are at the bottom of the pyramid, and white bread is at the top. The pyramid also strongly encourages the consumption of fruit and vegetables.

The virtues of the Cretan diet. How is this "Cretan" diet, which has evolved from the intermingling of culinary traditions, to be described? First of all, the daily ration can be termed frugal with a supply of approximately 3,000 kcal per capita per day and a quantity of animal products that is limited to a maximum of 20% of the daily calorie intake (compared to 40% in English-speaking countries). The core of the meal consists of vegetables, which are also used to accompany cereals such as couscous, pasta, etc. Meat and fish, which are consumed mainly in the coastal areas, serve to provide flavour or are reserved for festive occasions. They can also form the basic ingredient of sauces with olive oil and condiments. And finally, salads (seasoned with olive oil) and fruit are part of all main meals. Fresh milk is used very little, but fresh sheep or goat's milk cheeses, fermented milk (labneh, rayeb, ayran etc.) and yoghurt are staples in all Mediterranean diets, the cheeses often being mixed with the vegetable dishes. Furthermore, culinary herbs and spices are widely used as well as acid flavouring with vinegar or lemon juice. As regards beverages, apart from the Muslim countries, where alcohol is prohibited, drinks are consumed during meals; they consist of wine, which is often diluted with water, or drinks flavoured with aniseed and accompanied with side dishes.

This dietary diversity is combined with a wide diversity both of cooking techniques (boiling, simmering, roasting, grilling, drying, or steaming) and of preservation techniques (solar drying, salting, fermentation, pickling in vinegar or oil, slow cooking, or candying). The Mediterranean diet, which is due to be included in the World Heritage List at Spain's request is a combination of a variety of products and know-how. Its reputation is of course based on the composition of food intake and the nutritional advantages it offers, but also on

CRETAN, JAPANESE, INUIT

The "Cretan" diet is not the only diet in the world with proven health advantages. The Japanese model, which is less energising and has a high fish and whole-grain cereal content, or the Inuit model, whose nutritional structure is quite the opposite of the Mediterranean model, are also health references.

"Reference" models	Calorie supply (Kcal/ caput/day)	Animal share of intake	Main ingredients
Cretan	3136	18 %	Vegetables, olive oil, condiments, seasoning and spices, cereals, fruit, fish, fermented milk and cheeses, drinks flavoured with aniseed, wine
Japanese	2768	20 %	Fish and seafood products, vegetable oils, fruit, pulses, seeds and nuts, whole-grain cereals, beverages (tea)
Inuit	3000-5000	90 %	Meat, fish, animal fat, seaweed, berries

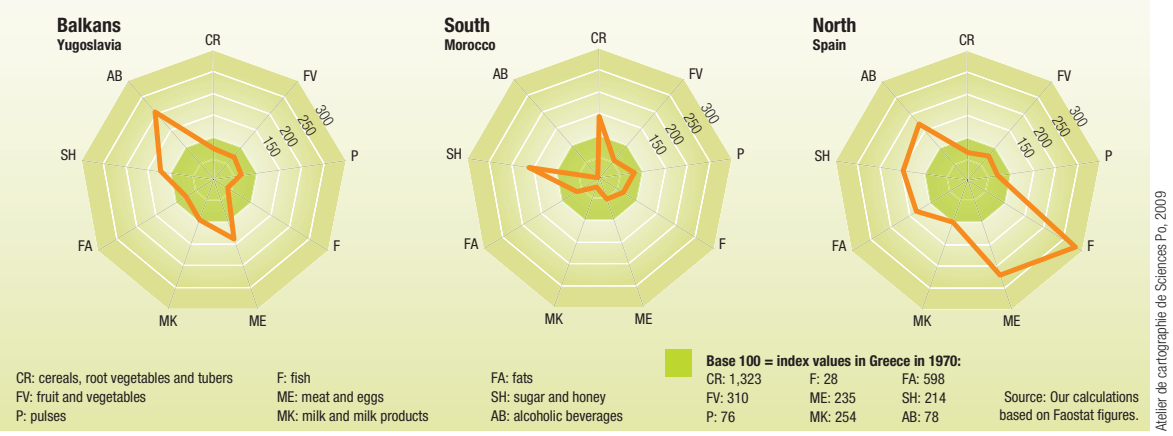
the cultural brand, sociability and commensality that are associated with it.

Variety and national nuances. None of the national diets has adopted the Cretan model strictly speaking. The peoples on the northern shores consume more meat, fish, fats, sugar and alcoholic beverages (as in Spain, for example). And the peoples on the southern shores eat large quantities of cereals and sugar and very few animal products, fruit or vegetables (as in Morocco, for example). In the Balkans, the Albanian diet has a specific focus on cereals, milk and milk products, but the diet of the vast majority of the Balkan countries is composed of cereals, meat, sugar and alcoholic beverages. It is in fact the dichotomy between animal and vegetable calories in daily intake that makes the two shores of the Mediterranean so different: whereas southern Mediterraneans include very few animal calories in their diet (10%), northern Mediterraneans include much larger quantities (30% of daily intake), and the peoples of the Balkans come close to the latter with 24% of daily intake. And it is surprising to observe that although the countries on the rim of the Mediterranean produce large volumes of fruit and vegetables many of them, such as Morocco, Algeria and Egypt, actually consume only small quantities of these products. In the Mediterranean countries the recommended daily intake of 400 g per person is more or less complied with in the North, whereas this is rarely the case in the South.

WORRYING SIGNS OF DETERIORATING FOOD QUALITY

A food quality indicator (FQI) has been established combining a number of recommendations as to the quantity of each type of food to be eaten daily or the proportions of

THE THREE TYPES OF FOOD IN THE MEDITERRANEAN REGIONIN RELATION TO THE CRETAN DIET, 2003



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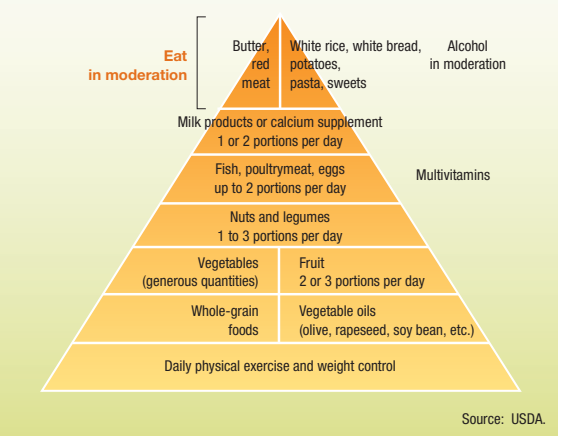
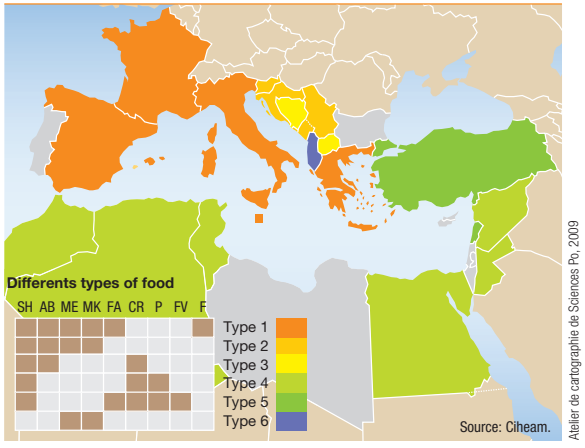
WILLETT'S PYRAMID, 2003



DIFFERENT TYPES OF FOOD



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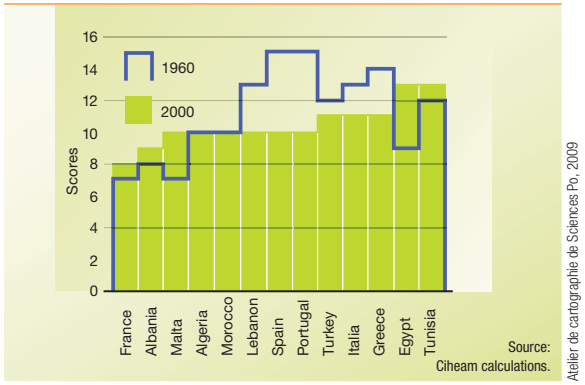
nutrients to be complied with in daily intake. The FQI is the sum of a series of scores that are attributed according to consumption level per type of foodstuff compared to the quantity recommended. The score varies from 0 to 2 for each variable, representing the least to the most satisfactory. The highest score indicates the intake that is most beneficial for the health and most preventive (the maximum score is 18). Using this table of scores we have calculated the FQIs for the Mediterranean countries over the period from 1960 to 2000.

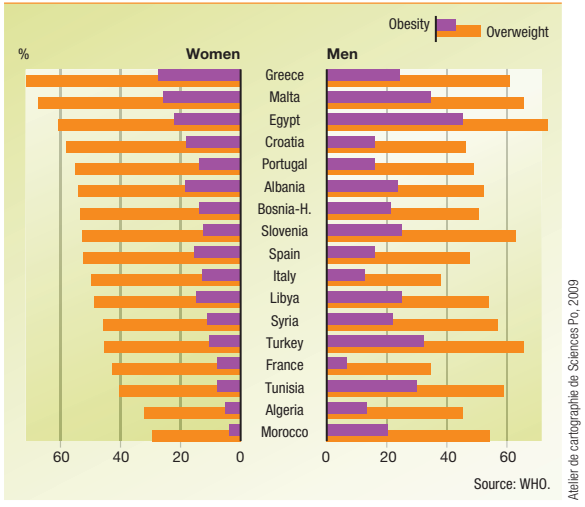
The table shows quite clearly that, although the situation in the Mediterranean countries is not disastrous (there is no FQI below 4), it is worrying, since there is a marked drift in the number of countries with a good or very good FQI in 1960 towards average or even poor FQI levels by 2000. The overall situation is thus shifting from a wide variety of situations to a more homogenous situation but with lower levels of quality. Three groups of countries can in fact be identified on the basis of this indicator: those where the quality of daily intake has deteriorated (Spain, Greece, Italy, Lebanon,

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

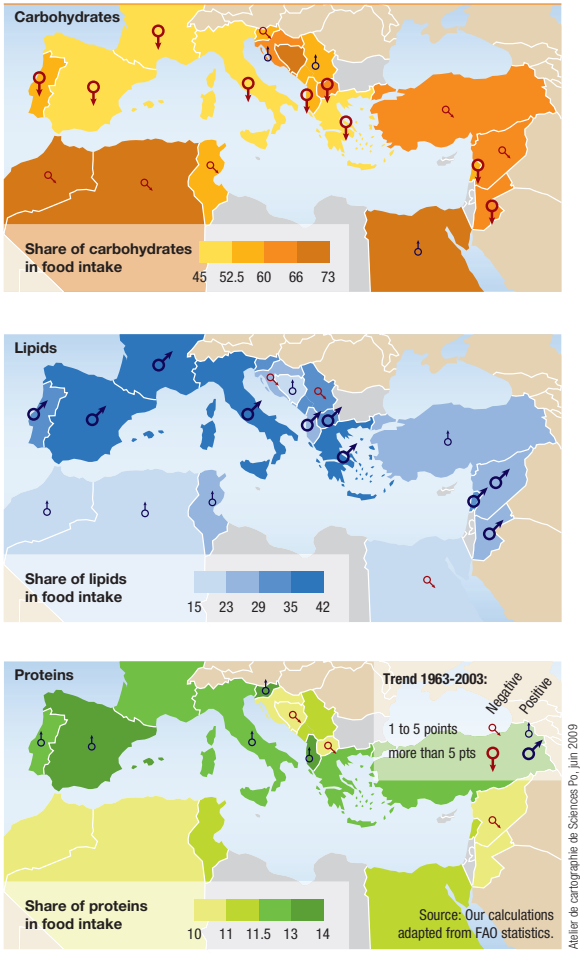
FOOD QUALITY INDICATOR, 1960-2000



OBESITY IN THE MEDITERRANEAN REGION, 2009



FOOD INTAKE, 2003

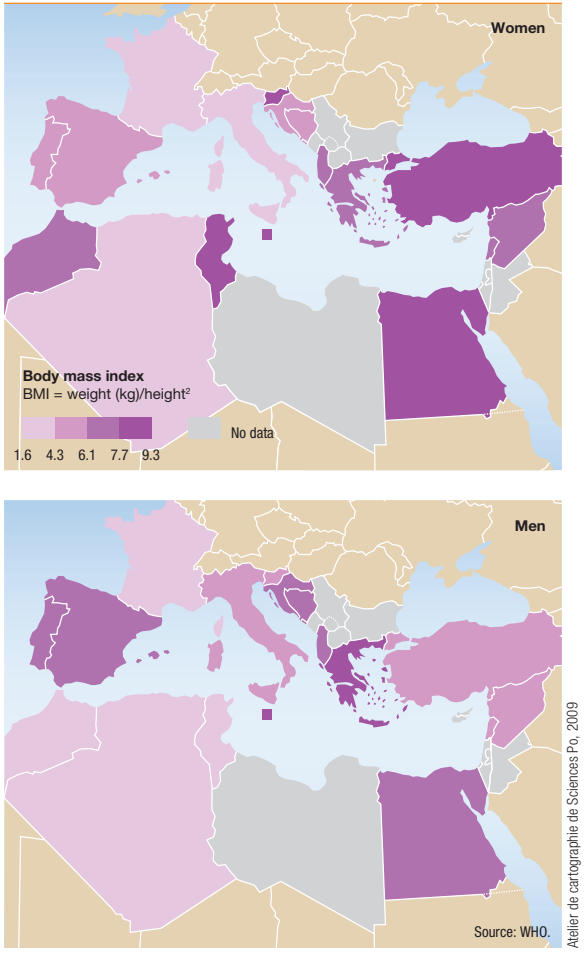


Portugal, and Tunisia), countries which are stable (Albania, Algeria, France, Morocco, Tunisia, and Turkey), and finally those where the quality of daily intake has improved (Egypt and Malta).

When one considers the proportion of carbohydrates, lipids and proteins in daily intake it is observed that values vary widely from one shore to the other but also that the proportion has developed over time. There is in fact a marked trend in Mediterranean food intake towards diets with a high fat content to the detriment of carbohydrates. Carbohydrates still account for a large proportion of the diet, however, but the type of carbohydrate consumed has changed: they were formally consumed in the form of whole-grain cereals but these have now been replaced by refined and processed cereals. The same applies to fats: the polyunsaturated fatty acids that are implicated in cardiovascular disease, certain forms of cancer and diabetes are overtaking by far the monounsaturated fatty acids which are contained in large quantities in olive oil.

Obesity, overweight and hidden hunger. These developments are already affecting the populations in the various countries to a greater or lesser extent. Whereas overweight and obesity (and the concomitant non-transmittable chronic diseases such as diabetes, high blood pressure, cardiovascular disease and certain forms of cancer) were long regarded as diseases specific to developed countries, there has been a spectacular rise in the incidence of these diseases in the Mediterranean region, particularly amongst young people and poor population groups. Egypt, Greece and Turkey, where 20% of the population is now suffering from obesity, are the countries worst affected. The emergence and rapid spread of these "civilisation" diseases are to be related to the

BODY MASS INDEX, 2009



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AN EXAMPLE FROM FRANCE OF FOOD SUPPLY ACTION

A scheme was launched in May 2007 involving a charter of voluntary nutritional commitment targeting enterprises. These charters aim in practical terms to induce industrialists to change the nutritional composition of their products towards better nutritional quality. They aim to reduce salt, simple carbohydrate, total lipid and saturated fatty acid content or to increase the consumption of complex carbohydrates and fibre, fruit and vegetables. The charters must be based on specific objectives quoting precise figures that are dated and verifiable. Inspections are carried out by independent bodies. In February 2008, the firm of St-Hubert was the first in France to sign a "charter of voluntary commitment to nutritional progress", and other businesses have since followed suit.

School fruit breaks

This fruit-break operation was launched on the initiative of the French Ministry of Agriculture and Fisheries with the collaboration of the Ministry of Education. Its purpose is to encourage the free distribution of at least one piece of fruit per week to children in primary schools or outdoor centres in addition to the meals that are provided.

French people do not eat enough fruit, and in some cases it is a form of food inequality. The fruit-break operation aims to reduce this injustice by distributing fruit to children direct. It was launched at the beginning of the 2008-2009 school year, and over 100 municipalities are already taking part, covering 92,000 children in 556 schools. The operation was extended by a European programme at the beginning of the 2009-2010 school year, distributing fruit to schools that are willing to participate.

changes in lifestyle and eating habits that are connected with urbanisation (people buy ready-made meals and eat between meals, the fast-food market is developing, people consume sweetened beverages – this is particularly the case in the southern and eastern Mediterranean countries and amongst young people – etc.).
A salient factor is that these diseases are often accompanied with nutritional deficiencies. Almost all of the southern Mediterranean countries are thus facing epidemic obesity combined with hidden deficiencies and very high levels of malnutrition connected with nutritional deficiencies (iron, vitamin A and iodine deficiency). Micronutrient deficiencies, i.e. lack of vitamins and minerals (flour, potassium, calcium, magnesium, selenium, and so on) are a "silent urgency" since they are to a large extent invisible – to the point that they are often called "hidden hunger". Yet these deficiencies are one of the most widespread forms of malnutrition in the world.

NUTRITION POLICIES

Measures to fight deficiencies or nutrition excesses form the core of public health policies in the Mediterranean region. These policies are based on nutrition and diet and aim primarily to change behaviour that is considered to be "deviant", because it is the cause of the non-transmissible chronic diseases mentioned above. Governments try to intervene with preventive measures and to convince people to change their eating habits by informing them. In the northern Mediterranean countries action has focused on individual factors including measures to improve people's knowledge of the nutritional properties of various foods, how to interpret the information on product labels and what a balanced diet consists of as well as communication (advertising at times when children watch television, for example). Advertising campaigns promoting certain food products such as fruit and vegetables aim to change people's attitudes, motivation and tastes.
A more ecological approach to eating habits – ecological also in the etymological sense of the term (*oïkos* meaning "house") – has emerged in the last 10 years: more action is being taken on the consumer's (social, economic and geographical) environment, since it has now been established that that environment and consumer behaviour are closely linked. If consumers have easy access to supermarkets, for example, they will be more attracted by industrial products than others who live in the country and have access to local markets. Two types of action tend to be combined: action targeting the individual, his preferences and motives (nutrition education, informational marketing and campaigns to promote recommended foods – five different fruits and vegetables per day, for example), and action aiming to influence the environment of the act of consumption (price incentives, subsidies, measures to improve quality via professionals, etc.).

Interventionism in the South. In the southern Mediterranean countries the first measures in the food field were taken in the context of a very centralised policy, taking the form of the general subsidisation of staples (introduced in Algeria in 1973, in Egypt in 1967, and in Morocco and Tunisia in 1970). The underlying idea was that these measures could improve food security without requiring in-depth social reforms or calling the basis of the economy in question. They brought a certain degree of social peace, and subsidies were applied to all products: cereals and derivatives, oil, powdered milk, sugar, plus meat and eggs in the case of Tunisia, tea, meat, dried beans and lentils in the case of Egypt, and coffee in the case of Algeria.
As the result of the structural adjustment plans required by the International Monetary Fund in order to reduce the debts of States with very adverse budget situations, subsidies were gradually abolished from 1986 onwards in Egypt, from 1988 in Algeria, from 1983 in Morocco and from 1991 in Tunisia. This subsidy withdrawal policy was not well received by the population, and "bread riots" broke out in Casablanca in June 1981 and January 1984 and in Tunis in January 1984. So the States then embarked on policies to privatise and liberalise agro-food firms and the agro-food trade, despite all of the difficulties involved due to the customary State protection policies. These privatisation and liberalisation policies culminated in the accession of Egypt, Morocco, Tunisia and Turkey to the World Trade Organisation in 1995; Algeria

IRON SUPPLEMENTATION PROGRAMME IN TUNISIA

An iron supplementation programme was introduced in 1990 in the context of a national programme focusing on the perinatal period and has since been applied throughout the country with a view to preventing iron deficiency anaemia in pregnant woman or correcting it in women suffering from the condition. Almost 70% of pregnant or anaemic women are covered by the scheme. The recommended dose in preventive care is 100 mg of iron element per day. Where moderate anaemia is diagnosed the curative treatment is 200 mg of iron element per day with regular monitoring of the circulating haemoglobin mass.

is still awaiting signature. Subsidisation policy has been replaced by other measures. In Morocco, a food compensation programme has been introduced to preserve the living standards of the most needy; it includes schemes involving work in the public interest (food in return for work) and direct food transfers (national mutual assistance and distribution of foodstuffs through the Catholic Relief Services). Algeria has opted for income aid, adopting and launching the "social safety net" scheme in 1991. In Egypt, the idea of a social action plan has been put forward but has not yet been put into effect. In Tunisia, a dietary and nutritional monitoring system that has been in operation since 2006 with the collaboration of European partners provides the basis for monitoring the evolution of nutritional problems as well as the impact of the strategies pursued so that they can be readjusted where necessary. Six specific actions have been devised and scheduled for the period of the 11th plan (2007-2011) involving measures to combat iron deficiency in children and women of child-bearing age, to promote breast-feeding, to combat vitamin A deficiency, to eradicate iodine deficiency, to combat stunting and to prevent obesity in children and adolescents.

Foodstuff fortification also helps to improve the nutritional status of the various populations. The Algerian Ministry of Health is running a vitamin D supplementation scheme for all infants as well as a screening programme for disorders due to iodine deficiency in children from 0 to 4 years of age (goitre, cretinism) and in pregnant women and nursing mothers. Dietary measures are recommended in order to combat anaemia (diversification of the diet with emphasis on the value of foods with high iron and folate content), and iron supplementation is provided for groups at risk. Furthermore, the Nutrition Committee stresses that mothers should be encouraged to breast-feed their children. In Lebanon, the WHO is supporting a Micronutrient Initiative, which has been promoting iodised salt since 1995 and flour fortified with iron and folic acid since 2006. In Turkey, the Ministry of Agriculture and Rural Affairs undertook extensive measures in 2000 to encourage animal production in order to eliminate the widespread iron, calcium, riboflavin and zinc deficiency. In Morocco, the measures taken to improve the nutritional quality of the foodstuffs that are made available to certain categories of the population (flour fortified with iron and vitamin A and D compounds and iodised salt) provide a means of correcting the deficiencies that are still found in women and children in mountain regions.

THE EMERGING CHALLENGE OF ZOONOSES

The development of diseases that can be communicated from animals to man is also a major challenge for public health policies. These pathologies affecting the Mediterranean basin include in particular bird flu, bovine spongiform encephalopathy and brucellosis. Bird flu has been very much in the news recently, although there have been few victims. Back in 2005 many scientists presented it as a pandemic of the future. This infectious disease is caused by A-strains of the flu virus and affects birds, which can then easily carry it. Although this virus is benign, the H5N1 strain can be highly pathogenic.

In Egypt, one of the countries most affected by the epidemic, the government launched a warning against bird flu in 2006. The victims were mainly women and children who had been in contact with poultry. The authorities decided to slaughter chickens in domestic poultry farms and to close poultry shops, and 15 million fowl were slaughtered in one month, but bird flu is still very difficult to control: of the 45,000 to 50,000 poultry farms in Egypt only 22,000 are authorised, and domestic production is still very important for 85% of the Egyptians who raise poultry. The government decided recently to promote the import of frozen chicken in order to bring domestic production to an end. This bird flu episode has had dire consequences for vulnerable population groups, since it has deprived them of food resources and a means of savings (poultry farming is a major source of savings in Egypt). More broadly, since climate change could promote animal diseases that can be communicated to man, it is absolutely imperative to develop policies for monitoring animal and poultry farms (traceability, prophylaxis, etc.). ■

H5N1 VIRUS IN EGYPT, 2006-2009