

Executive Summary

The aim of the European Nutrition and Health Report 2009 is to provide a comprehensive view of the health and nutrition status in the European Union (EU). It is not intended to generate new data, but rather to collect available and authorized data, published or unpublished, on the nutrition and health situation in the EU countries. Since the release of its predecessor five years ago, two new member states, Bulgaria and Romania, have joined the European Union the latter of which participated in the current report. Moreover, with the exception of Malta and Slovakia, the countries that joined the EU in 2005 also contributed as did Ireland and The Netherlands, not represented in the previous report. With 24 EU member states as well as Norway taking part, the amount of data contained in the second European Nutrition and Health Report 2009 has increased considerably. These countries were grouped into four geographical regions: (1) Denmark, Estonia, Finland, Latvia, Lithuania, Norway, Sweden constitute the North, (2) Belgium-Luxembourg, France, Ireland, The Netherlands, and the UK the West, (3) Central and Eastern Europe is represented by Austria, the Czech Republic, Germany, Hungary, Poland, Romania and Slovenia, and (4) the South is represented by Cyprus, Greece, Italy, Portugal and Spain. Like the previous project, the current project was again funded by the European Commission and coordinated by the Institute of Nutritional Sciences of the University of Vienna, Austria, directed by Professor Ibrahim Elmadfa. The coordinating center compiled the final report of the national data collected by the partners.

- To provide an overview of available data on food and nutrient intake as well as
 - identify major national and regional health and nutrition issues
- were again the major aims of the report.
- Specific additional objectives of the ENHR 2009 were
- to describe trends in food supply in the European Union focusing also on the different regions (chapter 4),
 - to compare average daily individual food availability at the household level (chapter 5),
 - to evaluate individual food consumption in adults (chapter 6) and energy and nutrient intake in all age groups (chapter 7),
 - to describe data on diet-related health indicators and status (chapter 8),

- to analyze food and nutrition policies in countries of the European Union (chapter 9).

The national reports constituting chapter 11 provide more detailed information on the nutrition and health situation in the different participating countries, especially on issues not addressed in the main report.

Besides providing an overview of the nutrition and health situation in the European Union, this report also shows that, despite a considerable improvement of the quality of the methods of data collection and assessment, there is still a need for harmonization of databases and survey methods.

Trends in the Food Supply in Europe

The Food Balance Sheets (FBS) of the Food and Agriculture Organization of the United Nations (FAO) are agricultural statistics that have so far been published yearly since 1961 up to 2003. To estimate food supply, they take into account data on total production, import and stocks of food as well as its utilization for non-food purposes in a given country. The consistency of methods and the coverage of a large number of countries worldwide make FBS a valuable source of information about the pattern of a country's food supply during a specified reference period. Especially, they allow international comparisons and the detection of international and national trends. In turn, regional differences within one country or between groups of its population cannot be discerned. Data are obtained on a per capita basis without any differentiation between genders and age groups. Additionally, losses due to waste and spoilage can only roughly be accounted for so that supply data are higher than the actual intake. Nevertheless, FBS are a unique source for showing international trends in food supply.

Supply in Europe Over the Last Four Decades

Cereals and Potatoes. Both, the mean supply of cereals and that of potatoes have been decreasing over the last 40 years. On a regional basis, the supply of cereals increased in the North region, while in the other regions a slight decrease could be observed. The supply of potatoes decreased in the West and Central and East regions and remained relatively constant in the South. In the North, the gap between minimum and maximum supply has been widening.

Fruits, Vegetables and Pulses. In all participating countries on the whole, the mean supplies of fruits and vegetables increased from 1961 to 2003, as well as in every region of the EU. Only in the West, has the supply of vegetables shown a slight decrease. In turn, the amount of pulses available for the food sector showed an undesirable decreasing tendency over the past four decades. However, this was mainly due to strong decreases in the South and the Central and East region, while the North and West region showed slight increases.

Milk and Milk Products. From 1961 to 2003, the average supply of milk showed an increase that was seen in every region except the North where it remained relatively constant. Nonetheless, in this latter, it was at the highest level compared to all other regions.

Animal Products – Excluding Milk. The average supply of meat, most notably of pork and poultry, eggs as well as fish and seafood increased over the past 40 years. A general increase in the supply of animal products can be observed in all regions, but it was higher in the central and eastern as well as western regions.

Fats, Oils and Sugar. The mean supply of oil crops, vegetable oils as well as the supply of sugar and sweeteners in the participating countries increased since 1961, whereas the supply of animal fats remained relatively constant. The average supply of oil crops increased in every region, with a particularly strong increase of the maximum values in the South region. Both, the supply of animal fats and vegetable oils increased over the past 40 years except in the North region where the supply of animal fats markedly decreased. The supply of sugar and sweeteners also increased. In the North, the gap between minimum and maximum supply widened.

Alcoholic Beverages. While the average supply of beer in the participating countries doubled over the past 40 years, the mean wine supply decreased slightly. The supply of alcoholic beverages in general increased in every region.

Concerning trends in the proportion of macronutrients over the past four decades, no change was observed for protein, while the proportion of fat increased and that of carbohydrates decreased.

In most of the participating countries, the contribution of animal and vegetable food groups in total energy supply changed only slightly from 1961 to 2003, although there was a strong increase during this period in the southern European countries Cyprus, Greece, Italy, Portugal and Spain as well as in Romania. Considering the different regions, the proportion of animal products in total energy supply remained relatively constant in the West region, decreased slightly in the North region, increased in the Central and East region and increased markedly in the South region over the past 40 years.

An increase in most of the food groups can be observed except for pulses, potatoes, wine, cereals and mutton and goat meat. The supply of animal fats remained relatively constant.

Food Availability at Household Level in Europe

The ability to monitor and compare the dietary habits of different populations is important in the formulation of dietary guidelines and in planning and implementing national policies. In the realm of actions in the field of public health, emphasis should be put on the importance of standardized and comparable dietary data and the promotion of nutrition surveillance systems.

Household budget surveys (HBSs) are systematically conducted by National Statistical Offices in representative samples and aim at collecting, among others, data on food availability at household level. The use of the national HBSs for nutrition monitoring purposes has been evaluated through the EU-supported Data Food Networking (DAFNE) initiative, which built up a regularly updated food-based databank allowing the: (a) identification of dietary patterns prevailing in Europe and of their sociodemographic determinants [Trichopoulou et al., 2002; Naska et al., 2006], (b) follow-up of time trends in food habits [Trichopoulou and Naska, 2003], and (c) evaluation of nutrition action plans and strategies implemented at national or international level [Trichopoulou, 2001] (<http://www.nut.uoa.gr/dafnesoftweb/>). The DAFNE network currently interrelates 26 European countries (Albania, Armenia, Austria, Belgium, Croatia, Cyprus, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Luxembourg, Malta, Montenegro, Norway, Poland, Portugal, Serbia, Spain, Slovak Republic, Slovenia, Sweden and the UK).

The DAFNE data, comparable between countries, documents regional and social disparities in food habits in Europe. Given the potential of the DAFNE data, a system facilitating the regular update of the database, as well as the expansion of the network to embrace all European countries could provide a ready source of data for monitoring public health nutrition at a reasonable cost.

Despite high variability between single countries, certain regional characteristics in food availability can be discerned. Vegetable and fruit availability was higher in the South, although this was more marked for fruits. Vegetable availability was very high in Cyprus and Greece, but less so in Portugal and Spain. A high availability of fruit was not always associated with a high vegetable availability and vice versa. Cereals and potatoes were on average more available in households of Central and Eastern Europe. Milk and milk products showed the highest availability in the North although for cheese, it was very comparable across regions despite a great variance between single countries. Average availability of meat was highest in the Central and Eastern region and lowest in the North, although interregional differences were not that large. The Central and East region also showed the highest amounts for processed meat, the South the lowest. In this latter, availability of fish and seafood was highest despite a high intraregional variation. It even exceeded the levels of processed meat in all and those of poultry in most countries. In the North, availability of fish and seafood was also above the average of all regions, while it was lowest in the Central and Eastern region. Availability of added lipids was also higher in the South and mostly accounted for by vegetable oils. The West had the lowest availability of this food group especially the vegetable variants (oil and fat). However, apart from the South variability within regions was particularly high for this food group.

Educational level of the household head generally has a strong influence on household food purchases. The present data revealed a lower overall availability of food associated with higher educational level. However, fish and seafood availability was higher in higher educated household heads and there was a similar trend for fruit and vegetables as well.

Food Consumption in Adults on the Basis of Dietary Surveys in European Countries

On the Basis of the EFSA Concise Database

To date, numerous countries have collected data on individual food consumption from dietary surveys. Up to now, there is no fully harmonized European database on individual food consumption. Hence, the European Food Safety Authority (EFSA) has compiled the available data on food consumption in adults from representative dietary surveys in 19 countries of the EU to make data as comparable as possible across the EU. Data are available for adults from 16 of the participating countries of the ENHR 2009 [EFSA, 2008a; EFSA, 2008b].

It has to be noted that differences between countries can be caused by different survey methodologies or different durations of surveys. Another limitation is the diverging assignment of foods to the food groups due to the use of differing nutritional evaluation software. For instance, ingredients- vs. recipe-based processing yields inconsistent results. Main results of the 16 participating countries were:

- The highest consumption of cereals was reported in the Central and East region (292 g/capita/day). The North region (223 g/day) was far below all the regions' average.
- The Central and East region had the highest consumption of added sugar and sugar products (46 g/capita/day). In the South region, represented by Italy, less than half of this quantity was reported (20 g/day).
- As for sugar and sugar products, the highest intake of fats was reported in the Central and East region (39 g/capita/day). The lowest values were reported in the West region (28 g/day). The other three regions were positioned around 35 g/day.
- The consumption of starchy roots and potatoes was highest in the Central and East region (165 g/capita/day), followed by the North (126 g/day) and West regions (97 g/day). The value for the South region was exceptionally low (48 g/day).
- Consumption of vegetables was very high in the South (249 g/capita/day) and Central and East regions (248 g/day). The North region (140 g/day) was far below average.
- The highest intake of fruits was reported in the Central and East (209 g/capita/day) and South regions (203 g/day). Fruit consumption was considerably lower in the North (129 g/day) and West regions (113 g/day). On average, only four countries (Poland, Germany, Italy, and Austria) have met the recommendation of consuming at least 400 g of fruits and vegetables per day.
- The consumption of fruit and vegetable juices was reported highest in the Central and East region (667 g/capita/day). The lowest values emerged in the North region (331 g/day).
- The Central and East (633 g/capita/day) and North regions (625 g/day) had the highest values in the category coffee, tea and cocoa. In contrast, only 124 g/day was accounted for in the South region.

- The highest consumption of alcoholic beverages was reported in the West region (235 g/capita/day), whereas the lowest values appeared in the South region (126 g/day). The North and Central and East regions showed equal results (181 g/day).
- The consumption of meat and meat products was higher in the Central and East region (194 g/capita/day) than in the West (174 g/day), South (137 g/day), and North regions (134 g/day).
- The highest consumption of fish and seafood was found in the South region (43 g/capita/day). As the Central and East region (18 g/day) is predominantly represented by landlocked countries, the low intake emerged as expected.
- Consumption of eggs was found to be highest in the Central and East region (25 g/capita/day), followed by the South (18 g/day), West (18 g/day), and North regions (17 g/day).
- The highest consumption of milk and dairy-based products was reported in the North region (416 g/capita/day). The lowest intake was found in the South region (212 g/day).
- The differences concerning tap water consumption were relatively small between the West (231 g/capita/day) and South regions (206 g/day). Tap water intake was highest in the North region (630 g/day) and lowest in the Central and East region (136 g/day).

Energy and Nutrient Intake in Europe

Assessments of individual energy and nutrient intake allow a better characterization of nutrition in a given country than the agricultural statistics previously presented. Such data are regularly collected in the majority of the European nations. Since the last European Nutrition and Health Report, the European Food Safety Authority (EFSA) has taken over the task of gathering the available data aiming for a harmonization. While methodological differences in the nutritional assessment of the participating countries still led to a certain incoherence of the data presented, comparability has improved as especially the age groups were uniform with a slightly higher variability only for children.

Information on individual intake of energy and major nutrients was available for sixteen of the participating countries and an overview is given in the following chapter.

Children

The energy intake in children was between 6.2 and 11.7 MJ/day in boys and between 5.5 and 10.6 MJ/day in girls and increased with age. The gap between genders became also larger with age. The protein intake contributed between 11.1 and 17.6% to total energy intake (%E) and was therefore above the recommendation of 10–15%E [WHO, 2003]. Only children from France, Greece (4–6 years), Portugal (7–9 years) and Spain (10–14 years) did not meet the recommendations for carbohydrate intake of 50–75%E [WHO, 2007]. In all countries and age groups, the fat intake was above the recommended

maximum of 30%E [WHO, 2003]. Apart from Italian boys aged 7–9 years, the mean intake of saturated fatty acids exceeded the recommended maximum of 10%E [WHO, 2003] and polyunsaturated fatty acids were generally low. The mean daily intake of retinol equivalents was between 0.4 and 2.4 mg. Compared to the D-A-CH reference values, younger children are more likely to reach the recommendations than children from the older age groups. The vitamin D intake in European children was generally low. The recommended intake values for α -tocopherol equivalents were between 5.3 and 14.5 mg/day in boys and 5.1 and 18.1 mg/day in girls. It was particularly low in Denmark, Finland, Ireland and Sweden. In the age group of 10–14 years, only 3 countries reached the reference values (Germany, Poland, and The Netherlands). Vitamin B₆ and vitamin B₁₂ intake were above the recommendations of the D-A-CH in all countries. The intake of folate equivalents was between 109 and 428 μ g/day. Only 10- to 14-year-old children from Portugal met the reference intake values [D-A-CH, 2000]. The sodium intake, in form of sodium chloride, was above the recommendations in all countries [WHO, 2003]. The recommendations for calcium intake were better met by younger children. It was especially low in Austrian and Polish children. Intake of iron was sufficient for boys and girls aged up to 10 years but very much below the D-A-CH recommendations in girls from 10 to 14 years apart from Portuguese girls aged 13. For zinc, the recommendations [D-A-CH, 2000] were generally better met in younger age groups and in boys.

Adolescents

The intake of energy was between 9.5 and 14.5 MJ/day in male adolescents and between 6.8 and 9.7 MJ/day in female adolescents and therefore in general below the reference intake values [D-A-CH, 2000]. The share of protein in total energy intake (12.4–17.8%E in male and 12.0–18.0%E in female adolescents) was within or slightly above the recommended range whereas for carbohydrates, it was in general lower than the recommendation (39.7–57.0%E in male and 38.6–57.0%E in female adolescents) [WHO, 2003 and 2007]. Fat contributed 28.0–40.4% and 25.5–41.9% of total energy in male and female adolescents, respectively. The fatty acid pattern was unfavorable; the intake of saturated fatty acids was above the recommendation in every country and in both genders, whereas the intake of polyunsaturated fatty acids was below the recommendation [WHO, 2003 and 2009b] in most of the participating countries. In most participating countries, the intake levels of retinol equivalents, vitamin D, α -tocopherol equivalents and folate equivalents were below the recommendations [D-A-CH, 2000]. The intake of calcium, magnesium as well as the intake of iron and iodine in female adolescents was in general lower whereas the intake of sodium was higher than the recommendations in both genders [D-A-CH, 2000; Eurodiet, 2000].

Adults

Daily energy intake was between 8.5 and 13.9 MJ in men and between 6.3 and 11.4 MJ in women. In most of the participating countries, it was below the reference values [D-A-CH, 2000]. Protein intake amounted to 13.5–18.5%E in men and 13.1–19.3%E

in women and, thus, was within or slightly above the recommended range [WHO, 2003]. Carbohydrates contributed 36.8 and 51.0% of total energy intake in men and between 37.7 and 51.8%E in women. In most of the participating countries, fat intake was above the recommended range (28.4–45.0%E in men and 29.9–47.2%E in women) and in general, the fatty acid pattern did not meet the recommendations [WHO, 2003 and 2009] either. Intake of most vitamins was within the recommendations except for vitamin D, α -tocopherol equivalents and folate equivalents for which the reference intake levels [D-A-CH, 2000] were not met. In most of the participating countries, intake of calcium, magnesium and iron (women only) was also below the respective recommendations [D-A-CH, 2000].

Elderly

Daily energy intake was between 7.1 and 13.0 MJ in elderly men and between 5.8 and 10.9 MJ in women. Protein intake was in the range of 13.6–19.0%E in men and 13.2–20.0%E in women. The recommended intake level for total carbohydrates of 50–75%E [WHO, 2007] was only met by elderly from Norway and Portugal as well as by female elderly from Finland and Ireland. Fat contributed between 26.7 and 43.9%E in male and between 28.0 and 45.3%E in female elderly and was therefore in general above the recommendation [WHO, 2003]. As was the case with adults, the intake was below the respective recommendations for vitamin D, α -tocopherol equivalents and folate equivalents as well as calcium, magnesium and iron (women only) [D-A-CH, 2000; Eurodiet, 2000].

Indicators of Health Status in Europe

Overweight and obesity are a major health threat in the European Union. It already affects children, in whom prevalence reaches up to 36% in 10- to 14-year-old Spanish girls and 7- to 9-year-old Italian boys. With increasing age, a gender difference became apparent inasmuch as adolescent girls showed a lower prevalence than their male counterparts. This discrepancy was maintained through adulthood in most countries. 21–37% of women aged 19–64 years were overweight, 7–36% obese. For men, the respective ranges were 35–54 and 6–29%. The highest prevalence of both, overweight and obesity was found in Greek women and in Cypriot men. Taken together, overweight and obesity affected as much as 73% of women and 83% of men in these two countries. In all participating countries, mean body mass index (BMI) exceeded the range of 21–23 kg/m² recommended as optimal by the WHO [WHO, 2000; WHO, 2003] with highest values found in Greek women and Lithuanian men. BMI of elderly was higher than in younger adults. However, according to the higher cut-off points for overweight recommended for this population, mean BMI was within the reference range of 24–29 kg/m² except in Greek women and Austrian men. These two countries also showed the highest prevalence of overweight and obesity for the respective gender. No marked regional differences were observed in any age group.

Data on blood lipids were available for adults and elderly from 8 and 6 countries, respectively. In most countries and collectives, total as well as LDL cholesterol concentrations exceeded the reference levels of <5 and <3 mmol/l, respectively. Total cholesterol was within the reference in Greek, Spanish and British adults of both genders (the latter aged 19–34 years), as well as in Romanian men \geq 19 years and Finnish men \geq 65 years. For LDL cholesterol levels, this was only the case in Lithuanian women aged 19–64 years. HDL cholesterol levels were above the reference value of >1 and 1.2 mmol/l for men and women, respectively. Triglyceride levels exceeded the reference value in 19- to 64-year-old Portuguese and Lithuanian men and Romanians of both genders. The atherogenic quotient (given as total cholesterol/HDL-cholesterol) was within the reference range [Graham et al., 2007].

Data on mortality were obtained from the European Health for All database of the WHO [WHO, 2009a] and was available from ten European countries for 2007. In women, total mortality rate was highest in Latvia (777 deaths/100,000 women alive), followed by Romania and Lithuania (764 and 731 deaths/100,000 women alive, respectively) and lowest in Finland and Austria (445 and 448 deaths/100,000 women alive). In men, the highest total mortality rate was observed in Lithuania with 1,621 deaths/100,000 men alive, followed by Latvia and Romania (1,565 and 1,242 deaths/100,000 men alive), the lowest in The Netherlands and the United Kingdom (708 and 712 deaths/100,000 men alive). Mortality rate were always higher in men than in women.

Most death cases were attributable to cardiovascular diseases (CVD) and malignant neoplasms (MN). Latvia, Lithuania and Romania showed the highest mortality rates from CVD, The Netherlands the lowest. For MN, it was highest in Lithuania and Latvia for men and in the Czech Republic and the UK for women. Greece and Finland showed the lowest MN mortality rates in women, Austria and Finland in men. Mortality from both causes was higher in men than in women.

Data on incidence of malignant neoplasms (MN) in 24 European countries was obtained from the GLOBOCAN database 2002 [Ferlay et al., 2004] from the International Agency for Research on Cancer in Lyon (IARC). Denmark followed by Germany and Sweden had the highest incidence of MN from all sites except skin in women (496, 467 and 464 new cases/100,000 inhabitants, respectively), Italy followed by Belgium and Hungary in men (586, 585 and 560 new cases/100,000 inhabitants, respectively). Romania had the lowest incidences for both genders (243 and 297 new cases/100,000 inhabitants, respectively). MN incidence was higher in men than women in all countries but Denmark.

In men, cancers of the lung and prostate were most common, breast cancer in women. MN affected men to a higher degree than women, especially in the case of lung cancer. Incidence of MN of the colon and rectum and the stomach was more comparable in both genders.

Data on the prevalence of diabetes mellitus (DM) of type I and II in 25 European countries in 2007 was obtained from the International Diabetes Federation (IDF)

[IDE, 2006]. It was highest in Cyprus, affecting 8.9% of the total population. In turn, the UK and Norway had the lowest prevalence with 2.9 and 3.5% of the total population, respectively. The rest of the countries could be separated in two blocs, one regrouping countries with a DM prevalence between 5.1 and 5.9% of the total population, the other countries showing a higher prevalence between 7.6 and 7.9%.

Data on smoking behavior of young, middle-aged and elderly adults of both genders were available from 15–17 countries across Europe. Generally, more smokers were found among men than women. Highest numbers of smokers were observed in young adult men with the maximum value seen in Greece (57.8%). With age, the proportion of smokers decreased while that of ex-smokers increased in most countries. However, in Denmark adherence to smoking was constant across all age groups.

Alcohol consumption was below the respective recommended maximum intake levels of 10 and 20 g/day for women and men in most of the 14 European countries for which data were available. Elderly Danish women and Portuguese men showed the highest consumption with 14.0 and 31.8 g/day, respectively. High proportions of alcohol abstainers among adults and elderly were found in Romania and Lithuania.

In 2004, the highest percentages for respondents never engaging in physical activity were found in Portugal (66%), Hungary (60%), and Italy (58%). The lowest rates were identified in Finland (4%), Sweden (7%), and Denmark (17%). These results confirm the prevalent North-South gradient in regard to leisure-time physical activity in European nations. Age and educational attainment of respondents were also related to the engagement in exercise and sport.

The rate of initiation of breastfeeding was almost 100% in Norway, Lithuania, Sweden, and Denmark. Ireland was the only country with less than half (46%) of mothers beginning to breastfeed their newborn in the most recent survey.

The North region reached the highest rates in the categories initiation of breastfeeding and breastfeeding at the ages of 6 and 12 months. The Central and East region had the highest values for exclusive breastfeeding at the age of 6 months and the second highest in all other categories. Overall, the West region had the lowest rates and the South region the second lowest. Mother's milk alone provides all the nutrients an infant needs during the first 6 months of life. Hence, it is the ideal nourishment for this age group and no additional liquid or solid food is needed.

Food and Nutrition Policies in Countries of the European Union

The inclusion of a chapter addressing Food and Nutrition Policy (FNP) across Europe in the edition of ENHR 2009 highlights the importance of this topic and its potential impact on the nutritional and health status of European citizens. The development of policies addressing food and nutrition in Europe has, in general, shifted from a focus on providing the general population with secure and sufficient amounts of food to interventions related to food safety and the prevention of nutrition-related health problems.

The objective of this present analysis was to summarize the actions of FNPs currently carried out in countries participating in the ENHR 2009, with special attention to initiatives addressing food fortification and food-based dietary guidelines (FBDG).

A questionnaire incorporating expert feedback was sent to the participating countries. Only the information provided by the partners who responded was included in this report.

Twenty-one of 25 countries provided data about FNP in their countries. All of them had a specific policy document on food and nutrition or various nutrition-related programs (except Ireland). Intersectorial collaboration was the foundation of developing the FNP in most of the countries, with the lead institution commonly being a Government Ministry. A coordination mechanism existed in all countries except Hungary, Poland and Sweden. FBDG comprised a policy implementation tool existing in all participating countries except for Ireland and Slovenia. Most countries reported a periodical revision of their FBDG and for certain countries, FBDGs were the result of intersectorial collaborations between several institutions. The pyramid was the graphic most countries applied to represent their FBDG. Other countries included specific written guidelines, tables, recommendations or other graphical representations. Mandatory food fortification with iodine in salt was reported in Austria, the Czech Republic, Denmark, Finland, Lithuania, Poland, Romania and Slovenia. In Finland and Sweden fortification of margarine with vitamin D and A, and vitamin D in milk products was mandatory. In Hungary and Austria the fortification (vitamins and minerals) of certain baby products, infant formulas, formulas for special medical treatment and special formulas for obesity treatment had mandatory fortification requirements. The fortification of certain foods was recommended in Hungary, The Netherlands, and Spain.

Conclusions

An optimal FNP should comprehend issues related to nutrition and health, food safety and food production. All participating countries had strategies addressing the main areas of interest related to health and nutrition. However, in some cases these did not constitute a 'real' policy as actions were not issued by a single body and were distributed throughout a variety of distinct documents. The extension and coordination between relevant sectors involved in FNP development, coordination and implementation need further attention. There is also a need for coordinated management of nutritional data for their application in planning and evaluation, such as in the establishment of appropriate indicators to gauge the degree of policy implementation and effectiveness, or in the identification of areas where an intervention is required.