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Food-Based Dietary Guidelines – development of a conceptual framework for future Food-Based Dietary Guidelines in Europe: report of a Federation of European Nutrition Societies Task-Force Workshop in Copenhagen, 12–13 March 2018

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Abstract

Identifying a need for developing a conceptual framework for the future development of Food-Based Dietary Guidelines (FBDG) in Europe, The Federation of European Nutrition Societies established a Task Force for this purpose. A workshop was held with the specific objective to discuss the various dimensions considered as particularly relevant. Existing frameworks for FBDG were discussed, and presentations from various countries illustrated not only several commonalities but also a high degree of heterogeneity in the guidelines from different countries. Environmental aspects were considered in several countries, and dimensions like food safety, dietary habits and preparation were included in others. The workshop provided an overview of the use of FBDG – both in developing front-of-pack nutrition labels and for reformulation and innovation. The European FBDG dimensions were described with examples from the close connection between FBDG and European Union (EU) policies and activities and from the compilation of a database of national FBDG. Also, the challenges with communication of FBDG were discussed. Considering the current scientific basis and the experiences from several countries, the Task Force discussed the various dimensions of developing FBDG and concluded that environmental aspects should be included in the future conceptual framework for FBDG. A change in terminology to sustainable FBDG (SFBDG) could reflect this. The Task Force concluded that further work needs to be done exploring current practice, existing methodologies and the future prospects for incorporating other relevant dimensions into a future Federation of European Nutrition Societies conceptual framework for SFBDG in Europe and working groups were formed to address that.

Key words: Sustainability: Use of Food-Based Dietary Guidelines: Communication: Dimensions of Food-Based Dietary Guidelines

Abbreviations: EU, European Union; FBDG, Food-Based Dietary Guidelines; FENS, Federation of European Nutrition Societies.

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The term Food-Based Dietary Guidelines (FBDG) traditionally refer to advice on dietary intake to promote health, prevent chronic disease and ensure that the general population has a diet that provides the nutrients required for health. FBDG also establish a basis for public food and nutrition, health and agricultural policies and nutrition education programmes to encourage healthy eating habits and lifestyles. FBDG were thus developed to ensure coverage of nutrient requirements for all. If adhered to, FBDG have dietary and health implications, and they may also affect and be affected by other dimensions in daily practices for the individual and for the community and at societal level through food production systems and through environment impact. Especially the links between health, diet, food production and environmental impact and the systems approach to foods from the EAT Lancet commission⁽¹⁾ have received renewed attention.

The need for establishing FBDG for each region, accepted at country level, is well recognised in Europe. Since 2010, the European Food Safety Authority (EFSA) opinion on the scientific process of developing FBDG⁽²⁾ has been available as a principal document and guide for national expert panels and FBDG issuing institutions. However, it is unknown if the scientific process has been followed by different national expert groups in Europe in recent years.

The Federation of European Nutrition Societies (FENS www.fensnutrition.eu) is a European non-profit organisation composed of national nutrition societies and organisations. One aim of FENS is to coordinate the activities of the nutrition societies and to promote and disseminate research and knowledge to facilitate further nutrition learning. Among its different activities, FENS identified the needs for supporting especially the Eastern European countries in building up capacities in nutritional science in general and in establishing FBDG.

In October 2016, the board members of FENS met with groups from South East Europe in Belgrade, hosted by the Serbian Nutrition Society, with the intention to support Eastern European countries to build further capacity in nutritional science and to establish FBDG for the countries in the region. At this meeting, it became clear that a framework for the development of FBDG considering the dimensions and needs for the future is not available and that there is a need for a conceptual framework for the future development of FBDG that also considers the multidimensional nature of such guidelines. FENS therefore established a Task Force to develop a general conceptual framework for the future development of FBDG in Europe. The first task was to collect and evaluate current national experiences with FBDG.

A first meeting of the Task Force took place in Brussels in September 2017, organised by the Belgium Nutrition Society where presentations of a number of FBDG from throughout Europe were shared. A second workshop took place on 12–13 March 2018 in Copenhagen, organised by the Danish Nutrition Society and the Department of Nutrition, Exercise and Sports, University of Copenhagen. This workshop was a 2 d event with around fifty participants and a total of fifteen presentations covering important topics associated with the development of FBDG. A specific objective of the workshop was to discuss the specific dimensions in relation to FBDG that are considered

particularly relevant for the development of future FBDG in Europe. Thus, we decided to summarise the main points presented at the meeting for a wider audience.

Approaches to development of Food-Based Dietary Guidelines

Professor Inge Tetens opened the oral presentations with an overview of the recent history of FBDG. She underlined the importance of the International Conference on Nutrition in 1992, where a global Plan of Action for Nutrition was adopted⁽³⁾ with the key point that each country has the responsibility for preparing its own national plans of action, which implies development of dietary guidelines for healthy diets. The Plan of Action for Nutrition marked an important change from policies dictated by numbers to policies focusing on prevailing public health nutrition problems. Following a joint consultation, FAO and WHO published a report on the preparation and use of FBDG in 1998⁽⁴⁾. This report describes some key considerations for the derivation of FBDG and an eight-step process for the development of FBDG, including the need for a cross-disciplinary committee, identification of relevant nutrition-related health problems and reviewing and testing with consumer groups. Some 10 years later, after request from the European Commission, the EFSA provided an opinion on the scientific process of developing FBDG⁽²⁾. EFSA proposed a seven-step approach including identification of diet–health relationships, nutrients of public health concern, food patterns and the importance of graphical representation.

An example on the process of updating the FBDG in Denmark from 2011 to 2013 was provided. In short, an expert group under the auspices of The Danish Veterinary and Food Administration assessed the scientific evidence for the update of FBDG. The expert group attempted to use the EFSA approach, but after careful considerations agreed to use a mix of approaches with more focus on the scientific evidence on dietary patterns and food intake in relation to relevant health outcomes⁽⁵⁾, borrowing the then recent results of similar work in Norway⁽⁶⁾.

A status of current FBDG in Europe showed that out of fifty-one screened countries, a total of thirty-four countries had their own national FBDG^(7,8). Current FBDG had many similarities in the content but also many differences, not least in the communication parts⁽⁸⁾.

Professor Daan Kromhout gave an overview of the development and the approaches used for setting the FBDG in the Netherlands from 1986 through 2006 and 2015. He described how the approach had gone from a focus on nutrients to foods and food patterns. With the example of the latest update of the Dutch FBDG in 2015, the development process started with the establishment of an independent committee of experts installed by the Health Council of the Netherlands. The committee work took a starting point in the top ten chronic diseases linked with morbidity and mortality considered the most important for the Netherlands. The committee selected also three causal risk factors of CVD and diabetes: blood pressure, LDL-cholesterol and body weight. The next step was the use of meta-analyses of



prospective cohort studies and randomised controlled trials to identify the scientific evidence of the relationships of nutrients, foods and food patterns with chronic diseases⁽⁹⁾. Only findings with a strong level of scientific evidence were accepted as background for the guidelines. Convincing evidence was based on evidence from experimental studies (randomised controlled trials) either or not in combination with strong evidence from prospective cohort studies. The Dutch FBDG 2015 were formulated into a general guideline to eat a more plant food-based dietary pattern and limit consumption of animal-based food together with fifteen specific guidelines⁽⁹⁾.

For many years, the Health Council provided dietary advice for healthy nutrition. But to what extent is a healthy diet also a sustainable one? In 2011, an advisory report was published with an emphasis on ecological aspects of the rather wide-ranging concept of sustainability⁽¹⁰⁾. The aim of the report was to support government in developing policy for a healthful and eco-friendly diet. Ecological effects are linked to essential ecosystem services such as provision of food, fuel and climate regulation. With regard to the effects of human diet, the choice of ecological indicators generally has little influence on the conclusions. This is because such ecologic indicators as biodiversity, land use and greenhouse gas emissions, disturbances in the nitrogen and phosphate cycles, water use and soil quality are strongly interrelated. The principal cause of this interrelatedness is that in food provision, production of animal protein, in particular, imposes heavy ecological burden. The Health Council recommended for healthful and sustainable diets: Eat more plant food and less animal food, eat sustainable fish, if overweight eat less non-basic foods and reduce food waste.

Another example of a different process for developing FBDG was provided from Sweden by nutritionist Asa Brugard Konde, The Swedish National Food Agency. Traditionally, FBDG in Sweden had been based on the Nordic Nutrition Recommendations, but in the development of the latest update of the Swedish FBDG launched in 2015, a more holistic approach was taken. To take into account sustainable development environment aspects, the working group responsible for updating the FBDG took the view that the consumers should not have to select foods either for health or for environmental reasons – but be able to choose foods that take both aspects into account⁽¹¹⁾. The Swedish FBDG thus became the first set of European FBDG that included environmental aspects. Further aspects that were considered important in the development of the recent Swedish FBDG was food safety and the consumer and communication perspective. The Swedish FBDG ‘Find your way’ are communicated in a document presenting different ways of obtaining a healthy diet so that everyone can find what suits him or her best.

Dr Quenia dos Santos gave an overview of the development of FBDG in Brazil where yet further dimensions were considered in the development process. She highlighted that the Brazilian population in a relatively short period of time has moved from a nutritional situation with primarily undernutrition to a situation where obesity has become the major health issue⁽¹²⁾, mainly related to a higher access to new foods, such as processed and ultra-processed foods, and changes in lifestyles. At the same time, there has been an increasing awareness of the importance

of other aspects than nutrients to healthy diets. A further important point for the development of the current FBDG was that the general Brazilian population found it difficult to follow the previous dietary guidelines mainly due to lower ability to understand and interpret portion sizes and nutrient recommendations.

Quenia dos Santos described the six-step Brazilian process behind the recent Brazilian FBDGs 2014 initiated by the Ministry of Health in partnership with Center for Epidemiological Research in Nutrition and Health of the University of São Paulo (NUPENS/USP) and the Pan-American Health Organization⁽¹³⁾. The guidelines followed the five principles that (1) diets are more than intake of nutrient, (2) dietary guidance needs to be tuned to their times, (3) healthy food derives from socially and environmentally sustainable food systems, (4) different sources of knowledge contribute to dietary advice and (5) dietary guidelines broaden autonomy in food choices. During the development process, special emphasis was given to the choice of individual foods. The golden rule of the guidelines was that natural or minimally processed foods and freshly made dishes and meals should always be preferred to ultra-processed foods. The Brazilian FBDG uses the NOVA classification system, a system that classifies food according to the extent and the purpose of the process they undergo^(14–16). As well as the FBDG, several studies have adopted the NOVA food classification to assess the impact of consumption or sales of ultra-processed products, such as studies in Canada⁽¹⁷⁾, UK⁽¹⁸⁾, New Zealand⁽¹⁹⁾, Sweden⁽²⁰⁾, France⁽²¹⁾, among others.

The overview of the development of the Brazilian guidelines showed a case from outside Europe where other dimensions but the food–nutrition–health aspects were included. With a starting point that an adequate and healthy diet is a basic human right, emphasis was also placed to environmental aspects, the food choice and preparation aspects and finally, also the communication part with the clear goal that the guidelines should be understandable to everyone in the general public.

The use of Food-Based Dietary Guidelines

Dr Chantal Julia presented the development and validation of the French front-of-pack nutrition label Nutri-Score. While the first front-of-pack label developed to help consumers make healthier choices appeared in Sweden in late 1980s as a key-hole symbol, the French Nutri-Score system was developed as a complementary science-based nutritional information to the consumers as a colour-coded front-of-pack nutrition labelling system to help them switch from one product with a certain nutrient profile to a better one in the same food category, while maintaining some form of hierarchy between food groups.

The French Nutri-Score system is based on a review of the scientific literature and proposed as a summary label to be used on all foods. It was developed as a five class summary graded coloured summary label. The French Nutri-Score uses a nutrient profile adapted from the British FSA/Ofcom model⁽²²⁾, taking into account seven nutrients gathered into one summary score including nutrients considered disadvantageous (energy, sugars, saturated fats, Na) and nutrients considered beneficial for health (fibre, protein, percentage of fruit, vegetables legumes and nuts).

The final overall score is associated with a letter, from A to E, and a colour from green to red. The calculation of the Nutri-Score was found in validation studies to be replicable in the food market since the information needed are mainly mandatory on the packaging⁽²³⁾. The calculation of the Nutri-Score is the same for all food groups, with the exception of added fats, cheese and beverages. The Nutri-Score takes into account only the nutritional composition of the food, and not other dimensions of the food.

The Nutri-Score was shown to be perceived as easy to identify and understand, quick to process and associated with an improvement in consumer understanding of products quality compared with other labels. In a comparative experimental study and large-scale trial, the Nutri-Score was found to lead to a higher overall nutritional quality of purchases, even in disadvantaged groups⁽²⁴⁾. Chantal Julia informed the audience that today (as of 2018), thirty-three companies were engaged with the Nutri-Score and pledged to use the label on their products.

Dr Undine Lehmann gave an industrial view of how FBDG are used as a tool to shape decision making when it comes to reformulation and innovation of individual food product. She gave examples of the different steps that Nestlé may take from nutrients and ingredients in a single product to the guidance of consumers on recommended portions within a whole diet. Undine Lehmann stressed how FBDG are central for innovation and reformulation through a science-based nutrient profiling scheme where tangible product targets are set up per product category and per serving⁽²⁵⁾.

One of the issues that the industry is facing in their development of healthier food products is the lack of harmonisation in the communication of FBDG across countries. An example was given for the D-A-C-H countries (Germany, Austria, Switzerland) that all refer to the same nutrient reference values but use different guidelines on individual foods such as juice, legumes and eggs⁽²⁶⁾. Undine Lehmann underlined that the process for reformulation, and food product innovation often is quite a long process. One of the issues that industry depends on in their development of information on the packaging is the need for strong dietary intake data – and the access to representative dietary data. The current situation is mainly set up for adults, but industry is interested in specific FBDG for other population group such as elderly and children.

The process of updating Food-Based Dietary Guidelines

Testing and optimising FBDG is one of the FBDG construction steps as described by EFSA⁽²⁾. Dr Caroline Van Rossum described how the development of Dutch FBDG has moved from a previous iterative process with experts conducting a trial and error exercise until the optimal dietary patterns satisfied the selected criteria to a computerised approach where the diet optimisation occurs through a mathematical approach. The different steps in this latter process included: identification of target groups; setting constraints food groups, nutrients and energy; determining nutrient compositions and criteria for food groups and performing calculations with a linear programming method to define an 'optimal diet' with certain criteria and a set of constraints. The

constraints took into account the health effects as described in 2015 Dutch guidelines by Kromhout *et al.*⁽⁹⁾, environmental impact⁽¹⁰⁾, feasibility (based on current consumption)^(27–29) and the dietary reference values for nutrients and energy. An important aspect in the optimisation method was the requirement that the optimised diet should not deviate substantially from the current habitual diet. Thus, the mathematical process requires high-quality data on habitual dietary intake of the various consumer groups and food composition data. In addition, sustainability aspects were taken into account. The 'optimal diets' were developed for different age and sex target groups and for groups with specific food preferences. Based on these modelling results together with input from experts, recommendations for every population group were set. Advice from external scientists, dietitians and consumers was taken into account throughout the whole process. Details of the process and the outcome were recently published⁽³⁰⁾.

Caroline Van Rossum reported some issues occurring in relation to some target groups or large gaps between optimised dietary patterns for different age groups. It took several modifications of the modelling before the 'optimal diet' could be translated into FBDG. The translation also included expert judgement. She also recognised that even though the mathematical modelling is considered objective, subjective choices remain to be taken. Thus, a mathematical approach is not perfect but adds a value and enables taking into account a large number of parameters.

In 2016, a working group was formed by the German Nutrition Society with the request to replace the former FBDG that dated back to the beginning of the second millennium. Professor Heiner Boeing reported that it became clear from the beginning of the work that this new German FBDG will consider various dimensions of food consumption as discussed at the FENS meeting in Copenhagen. This results in a complex decision process because measures representing the dimensions need to be identified, databases for values regarding the different foods searched and a weighting scheme developed across the measures that defines the importance of each dimension for the final decision-making process.

Further thoughts regarding the food classification system were discussed. Several arguments call for the use of a food classification system that is in use for describing food intake. In essence, FBDG need to be linked to dietary intake data. Intake monitoring data could be used to evaluate the effectiveness of the guidelines. In most European countries, national nutrition surveys exist that use the food classification of EFSA. This food classification system, as well as others being in use for national surveys, has a clear hierarchical structure, with main food groups and subsequent subgroups (seven levels for the recent foodex2 classification of EFSA). Each food, given by the study participant with its original name at the survey, is recorded in the database with the lowest food classification level possible. Level by level, the intake is summarised, leading to the final intake quantities of the main food groups. Similarly, food dimensions need to be structured according to the levels and should assure the same consistency as with intake: a measure for a food group of higher level is initially valid for all subgroups of lower level if not otherwise specified and measures on a lower

subgroup level is making up the (weighted) measure of the higher group. It is currently not clear if existing data on the various food dimensions are in line with such rules of consistency.

Taking dimensions and hierarchical food grouping together, the new German Food-Based Dietary Guidelines are following a matrix approach, with rules that could be translated into a statistical program. The search for such a program is underway.

The European dimension to Food-Based Dietary Guidelines

Dr Stephanie Bodenbach gave an overview of the European Commission's role in relation to EU policies and activities in the area of food and healthy diet. A division can be made with respect to the regulatory activities concerning food laws on mandatory food information to consumers⁽³¹⁾ and about nutrition and health claims⁽³²⁾ which all allow citizens to make their own dietary choices and the non-regulatory activities related to health which takes a starting point in the White Paper from 2007 on a Strategy for Europe on Nutrition, Overweight and Obesity-related health issues⁽³³⁾. The non-regulatory activities include nutrition strategies, reformulation and campaigns aimed at improving nutrient content of manufactured foods in the EU.

An example of a non-regulatory activity was provided in the EU Framework for National Salt Initiatives from 2008 and initiatives on selected nutrients from 2011. Common health-related activities are challenged because many European countries have different national policies. A continuous relevant activity is therefore to keep individual countries informed about what is done abroad and about promotion campaigns such as for physical activity or a limited salt consumption. Stephanie Bodenbach also underlined that since FBDG are not similar between countries, it is not possible to consider common community actions.

Dr Stefan Storcksdieck genannt Bonsmann presented an overview of the work conducted by the European Commission's Joint Research Centre in compiling and comparing FBDG in the EU-28 plus Norway and Switzerland. All 30 countries were found to have their own national FBDG, which exhibit certain commonalities and differences as described in Table 1. Several countries highlight the particular importance of cutting

down on added sugars and saturated and *trans*-fats. As for the commonalities, FBDG are typically developed by health ministries or related public health organisations and targeted at the healthy adult population; several countries also offer specific FBDG for subpopulations such as children, pregnant women or the elderly. Almost all FBDG advocate dietary variety, recommend physical activity and have pictorials to support their advice; pyramids are by far the most common pictorial design. In some cases, social or environmental aspects and hygienic kitchen practices are mentioned. Whilst most FBDG offer guidance on how to reduce the intake of sugars, fat and salt, this is sometimes done in connection with foods rich in these nutrients, sometimes with modes of food preparation.

Other differences relate to how foods are grouped (e.g. potatoes are sometimes included with starchy foods and sometimes in the vegetable group) and how the advice is phrased (qualitative or quantitative terms, measuring units, etc.). The Joint Research Centre's FBDG compilation (now also including Iceland), validated through review by designated experts from all thirty-one countries, is freely available at the Health Promotion and Disease Prevention Knowledge Gateway (<https://ec.europa.eu/jrc/en/health-knowledge-gateway/promotion-prevention/nutrition/food-based-dietary-guidelines>) where interested parties can request access to the database in Excel and Access format. In the Knowledge Gateway, Table 19 provides a summary of FBDG guidance on sustainability.

The scientific concepts and methodologies in the development of European FBDG are discussed in the EFSA scientific opinion on developing FBDG⁽²⁾ and in a recent scientific review⁽³⁴⁾.

Dr Christopher A. Birt summarised the work conducted as part of the European Public Health Association, Section for Food and Health on the public health significance of sustainable health nutrition which resulted in a report, outlining certain criteria for sustainable healthy diets. The working group also considered the opportunities of implementing such sustainable healthy diets via the EU Common Agricultural Policy which was created in the 1960s since has provided massive subsidies for production of certain foods which encourages their production and consumption. As a result, Christopher Birt pointed out that Common Agricultural Policy could represent a major tool in

Table 1. Examples of commonalities and differences observed across national Food-Based Dietary Guidelines (FBDG) in the EU28 plus Norway and Switzerland*

Commonalities	Differences
Dietary variety	Format of consumption advice
Water as the beverage of choice	Given in qualitative or quantitative terms
Advice to eat less sugars, salt, fat	Quantities deemed appropriate
partly presented in connection with foods (e.g. sweets, confectionery, pastry, soft drinks, crisps and other salted snacks)	Phrasing of quantitative recommendations (in weight, volume, or servings, per d, week, or month, etc.)
partly with food preparation (choose low-fat cooking techniques; use herbs and spices instead of salt; do not add sugar to tea or coffee)	Grouping of foods or food items
Advice to be physically active	Some consider potatoes under starchy foods, whereas others group them together with fruit and vegetables
Pictorials to illustrate advice	Some fit nuts and seeds together with fats and oils, others group them with protein-rich foods and yet others grant them their own category

* The wording in the table is a description of what is written in the national FBDG.





promoting a sustainable and healthy diet in the EU and summarised that a sustainable and healthy diet has to meet different criteria such as food security, reasonable price, production of healthy foods, animal and worker welfare and environment sustainability. Until now, Common Agricultural Policy has contributed to overconsumption of fat-rich beef and dairy products, and subsidies need to favour more plant-based foods, including vegetables and fruits, and importantly, the whole food chain needs to be considered in the process.

Food-Based Dietary Guidelines – communication aspects

Some of the communication considerations and experiences around the development process of FBDG were addressed by Ms Trine Grønlund who had chaired the independent working group on communication as part of the update of the Danish FBDG from 2011 to 2013. The group was established following the EFSA opinion that advised taking testing and optimising of FBDG together with the graphical representations into account in the development process⁽²⁾. The working group consisted of participants from several private and public organisations who were responsible for and/or had experience in communicating about healthy eating and the group used a professional communication agency.

One of the starting points in the working group was that the new FBDG and messages should be expressed more positively than before since this was better accepted by consumers. Through studies of consumer understanding, it was found that the number of portions and drawings should not be applied since they were less well perceived by the population. Trine Grønlund described how the working group took into account that the intended target for FBDG include both professionals, the media in general and the consumers and that professionals and media were found to be more likely to disseminate knowledge and to apply the guidelines at the wider scale. Thus, the consumers are likely to get informed via the media.

The challenges in the communication around FBDG were also addressed by Dr Milka Sokolović who asked if 'in passing the message to people we get lost in translation'? She reminded the audience that communication to the public – such that it ensures understanding, uptake and use of FBDG – is a key aspect of effective public policies.

For the messages to be passed to and accepted by the consumers, the communication around FBDG should be a joint responsibility of public health authorities and nutrition scientists. To ensure that science is properly translated and that messages include all relevant aspects of healthy and sustainable diets, the communication panels should also consider views of behaviour scientists, psychologists, environmental scientists, urban planners, educators and communicators. In developing key messages, the focus should be on their clarity, simplicity and actionability, followed by selecting the right channels and formats for reaching different target audiences.

In the digital world of today, the emphasis should also be put on being where the discussion happens, on talking with and not at people and on scientists becoming 'one of us' (for which, capacity building and communication training should be

considered). If done well, communication can prove instrumental in counteracting the overwhelming misinformation in the (digital) media and in regaining trust in nutrition science.

Workshop conclusions and the way forward

Among the workshop participants, there was a general agreement that easier access to data, new tools and methodologies have widened the possibility to include more dimensions in the development of future FBDG. The environmental sustainability is one example where a considerable change has appeared within a relatively short term, and several examples from the workshop showed how the concept has been implemented in the development of FBDG as sustainable FBDG. There was also a general agreement that harmonisation in the approaches, methodologies and scientific basis would benefit the way forward and that it is time for a new conceptual framework for the development of FBDG where different dimensions that had been highlighted at the meeting could be taken into consideration.

The Task Force agreed that the future terminology for FBDG should be replaced by sustainable FBDG to ensure that the sustainability dimension becomes highly visible. The overall concept of sustainable FBDG and the development should encompass a holistic dynamic process that needs to be based on a comprehensive overview of the scientific evidence of the relationship between the environment, dietary patterns and health in combination with the broader societal considerations and concerns.

The Task Force concluded that further work needs to be done. It was agreed that the following dimensions should have priority in the further development of the future conceptual framework for FBDG: (1) the scientific evidence for the relationship between nutrients, foods and dietary patterns, including food safety aspects; (2) environmental issues related to diet and health; (3) social, cultural, ethical and economic aspects of diet and health relationships; (4) the methodological aspects and integration of all dimensions into a comprehensive framework structure and (5) communication and dissemination. Five working groups were established to further address these major dimensions by exploring current practice, existing methodologies and the future prospects for incorporating these dimensions into a future FENS conceptual framework for sustainable FBDG in Europe.

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