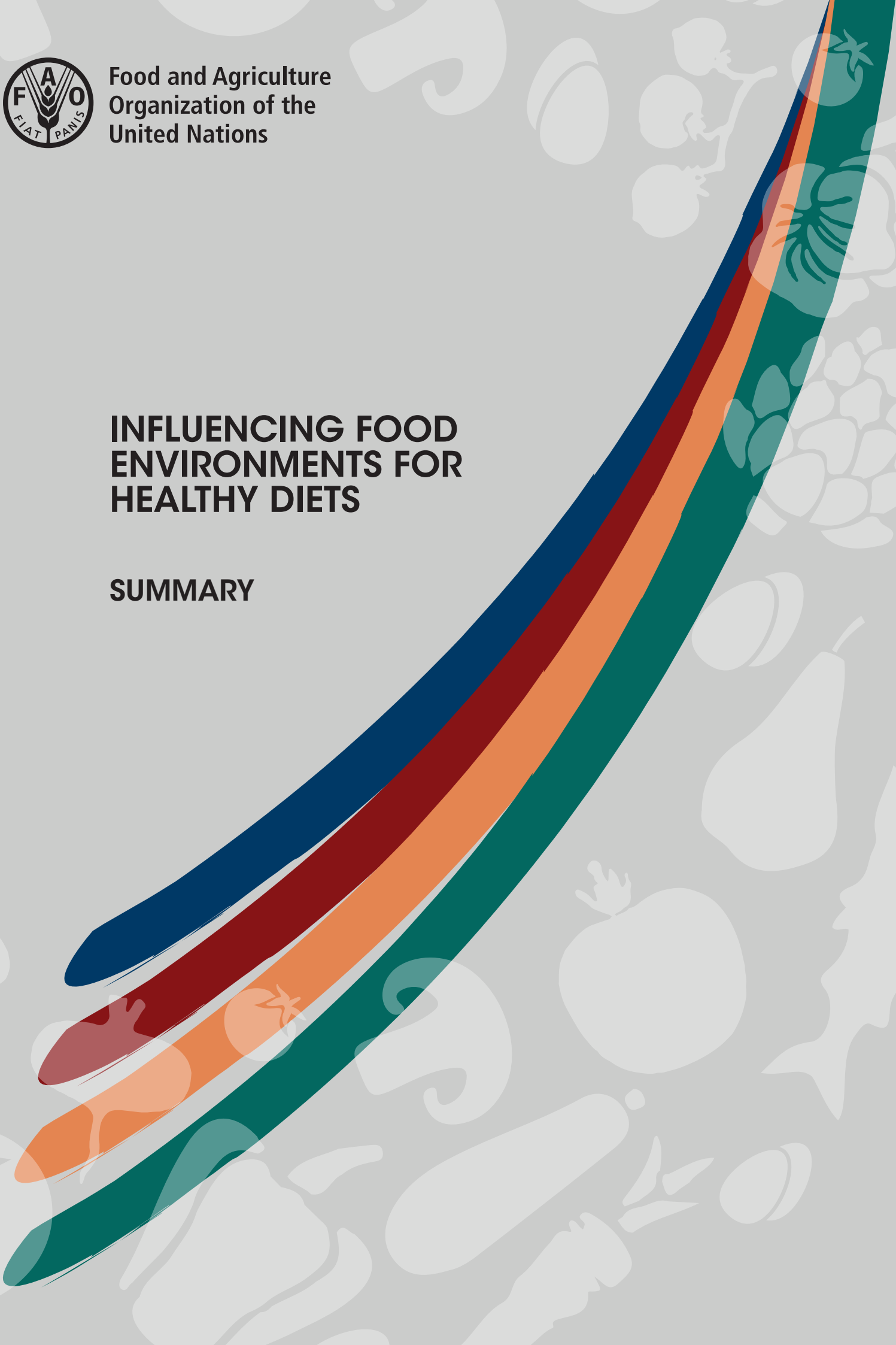




Food and Agriculture  
Organization of the  
United Nations

# INFLUENCING FOOD ENVIRONMENTS FOR HEALTHY DIETS

## SUMMARY





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## SUMMARY

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

Rome, 2016

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# INFLUENCING FOOD ENVIRONMENTS FOR HEALTHY DIETS

## INTRODUCTION

Food environments are usually defined as the settings with all the different types of food made available and accessible to people as they go about their daily lives. That is, the range of food in supermarkets, small retail outlets, wet markets, street food stalls, coffee shops, tea houses, school canteens, restaurants, and all the other venues where people buy and eat food. These environments differ enormously depending on the context. They can be extensive and diverse, with a seemingly endless array of options and price ranges, or they can be sparse, with very few options on offer. Because they determine what food consumers can access at a given moment in time, at what price, and with what degree of convenience, food environments both constrain and prompt the consumer's choice.

Food environments are influenced by the food systems which supply them, and vice versa. Food systems encompass the entire range of activities, people and institutions involved in the production, processing, marketing, consumption and disposal of food (FAO, 2013). They include

but are not limited to food supply chains. Making food systems nutrition-sensitive can contribute to addressing all forms of malnutrition, as food systems determine whether the food needed for good nutrition are available, affordable, acceptable and of adequate quantity and quality. How closely food systems and food environments are interrelated and interdependent, and the degree to which external factors affect nutrition outcomes, varies from setting to setting.

Many of today's food systems and food environments are challenged in supporting consumer choices that are consistent with healthy diets and good nutrition. Consumers are not making choices based on nutrition and health, and poor diet is now the number one risk factor for death and disability worldwide (GBD, 2015). Food systems that do not enable healthy diets are increasingly recognized as an underlying cause of malnutrition (GLOPAN, 2016), and malnutrition, irrespective of form, has a huge cost. Economic costs associated with undernutrition are estimated at \$1-2 trillion per year, about 2-3% of global GDP (FAO, 2013); the global economic cost of obesity and associated diet-related

non-communicable diseases is estimated at \$2 trillion per year, about 2.8% of global GDP (McKinsey, 2014). Influencing food environments for promoting healthy diets is an emerging strategy to address today's nutrition challenges.

## LINKING FOOD SYSTEMS, FOOD ENVIRONMENTS, AND DIETS

Food systems also involve the people and institutions that initiate or inhibit change in the system as well as the socio-political, economic and technological environment in which these activities take place (FAO, 2013).<sup>1</sup>

Food systems are shaped by culture and consumer preferences, as consumer demand affects supply. The values and beliefs underpinning people's choices, influence what kinds

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<sup>1</sup> The High level Panel of Experts (HLPE) definition of food systems also includes socioeconomic and environmental outcomes of food systems: A food system gathers all the elements (environment, people, inputs, processes, infrastructures, institutions, etc.) and activities that relate to the production, processing, distribution, preparation and consumption of food, and the outputs of these activities, including socioeconomic and environmental outcomes. (HLPE 2014)

of food are produced and how they are processed, procured, and eaten. Food choices, however, are also shaped by food systems. The relationship is bi-directional. This two-way street is best viewed at consumer level via **food environments**, which are often described as the “interface” or “link” between food systems and diets.

Herforth and Ahmed describe food environments as the range of food which are available, affordable, convenient and desirable to people in a given context (Herforth and Ahmed, 2015), while Hawkes *et al.* describe the concept as comprised of the everyday prompts which nudge consumers’ food choices in particular directions, and which contribute to

dietary habits and preferences which can have long-term impacts, especially in children (Hawkes *et al.*, 2015). Both of these definitions trace a clear trajectory from food systems to food environments to diet choices, with implications for nutrition.

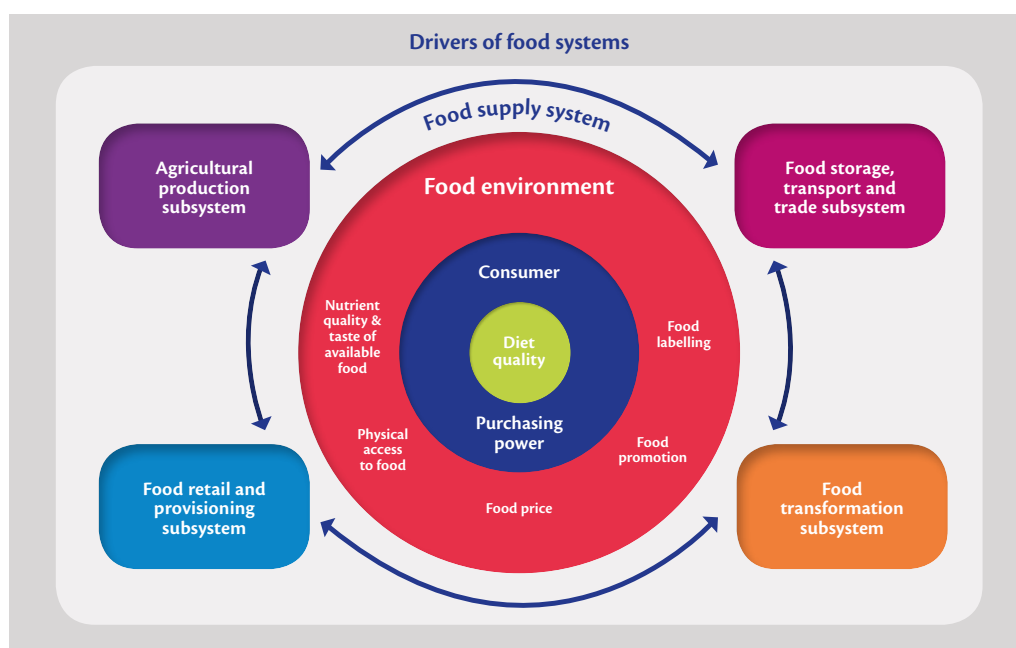
Figure 1 provides a conceptual framework for explaining these and related links between food systems, food environments, consumer choices and diet.

**Four food supply subsystems** comprise the entire “farm to fork” food chain, namely *agricultural production; food storage, transportation, and trade; food transformation; and food retail and provisioning.* These subsystems influence the food environments in which people make their dietary choices.

How each subsystem influences food environments includes but is not limited to:

- *Agricultural production subsystems:* may affect food availability and relative prices via investment agendas, for example by prioritizing a small number of staple cereals over legumes, indigenous grains, and other crops.
- *Food storage and transport subsystems:* may encourage or restrict domestic availability of affordable, nutrient-dense foods through export and import policies or influence toxin and pathogen-borne contamination through food safety regulations.

**Figure 1: Conceptual Framework for the links between food systems, food environments and diet quality**



Source: GLOPAN, 2016



- *Food transformation subsystems:* may increase availability of nutritious foods through fortification and limited processing (e.g. canning), or may reduce the nutrient content of food through heavy processing (e.g. extrusion and addition of free sugars).
  - *Food retail subsystems:* may increase or reduce availability of highly processed food relative to whole, nutrient dense foods through food promotion.
- (Adapted from GLOPAN, 2016).



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Food environments mitigate the impact of these subsystems on the choice and quality of diets of the individual through a variety of factors, including **food labelling, promotion, pricing, physical access, and nutrient quality and taste of food.**

Improving alignment between all these components – the four food subsystems and various food environment features – is key to reforming the food system, with the unifying objective being to give better support to food choices that are consistent with healthy diets. As such, food environments supporting healthy diets can be defined as those that make such diets available, affordable and appealing to people, with **healthy diets** themselves defined as:

- Adequate, comprising sufficient food for a healthy life.

- Diverse, containing a variety of food, including plenty of fruits and vegetables, legumes and whole grains.
- Low in food components of public health concern: Sugars and salt consumed in moderation (with all salt iodised) and fats being unsaturated rather than saturated and trans fats.

Additionally, according to the World Health Organization (WHO), the hallmarks of a healthy diet are abundant, diverse plant foods, limited or no highly-processed foods such as sugar-sweetened beverages and processed meats, and an appropriate consumption of other nutritious foods aligned with dietary needs for a particular stage in life (WHO, 2015).

High-quality diets also need to be safe so they do not cause food-borne diseases.

This summary provides proposals for influencing food environments for healthy diets using production diversity, food safety, food labelling and food-based dietary guidelines as possible entry points. It is important to note that the opportunities for influencing food systems and food environments are enormous and largely un-investigated.

*Readers are referred to the full on-line publication on "Influencing food environment for healthy diets" for detailed discussion on the topic ([www.fao.org/3/a-i6484e.pdf](http://www.fao.org/3/a-i6484e.pdf)).*

# INFLUENCING FOOD ENVIRONMENTS FOR HEALTHY DIETS THROUGH THE PRODUCTION OF DIVERSIFIED FOODS

## INTRODUCTION

A core aspect of food environments is the range of food people have available to them. This availability reflects an often extensive array of processes that occur upon leaving the farm gate. However, agricultural production is the necessary precursor. Agricultural production influences the food environment directly through affecting availability, quality and affordability of food at local and global markets, and indirectly through income generation, social structures, and environmental change.

The following briefly discusses how production of diversified foods can contribute to a healthier food environment.

## ACHIEVING HEALTHY FOOD ENVIRONMENTS

How does agricultural food production at a global level match up with dietary recommendations? The primary recommendation of food-based dietary guidelines and diet quality measures is for food environments to enable a diverse diet that includes fruits and vegetables, legumes, nuts and whole grains. Yet the current global availability

shows that production systems fail to meet nutritional needs even before issues of access, affordability and acceptability are considered.

The good news is that fruit and vegetable production - especially fruit - has been increasing worldwide since the 1960s. Legumes have also been increasing steadily since the 1980s, following a decade of decline in production in 1960s-70s. However, just because a particular food is available, it does not guarantee their acceptance or appeal by the market nor that consumers can afford them. Therefore, there needs to be a global dialogue on how to increase the availability of fruits, vegetables and legumes on the one hand, and their affordability, acceptability and appeal on the other.

There is tremendous variation in the type of food made available within a country. At this level, both trade and production, become important because national availability reflects what is produced, exported and imported, as well as wasted or used for non-food purposes.

Countries can grow food that are not found in their diets or import them, or both. In low-income countries, increasing production diversity

typically boosts the diversity of national food availability. In Nepal, for example, when the production diversity increased, it led to greater diversity of national food availability. However, as incomes increase, it typically results in a “decoupling” between production and supply, and trade has a greater influence on national supplies. For example, in China, as production diversity of vegetables increased, it did not translate into greater supply diversity because of exports. In Malaysia, production diversity dropped as a result of shifting land to mono-cropping and reducing mixed farming systems, but supply diversity nevertheless increased thanks to greater imports. Increasing the diversity of food availability therefore involves paying attention to both production and trade policies.

Policy-makers also need to pay attention to what makes up the diversity. More diversity does not necessarily translate into wider nutritional diversity. Importing wheat or rice, for example, may compensate for less national diversity - but it may not compensate from a nutrition perspective if locally produced grains are more nutritious. In fact, modern trade policies have



tended to introduce more highly-processed foods that are high in fat, sugars and salt, which is counter to what is recommended by food-based dietary guidelines.

Countries with more open trade policies are more likely to have food environments that are characterised by ultra-processed foods and decision-makers may have

to put policies in place to mitigate the risks of unhealthy food environments.

## THE ROLE OF AGRICULTURAL MARKETS

Agricultural markets - which take food from farm to retail - influence if and how the food produced by agriculture

makes its way into food environments locally, nationally, regionally and globally. To date, efforts to strengthen markets in low-income settings have tended to focus on major staples and cash crops. To improve food environments, more attention is needed to build strong markets that deliver a diversity of more nutritious food products to local, rural-urban and global



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food environments. At a local level, well-functioning markets can ensure that locally-produced food boosts diversity in the local food environment. At a regional scale, strong markets can ensure that people have access to local nutritious products like green leafy vegetables. At a global scale, strong markets mean that the global population has access to nutritious products that are only produced in specific areas.

In practice, strengthening markets often goes hand-in-hand with increasing specialization of production. While this can boost agricultural yield and economic growth, evidence from some countries (e.g. Ethiopia and Tanzania) proves that, where people are reliant on local markets, reducing production diversity can lead to lower diet diversity. In these regions, then, agricultural policies and programmes need to balance specialization and diversification in tandem with strengthening local markets.

## **BALANCING SPECIALIZATION AND DIVERSIFICATION**

Not every farmer can or should grow everything. To ensure that food environments provide a diversity of nutritious foods in a sustainable way, we need



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to address how to balance specialization, mainly for income, with diversification, for nutrition, environment and risk management. The following are four potential approaches to enable diversification alongside specialization towards healthier food environments.

### **Innovative garden approaches**

Diversified home, institutional and community gardens are gaining new traction in rural, peri-urban and urban settings. They often serve as an affordable source of fresh vegetables, fruits, and small stock animal-based products, but also as an educational, social, health, and/or sustainability intervention (e.g. a rooftop garden with an isolation and energy-saving function).

### **Mixed or integrated farming systems**

Agriculture has multiple objectives; from increasing income to producing food, to managing land, to mitigating and adapting to climate change. Therefore, smart agricultural management is crucial to ensure that agriculture contributes to a healthier food environment in a feasible and compatible manner with other goals.

In mixed or integrated farming systems, this is exactly what farmers do. They combine

different agricultural practices and commodities for multiple reasons simultaneously. These can range from controlling pests and diseases, to optimizing use of inputs (land, nutrients, water), to producing a diversity of products for consumption and bringing these products to markets, to minimizing risk and coping with seasonality. A noteworthy example is found in flooded rice paddies that are also used as fish ponds, providing households with protein and rice fields with organic matter. Other similar examples include fallow fields that are used for grazing and provide sources of milk and dung and tree crops that are intercropped with beneath-canopy subsistence crops for soil fertility, fruits, and forage.

Several factors currently limit the scale and potential of those systems. Mixed systems are often knowledge and labour intense. They need functional market linkages for several commodities and have smaller conventional yields, and as such are considered less productive in the short-term. Incentives that address those constraints and support mixed farming systems can enhance not only the health but also the sustainability of our food environments.



## Genetic resource management

Plant and animal genetic resources underpin food diversity. Managing those genetic resources, in terms of conservation and access for use and innovation, is crucial for creating an enabling environment for food production diversification.

Community seed banks safeguard and create options for diversification and future use.

## Strengthening value chains for multiple commodities

Most investments aimed at strengthening value chains in low-income settings, have focused more on value chains of major staples and cash crops, and less on facilitating the diversity of more nutritious foods to penetrate markets or on making them more affordable and desirable to consumers.

Two recent examples that take a holistic approach to strengthening value chains include:

- i. Harnessing entrepreneurial ideas for nutritious food in the marketplace through the Global Alliance for Improved Nutrition (GAIN). The marketplace empowers local social entrepreneurs with promising ideas on seed funding, business capacity and networking that would widen the access of nutritious food in local markets. The selection of ideas goes through a peer-review, where local entrepreneurs submit their ideas to a regional multi-stakeholder committee.
- ii. Multiple chain approaches such as linking farmers with school meal programmes or retailers for a diversity of products through improving cold chains in remote settings would improve the livelihoods of farmers while guaranteeing nutritious meals for school children.



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## CONCLUDING RECOMMENDATIONS

- Monitor trends in diversity of nutritious foods in the food environment, in agricultural production and trade to identify key leverage points for action.
- Address the overall shortage in availability, affordability and acceptability in vegetables, fruits, legumes and nuts.





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- Enact policies that help manage the balance between agricultural specialization and diversification, including those policies that:
  - strengthen local markets for nutritious foods
  - create greater coherence between domestic agricultural policy, trade policies and policies to promote healthy food environments
  - support initiatives that enable diversification alongside specialization such as innovative garden approaches, mixed farming systems, genetic resource management, and multi-chain approaches.

- Formulate complementary policies to mitigate the risks of trade policies to unhealthy food environments.

*For detailed discussion of this topic, refer to the full on-line publication on "Influencing food environments for healthy diets" (available at [www.fao.org/3/a-i6484e.pdf](http://www.fao.org/3/a-i6484e.pdf)).*

**Box 1: Production of diversified foods - key messages**

- Current availability at a global level indicates that production systems are failing to meet the nutritional needs of people even before issues of access, affordability and acceptability are considered. There is a need to produce and increase access and demand for more vegetables, fruits, legumes and nuts.
- Balancing specialization and diversification in agricultural production is key to ensure that food environments provide a diversity of nutritious foods and are sustainable.
- To do so governments, public and private actors should: 1) strengthen local markets for nutritious foods, 2) create greater coherence between domestic agricultural policy, trade policies and policies that promote healthy food environments, 3) support initiatives that enable diversification such as innovative garden approaches, mixed farming systems, genetic resource management, and value chains that benefit multiple commodities simultaneously.

# INFLUENCING FOOD ENVIRONMENTS FOR HEALTHY DIETS THROUGH FOOD SAFETY

## INTRODUCTION

The food environment influences people's consumption choices and nutritional status. Food safety issues can affect health directly by making people sick (primary disease pathway resulting from hazard ingestion). They can affect health indirectly when food scares lead people to change their food consumption behaviour (food fear pathway). This can lead to additional indirect effects such as a drop in incomes of workers in agri-food chains, or a reluctance to offer food that is perceived as risky. A third pathway is the effects of disease control attempts on food and nutrition security (disease control pathway), either by condemning unsafe food or by controlling animal hosts, which can lead to curbing the availability of a particular type of food.

Food-borne diseases (FBD) can be defined as any illnesses caused by ingesting contaminated food or drink. The most common clinical presentation is gastrointestinal symptoms, but FBD can also lead to chronic and life-threatening conditions including neurological, gynaecological or immunological disorders

as well as multi-organ failure, cancer and death. Illness may also cause the malabsorption of nutrients or other effects that impair nutritional status of the individual. Worldwide, millions to billions of cases of FBD occur each year of varying severity.

The first global and comprehensive estimate of FBD was published in 2015. The report found that FBD had been currently greatly underestimated and that most FBD are due to microbial pathogens and food-borne parasites (rather than chemical hazards); and that the highest burden of FBD falls on developing countries, with the highest incidences in Africa. However, there is greater uncertainty about the health burden of chemical hazards.

## GROUPS MOST VULNERABLE TO FBD

Certain groups are more vulnerable to FBD. These groups can be summarised by the acronym YOMPI, that is, the Young, the Old, the Malnourished, the Pregnant and the Immunosuppressed. In developing countries, there are important interactions between malnourishment and FBD. One multi-country

study found 25% of stunting was attributable to repeated episodes of diarrhoea. Each additional episode in the first 24 months of life, increases the risk of stunting by roughly 5%.

FBD has important implications on women's resilience and vulnerability. For example, pregnant and lactating women are especially vulnerable to a range of FBD, especially listeriosis and toxoplasmosis. Culture also affects the relative consumption of risky food. In some countries, women consume more low-value offal and men, more high value muscle meat. Offal consumption has been found to be a risk factor for diarrhoea. In Africa, men have more access to meat because they eat in bars that serve meat and alcohol. Consumption in these places is associated with increased risk. A similar pattern is seen with fish-borne diseases in China, Vietnam and Korea.

## TRENDS IN FBD

Most FBD are caused by pathogens. Recently, there has been an overall sharp fall in infectious diseases, while non-communicable diseases, and especially diseases associated with overweight and obesity, have seen an



upward trend. From this perspective, we might hope for a decline in FBD. However, countries and regions with good data on FBD (European Union and United States of America) have seen no change or deterioration in the number of cases of most (but not all) FBD over the last decade.

## FOOD SAFETY AND HEALTHY FOOD ENVIRONMENTS

The following outlines the critical role that food safety plays in ensuring a healthy food environment.

**1. Food availability:** Most FBD result from consuming fresh meat and vegetables, which are more nutritious and often

more expensive than staple foods. FBD can reduce food availability if contaminated food is destroyed and if control methods involve the culling of animals. The latter may also reduce farmer incomes. Concern over FBD may also motivate changes in agri-food systems, resulting in lower availability of fresh, locally-produced and unprocessed food.



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**2. Food scares:** Hazards associated with food scares are not a major cause of illness and death, because typically only dozens or hundreds of people are affected. The burden of endemic FBD takes a much higher toll on the population. However, food scares have a potentially larger effect on health through nutrition pathways because millions of people may change their diets as the result.

**3. Food standards:** Food standards have an important, but not decisive, influence on reducing FBD in developed countries (where private standards are increasingly important). In developing countries there is often little compliance with standards and thus their impact is difficult to assess.

**4. Public information:** In contrast to provision of nutritional information, provision of information on

food safety is less common, and not likely to influence health either through the disease or nutrition pathway. There are economic and social challenges to using this strategy for promoting food safety.

**5. Retail:** In developed countries, modern retail is generally associated with more processed food which tends to create an unhealthy food environment, but as a general rule, is safe. (Some types of retail are also associated with higher availability of fresh food.) In developing countries, modern processed food appears to be less safe than its equivalent in developed countries, while the relative safety of food from modern retail and traditional is unclear.

**6. Household production:** Ensuring the safety of food that is grown and consumed by farm household is very challenging. There are trade-offs between encouraging healthy food environments through increasing home production of fresh vegetables and animal-source foods and ensuring all food consumed by households is safe.



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## 7. Provision of food

**programmes** such as school meals or food for work: these programmes have the potential to make greater contributions to attaining food safety and a healthy food environment even though there are trade-offs, such as food which is highly nutritious and palatable may also be more expensive with a higher risk of contamination.

**8. Trade:** The relationship between attaining food safety and a healthy food environment through trade is a complex one. In developing countries, traded food is generally safe but may be more processed and less nutritious as a result.

## RECOMMENDATIONS FOR IMPROVING FOOD SAFETY

- A “farm to fork” approach is best for identifying control points. An important principle of food safety management is that risks must be managed along the “farm to fork” pathway and that some risks are most effectively managed on the farm. The United Kingdom, Iceland and Denmark dramatically reduced pathogens found in food production by stringent controls along the value chain, with an emphasis on reducing disease in the animal reservoir rather than in the retail product.
- Risk-based approaches rather than hazard-based ones. Studies from

developing countries show that hazards are commonly found in food but the risk of this occurring is not always high. For example, milk in Kenya is often contaminated with bacteria but because more than 99% of milk is boiled, the risk to consumers is not necessarily high. Focusing on risk to human health, rather than presence of hazards allows for better allocation of resources.

- Where the informal sector predominates, professionalize don't penalize. In developing countries, “farm to fork” approaches are less applicable. However, successful approaches have combined capacity building of the informal sector with the provision of incentives to further motivate behaviour

change. For example, until the late 1990s street foods vending in South Africa were perceived as unsafe and most decision-makers wanted it outlawed. Public opinion shifted thanks to a combination of evidence, policy advocacy and programmes to improve hygiene. As a result, improved street food vending to support livelihoods and nutrition was supported and well perceived by all.

- *Encourage the uptake of appropriate technology.* Where value chain actors are not using food safety technologies, simple innovations such as food grade containers or chlorinated water can result in substantial improvements to food safety and quality.
- *Improve food safety governance.* Many governments in developing countries are not well equipped to ensure the safety of most food consumed in domestic markets. A single unified structure or an integrated system, is likely to be effective, but when it is not possible due to historical or political reasons, a national food control strategy can identify roles.
- *Costs of disease control.* Consideration of the costs and benefits of disease control should take into account the possible impacts on nutrition.

- *Holistic prioritization.* When societies have multiple objectives, there needs to be consideration on how attainment of one valued outcome affects the attainment of others. For example, developing countries aim to reduce childhood disease and stunting and most raw milk comes from the informal sector. In this scenario, banning raw milk could have serious effects on household nutrition. Even where the risk of FBD from informal markets is not negligible, it is also important to consider the benefits of nutritious foods as well as the livelihoods of the hundreds of millions of women and men working in informal value chains.

## CONCLUSIONS

There is reasonable evidence that most of the known burden of FBD comes from biological hazards; that most of the burden falls on developing countries; and, that most is the result of consumption of fresh, perishable foods sold in informal markets. The first global assessment of the burden of FBD, estimates FBD caused 420,000 deaths and 33 million DALYs<sup>2</sup> in 2010 (98% in developing countries), comparable to the burdens of malaria, tuberculosis or HIV/AIDS.

<sup>2</sup> Disability-adjusted life years



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Safe food is an essential component of a healthy food environment. However, nutritional and food safety objectives are not always well aligned. In particular, the most nutritious foods are the most risky and labelling and informational approaches are not well suited to ensuring food safety.

There are opportunities to improve food safety through technologies, value chain innovations and restructuring of food safety governance, but





the feasibility and effectiveness of these is not well understood. Moreover, efforts to improve food safety may have unexpected ill effects including impairing nutrition. However, the widespread concern over food safety and the growing evidence of the associated health burden and economic costs, make it likely that this area will receive greater attention in future.

#### **Box 2: Food safety - key messages**

- The health burden of FBD has been greatly under-estimated: comparable to that of malaria, HIV/AIDS or tuberculosis. Most of the known burden of FBD falls on developing countries (98%) and is due to biological rather than chemical hazards (97% and 3% respectively).
- Food-borne disease has important indirect effects by changing consumer purchasing behaviour.
- There are opportunities to improve food safety in developing countries through technologies, value chain innovations and restructuring of food safety governance, but the feasibility and effectiveness of these are not well understood.

*For detailed discussion of this topic, refer to the full on-line publication on "Influencing food environments for healthy diets" (available at [www.fao.org/3/a-i6484e.pdf](http://www.fao.org/3/a-i6484e.pdf)).*

# INFLUENCING FOOD ENVIRONMENTS FOR HEALTHY DIETS THROUGH FOOD LABELLING

## INTRODUCTION

A healthy food environment ensures that healthy and nutritious foods are available, affordable, acceptable and desirable to all people. Food labels have the potential to draw consumers' attention to the health benefits and risks of particular nutrients or ingredients in food and to motivate food producers to produce healthier foods, thus, enhancing the environment and directly assisting consumers to follow a healthy diet.

According to the Codex Alimentarius Commission (CAC), a label is defined as "any tag, brand, mark, pictorial or other descriptive matter, written, printed, stencilled, marked, embossed or impressed on, or attached to, a container of food. Labelling includes any written, printed or graphic matter that is present on the label, accompanies the food, or is displayed near the food, including that for the purpose of promoting its sale or disposal." (FAO and WHO, 2007)

Food labels are ubiquitous in many food environments; some are provided on a voluntary basis while others are required by law. Voluntary labelling policies

allow producers to decide what information to disclose. Typically, a producer is motivated to provide a label when the information stimulates sales because labels raise consumer awareness of the benefits of a product. Not surprisingly, such labels are unlikely to inform of any negative attributes of the product. Voluntary labels are not provided on all food, which limit the consumer's ability to compare products.

Mandatory labelling policies are developed to provide information deemed necessary to protect consumers. Mandatory policies usually cover a wider range of products than voluntary labelling policies. Producers are required to disclose information that may attract or discourage sales of the product. The requirement to place information about risks on packages can motivate producers to reformulate products in order to avoid labels that may cause negative perceptions of products.

## TYPES OF NUTRITION LABELS

Several types of labels that provide information relevant to nutrition are commonly found in many countries. The strengths and limitations of each of these labels are discussed below.

### Nutrition fact declarations

One of the most common nutrition labels is the nutrition fact declaration, usually presented in a panel on the back or side of a package. As of 2016, 68 governments have enacted mandatory nutrient lists on packaged food. The Codex guidelines recommend mandatory nutrition labelling of energy value (calories), protein, dietary carbohydrate excluding dietary fibre, total fat, saturated fat, sodium and total sugars. Information about vitamins and minerals may also be provided.

Consumers use nutrition fact declarations to compare products according to specific traits, to verify claims, and to select the products which are most suitable for their needs. However, while many consumers "look at" and "read" nutrition fact declarations, far fewer



consumers truly understand how the information can be used to create a healthy diet. To be able to understand this type of label consumers need to have literacy and numeracy skills along with nutrition knowledge, all of which many consumers lack. Nutrition fact declarations do not summarize the information in a way that guides consumers on the overall health benefits and risks of the product. Therefore, nutrition fact declarations must be accompanied by educational programmes, if they are to be understood by consumers.

### Ingredient lists

A second type of label that is widely used and often required is the list of ingredients. Consumers can use these lists to identify food with ingredients that contribute to health as well as ingredients that should be reduced or avoided altogether. A weakness of ingredient lists is that they can be very long and too technical for many consumers to understand. Ingredient labels could be improved by using simple, common words and making the lists more visible and legible on the label.

### Nutrient content and nutrient function claims

Voluntary claims about the nutritional properties of food products are found in affluent, middle- and low-income countries. Manufacturers use claims to distinguish their products, extend their product lines, respond to regulations and public health communications

and enhance the image of their brand. For example, statements may claim that specific nutrients in a product are “high”, “low”, “enriched”, or “not added”. Though such statements are voluntary, national laws and international standards define the criteria for the use of such labels.

The ability to make claims that will differentiate a product by its nutrient contents can motivate producers to develop



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more nutritious products. Experience shows that such claims draw consumers' attention to those products that are especially nutritious. However, without proper regulation, these claims can also mislead consumers about the overall value of a product.

## Front of Pack rating systems

Decades of experience have led many experts to conclude that labels must be changed so that they:

(1) are simple to understand; (2) require no prior knowledge of nutrition; and (3) are easy for consumers to find on the package. Many believe that labels should not only provide guidance rather than merely giving facts, but that there should be a rating of the product and that the label should be easy to remember.

Front of Package (FOP) labels that use numbers, symbols and rankings to summarize the nutritional quality of the product were developed in

response to these needs. Three types of FOP label have become prominent in the past decade: the Guideline Daily Amount, Choices and the Multiple Traffic Light. Such labels are clearly visible to shoppers, saving them time and attracting their attention even when the shopper is not actively looking for the information. There is a need to harmonize front of pack labels to prevent consumer confusion.

## CONCLUDING RECOMMENDATIONS

Worldwide, food labels are a popular tool for improving the food environment because the information reaches the consumer when purchasing decisions are being made. Labels describe specific products. Labelling can fulfil the consumers' right to information and allow them to apply their nutrition knowledge to choose any kinds of food. Labels are also less restrictive than bans on food and less costly than taxes and subsidies. By necessity, developing and implementing labelling policies requires negotiation and collaboration among stakeholders. This participatory process can build consensus while contributing to the sustainability of strategies that improve the food environment.



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Food labels are seen and used by millions of consumers in many countries; however, experience has shown that labels and labelling policies need to improve, if they are to achieve their full potential as a useful tool. The following recommendations are proposed:



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- The effectiveness of labels depends upon the nutrition knowledge and literacy skills of consumers as well as their motivation to choosing a healthy diet. Therefore, dietary guidelines, nutrition education and public health campaigns are needed in addition to labelling policies.
- There is a need to improve the design of labels to make them accessible and appealing to everyone. Improving the legibility of existing labels would improve consumer use of nutrition information. Labelling schemes that illiterate people can understand are needed.
- Labelling can stimulate the reformulation of products; adding healthier food choices on the market. More producers should develop new products that have reduced sodium/salt, saturated and trans fatty acids and sugar. For commercial success, some recommend gradually introducing these products to allow taste preferences to adapt.
- There is a need to harmonize approaches to labelling to avoid consumer confusion and enable consumers to compare products. The Codex standards for labelling can facilitate this effort.
- Governments, consumer and industry associations can share expertise to facilitate the implementation of labelling policies. Assistance could include training on legal requirements, on analyzing the composition of food products, on designing labels that consumers understand, and on manufacturing labels.
- Enforcing a labelling policy requires a competent food control system. This includes the ability to veto labels that mislead consumers. Some governments and producers will require assistance to strengthen their food control systems.

### Box 3: Food labelling - key messages

- Food labels attract consumers' attention to the health benefits and risks of particular food products. Consumers use labels to compare products according to specific traits, to verify claims, and to select the products which are suitable for their needs.
- Labelling motivates food producers to formulate nutritious food. Manufacturers use labels to distinguish their products, extend their product lines, respond to regulations and public health communications and enhance the image of their brand.
- Labels must be simple to understand and require no prior knowledge of nutrition. Label designs should be appealing to all types of people, including those with low literacy and numeracy skills. Improving the legibility of labels would improve consumer use of nutrition information.

*For detailed discussion of this topic, refer to the full on-line publication on "Influencing food environments for healthy diets" (available at [www.fao.org/3/a-i6484e.pdf](http://www.fao.org/3/a-i6484e.pdf)).*

# INFLUENCING FOOD ENVIRONMENTS FOR HEALTHY DIETS THROUGH FOOD-BASED DIETARY GUIDELINES

## INTRODUCTION

Food-based dietary guidelines (FBDG) can play a role in ensuring a healthy food environment. This section provides an overview of existing national dietary guidelines around the world, analyses their current role in shaping the food environment and provides some suggestions to improve their effectiveness.

### What are food-based dietary guidelines?

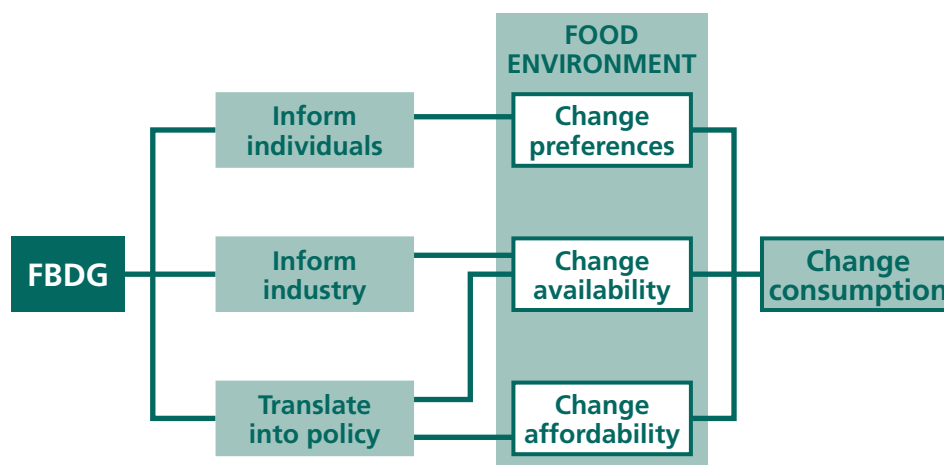
FBDG are short, science-based, practical and accessible messages to guide people on healthy eating and associated healthy lifestyles that keep them well-nourished

and healthy and can help prevent malnutrition in all its forms. Unlike recommended nutrient intakes – which are standards that apply worldwide – FBDG are tailored to the specific nutritional, geographical, economic and cultural conditions within which they operate. In many cases, the messages provided in dietary guidelines are illustrated with the aid of visual representations such as pyramids, plates or other diagrams, also known as food guides. These show the recommended relative contributions of different food groups to the diet.

Besides providing individuals with the information needed to make healthier food

choices, dietary guidelines can provide the basis for setting nutritional standards for public procurement policies (e.g. school or hospital meals) or for social security support (e.g. food distribution programmes); guide policies with respect to food marketing and advertising; and – at least in theory – inform the food offer of private sector actors (e.g. retailers, restaurants and canteens) and set the steer for food industry on food composition, labelling and promotion. In summary, FBDG can potentially affect consumption via three main paths: informing individuals, informing industry and informing policy (Figure 2).

*Figure 2: Three main paths by which food-based dietary guidelines can affect the food environment and, in turn, consumption patterns*





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## Linking personal health with global societal challenges

It is well recognised that current food systems are environmentally and socially unsustainable. Systems of production, distribution and consumption have eroded the natural resource base and have contributed to climate change. They are also vulnerable to climatic and environmental shocks and fail to feed people adequately.

If we are to address our food security challenges today

while securing viable food for tomorrow's generation, then our food systems will need to become more sustainable.

Dietary guidelines can play a role in helping shape a more sustainable and health enhancing food system by providing guidance on dietary patterns that are not only consistent with nutritional requirements but also generate fewer environmental impacts. In recent years, some countries (Germany, Brazil, Sweden and Qatar) have started to integrate environmental sustainability concerns into their national

dietary guidelines as discussed in more detail elsewhere (Gonzalez Fischer and Garnett, 2016).

## METHODOLOGY

A web-based review of national dietary guidelines worldwide was done, using publicly available information. These included the guidelines themselves, associated food guides and other supporting documents, press releases about their publication and general literature on the topic including scientific papers and reports.



## RESULTS AND DISCUSSION

### General picture

Eighty-three countries with official dietary guidelines were identified. There were some clear geographic biases (only 5 of those countries are in Africa, Figure 3), and a clear relationship emerged between a country's income and the probability of it having dietary guidelines. Only two out of 31 low-income countries have guidelines, while 43 (out of 80) high-income countries have dietary guidelines (Table 1). It is likely that this reflects a lack

of capacity and resources in the former and the fact that wealthier countries are able to focus more time and resources on consumption and food choices, having no immediate problems of food availability and supply.

The need for dietary guidelines sits in the context of a changing burden of diet-related illness. While absolute hunger is still a problem affecting 793 million people worldwide, mainly in sub-Saharan Africa and South Asia, developing countries are now starting to experience many of the same diet-related problems, such

as obesity and associated non-communicable diseases, traditionally associated with high-income countries. Guidelines are needed that are mindful of these trends in low- and middle-income countries and help steer a dietary course that avoids the major health and sustainability problems experienced in the developed world.

**Figure 3: Map illustrates the 83 countries (in green) with dietary guidelines included in this analysis**



Source: Gonzalez Fischer and Garnett, 2016



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**Table 1: Classification of countries with and without dietary guidelines, according to their income level following World Bank classification**

	Total	With guidelines
Low-income countries	31	2 (6%)
Low-middle-income countries	51	12 (24%)
Upper-middle-income countries	53	26 (45%)
High-income countries	80	43 (53%)
All countries	215	83 (38%)

## Development Process

### Formulating the guidelines

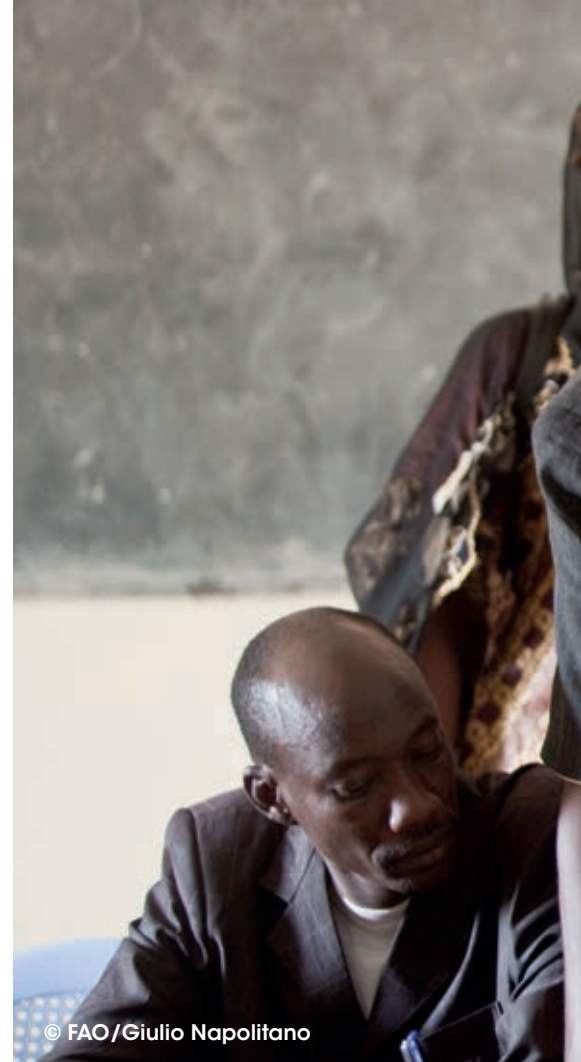
In most countries, the development of guidelines falls under the remit of the Ministry of Health or its equivalent. Accordingly, most of the experts involved in production of the guidelines are also drawn from the areas of nutrition and public health.

It is often difficult to separate the scientific from the political process. For example, the final decision to exclude sustainability from the 2015 US guidelines reflected political judgement rather than any fundamental disagreement about the scientific evidence base.

## Presentation and messaging

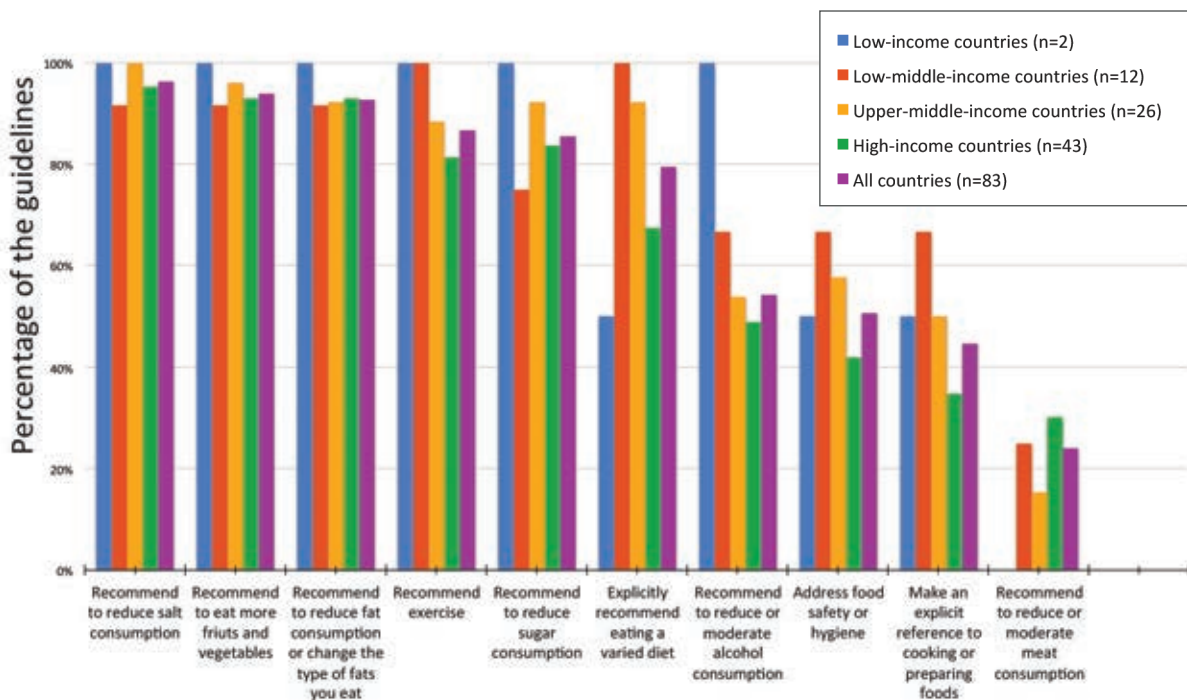
Most of the guidelines present very similar messages (Figure 4).

Despite the high environmental impact associated with meat production and the 2015 WHO statement on the links between processed – and possibly red – meat, and cancer (Bouvard *et al.*, 2015), only 20 out of 83 guidelines (24%) recommend reducing or limiting meat intakes, with some distinguishing between red and processed meat.



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**Figure 4: Summary of the most common messages in the guidelines by income level**



Source: Adapted from Gonzalez Fischer and Garnett, 2016





## Audience

Most countries who issue guidelines provide guidance suited to the needs of the general population; a few additionally provide separate advice for particular groups.

Examples of official guidelines aimed at retailers and caterers, the gatekeepers of food consumption were not found. If available, these guidelines could set out what food should preferentially be retailed in shops, restaurants and canteens. In some countries, out of home consumption represents a significant proportion of total food consumption, particularly of foods high in saturated fat, sugar and/or salt.

## Monitoring and evaluation

Monitoring and evaluation processes to evaluate the impact of the guidelines are essential. Many countries invest considerable efforts in developing dietary guidelines but then pay little or no attention to assessing their impacts.

### A missing step: translation into policy

Ensuring that the guidelines influence policy is vital if they are to affect food environments in a meaningful way. However, the links between the dietary guidelines and other policies are not readily apparent.

## CONCLUDING RECOMMENDATIONS

Despite all the limitations and shortcomings described here, dietary guidelines are still a key component of a coherent food policy. At their best, they provide an official, accessible and easy-to-understand steer on how people should eat and the direction of progress needed. To fulfil their potential, guidelines should be evidence-based and widely communicated to the general public and health professionals. They also need to underpin and link to the development of policies and interventions, including but not limited to school meals, food aid, public procurement

standards and regulations on food marketing and advertising.

An increasingly robust body of research now finds that a focus on health alone, while necessary, is not sufficient. Current food systems have a high negative environmental impact, low equity and high volatility; in other words, they are not sustainable. Diets consistent with good health today can undermine the wellbeing of future generations and their ability to access and consume nutritious food. Therefore, it is essential to incorporate environmental and other societal considerations into the definition of a desirable dietary pattern.

The following outline gives specific suggestions for developing dietary guidelines that help to create a healthy food environment.

Guidelines should:

- Have frequent updates to include the latest nutritional evidence and adjust to the changing public health landscape
- Display ownership by multiple government sectors and be robust in the face of lobbying by interest groups
- Develop via two distinct and independent processes:

- development based on the advice of scientists and professionals from a wide range of expertise, health, environment and socio-economic concerns
- consultation with civil society and industry, considering their interests but subordinating this to scientific evidence
- Communicate with different audiences, in formats and levels of detail tailored to each audience: general public, health professionals and those working in the food sector
- Be accessible but ambitious:
  - they should consider current consumption patterns and the cultural context, so they do not “stretch” people unrealistically
  - they should promote a clear change in the consumption patterns needed to foster truly healthy and sustainable dietary patterns, by adopting and communicating a series of achievable step changes
- Include advice for different population groups where relevant, including those who choose not to eat meat or animal products
- Include advice beyond just what to eat to redefine our relationship with food, including:
  - preferred settings to eat
  - cooking and food preparation
  - information on the environmental impact of different food





- Need promotion - everybody should know about them:
  - effective communication of the guidelines not only helps to promote their message, but will counter inaccurate information from other sources (e.g. fad diets)
- Be informed and validated by monitoring food consumption, public awareness of the guidelines and the issues they raise
- Have clear links to food policies that are actually implemented, e.g. school and hospital meals, food aid, public procurement, advertising regulations and industry standards
- Integrate sustainability concerns, to ensure that future generations will be able to enjoy sufficient and nutritious food

#### **Box 4: Food-based dietary guidelines - key messages**

- Despite all the limitations and shortcomings described, dietary guidelines are still a key component of a coherent food policy. At their best, they provide an official, accessible and easy-to-understand steer on how people should eat and the direction of progress needed. It is important that countries that have yet to develop them, take action to do so now.
- To fulfil their potential, guidelines should be evidence-based and widely communicated to the general public and health professionals. Critically they also need to underpin and link to the development of policies and interventions, including but not limited to school meals, food aid, public procurement standards and regulations on food marketing and advertising.
- An increasingly robust body of research now finds that a focus on health alone, while necessary, is not sufficient. Current food systems have a high negative environmental impact, low equity and high volatility; in other words, they are not sustainable. Diets consistent with good health today can undermine the wellbeing of future generations and their ability to access and consume nutritious food. Thus it is essential to incorporate environmental and other societal considerations into the definition of a desirable dietary pattern.

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## **SUMMARY OF THE 10 COMMITMENTS TO ACTION IN THE ROME DECLARATION ON NUTRITION**

1. Eradicate hunger and prevent all forms of malnutrition worldwide
2. Increase investments for effective interventions and actions to improve people's diets and nutrition
3. Enhance sustainable food systems by developing coherent public policies from production to consumption and across relevant sectors
4. Raise the profile of nutrition within relevant national strategies, policies, action plans and programmes and align national resources accordingly
5. Improve nutrition by strengthening human and institutional capacities through relevant research and development, innovation and appropriate technology transfer
6. Strengthen and facilitate contributions and action by all stakeholders and promote collaboration within and across countries
7. Develop policies, programmes and initiatives for ensuring healthy diets throughout the life course
8. Empower people and create an enabling environment for making informed choices about food products for healthy dietary practices and appropriate infant and young child feeding practices through improved health and nutrition information and education
9. Implement the commitments of the Rome Declaration on Nutrition through the Framework for Action
10. Give due consideration to integrating the vision and commitments of the Rome Declaration on Nutrition into the post-2015 development agenda process including a possible related global goal