Development of Food-Based Dietary Guidelines
Food Models and Cultures

October 2017

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# Contents

## Introduction

<table>
<thead>
<tr>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
</tr>
</tbody>
</table>

## I. Dietary guidelines, a reflection of cultures

<table>
<thead>
<tr>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
</tr>
</tbody>
</table>

1.1 A long history worldwide

1.2 Food-based dietary guidelines and food culture

1.3 Changing dietary guidelines, through the food guides

### 1.3.1 Food guides, from design to implementation

### 1.3.1.1 Target groups

### 1.3.1.2 Nature and content of messages

### 1.3.1.3 Formats

### 1.3.2 Evolution of food guide graphics

## II. France-Canada, differing perspectives

<table>
<thead>
<tr>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
</tr>
</tbody>
</table>

2.1 Dietary guidelines, the French approach

2.1.1 From the 1930s to the 2010s, between modernity and tradition

2.1.2 Nutrition program in France: large-scale implementation

2.2 Canada, healthy eating in a multicultural society

2.2.1 A brief history: dietary guidelines from 1942 to the 2010s

2.2.2 Multicultural approach

2.2.3 Québec’s original vision

2.3 Canada and France: similarities and differences

## III. Nutrition recommendations, implementation processes

<table>
<thead>
<tr>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>53</td>
</tr>
</tbody>
</table>

3.1 Development of new dietary guidelines in France

3.2 Canada’s methodological approach

3.2.1 Evidence Review Cycle for Dietary Guidance

3.2.2 The new Healthy Eating Strategy

3.3 Brazil’s innovative approach

3.4 Focus on dietary guidelines in the twenty-first century

3.4.1 New trends

3.4.2 Making guidelines easier to apply

## Conclusion

<table>
<thead>
<tr>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>82</td>
</tr>
</tbody>
</table>

## Glossary

<table>
<thead>
<tr>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>83</td>
</tr>
</tbody>
</table>

## Bibliography

<table>
<thead>
<tr>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>85</td>
</tr>
</tbody>
</table>
Introduction

Dietary behaviours are the result of numerous individual, interpersonal and collective determinants, which are biological, nutritional, sensorial, emotional, educational, social, cultural and economic in nature. They affect not only the physiology of food intake and food choices, but also food sourcing and consumption practices.

Throughout the world, “eating well” means satisfying people’s qualitative and quantitative physiological needs according to a number of factors: the social context, cultural traditions, financial means, place of consumption, food supply, marketing, nutritional knowledge, and even food preparation skills.

For a number of decades now, experts and governments around the globe have demonstrated the need to regularly update and issue dietary guidelines adapted to the nutrition situation, food availability and culture of each country; they have done so under the auspices of two agencies of the United Nations (UN): the Food and Agriculture Organization (FAO) and the World Health Organization (WHO) (FAO, Food-based dietary guidelines, no date).

Some of these guidelines indicate the importance of culture in actions related to the supply of traditional local food and foods that are acceptable in light of “the beliefs, culture, traditions, dietary habits and preferences of individuals” (FAO/WHO, 2014b, p.4).

As a result, when governments update food-based dietary guidelines, they face a considerable challenge in determining methods of implementation enabling them to create simple messages and effective tools that take cultural realities into account. Part of the challenge is due to the fact that the messaging and tools are intended both for the general public and for health, education and media professionals, as well as other stakeholders in civil society in contact with the public (FAO, Food-based dietary guidelines, no date).

Many stakeholders (experts, consumer associations, non-governmental organizations and businesses) from different backgrounds and sectors (health, nutrition, agriculture, education, communications, the social sciences) are involved in developing dietary guidelines and resources tailored to the food culture of each sub-group of the population. These resources include food guides, which are designed to disseminate messages derived from the guidelines in simple language and graphic form.

To provide a clearer understanding of these challenges, this monograph begins by tracing the history food-based dietary guidelines worldwide and showing the links between culture and nutrition.
It explores the culture-nutrition relationship through an analysis of the form, content and target audience of the various guides. The approaches taken by France and Canada to their dietary guidelines are then discussed, as both countries are presently revising their guidelines and resources (Health Canada’s *healthy eating strategy*, Health Canada, 2016a; the French Agency for Food, Environmental and Occupational Health & Safety, ANSES, 2017c; the High Council for Public Health, HCSP, 2017). Their visions of nutrition in recent decades and their methodological approaches are compared in order to shed light on the importance of scientifically-based issues and cultural contexts.

The unique approach implemented by Brazil is then examined (Ministry of Health of Brazil, 2014). Finally, new trends and innovative methods of preparing food-based dietary guidelines are outlined.
1. **Dietary guidelines, a reflection of cultures**

1.1 **A long history worldwide**

As of the mid-twentieth century, a number of agencies in Europe and elsewhere around the globe were set up with the goal of developing dietary guidelines for the world population.

**1945, Québec City**: Forty-two countries, assembled at the Château Frontenac Hotel in Québec City, Canada, created the Food and Agriculture Organization (FAO) of the United Nations. Their goal was to manage the global food system effectively and to free humanity from hunger and malnutrition. The FAO’s executive committee was chaired by André Mayer, a French physician and physiologist, until 1947 (A short history of FAO, n.d.).

**1946, Rome**: A specialized public health institution of the United Nations was founded under the name of the World Health Organization (WHO). The WHO began operations in 1948 (Constitution of the World Health Organization, 1946). At that time, it developed, together with the FAO, the first generic guidelines for energy, protein, fat and micronutrients.

**1974, Rome**: The UN General Assembly called a world food conference to discuss the problem of global food. A declaration on the eradication of hunger and malnutrition was signed by 135 countries, which made a commitment to develop national action plans (A short history of FAO, n.d.).

**1992, Rome**: The first International Conference on Nutrition (ICN1), organized by the FAO and the WHO, brought together 159 countries. It marked a turning point in the history of food guides, as the concept of dietary guidelines was proposed and two documents were published: the “World Declaration on Nutrition” and the “Plan of Action for Nutrition.”

The Plan of Action was aimed at promoting the development of dietary guidelines for every country. Guidelines were intended to continue the fight against hunger in developing countries and to prevent diet-related chronic diseases and premature death in developed countries (FAO/WHO, 1992).
1995, Cyprus: The FAO and the WHO held a consultative meeting to evaluate the progress made since 1992. Plans of action had been produced and revised by 73 countries, and were being developed by 20 others. Work began the following year on a guide for government agencies, and was published in 1998 under the title “Preparation and Use of Food-Based Dietary Guidelines” (WHO, 1998).

The guide sets out all the steps involved in preparing dietary guidelines, which can be adapted by every country for implementation.

1997, Vilnius, Lithuania and Nitra, Slovakia: Two workshops were organized by the European International Life Science Institute (ILSI) that focused on the development of dietary guidelines specifically in the Euroregion (Food-based dietary guidelines in Europe, EUFIC, 2009).

2000 to 2001: A cross-cutting, scientific Eurodiet project, aimed at defining a plan of action to promote healthy nutrition and lifestyles in Europe, was carried out in cooperation with the European Commission. It provided a methodological framework for the development of national dietary targets by member states (EUFIC, 2009).

2000 to 2005: The first plan of action for diet and nutrition, overseen by Euroregion experts from the WHO, was developed and ratified by fifty-one member states (“National Food-Based Dietary Guidelines: Experiences, Implications and Future Directions,” summary report of a workshop held in Budapest, 2004) (EUFIC, 2009).

2006, Parma: The European Food Safety Authority (EFSA) held a symposium to begin discussing scientific approaches to the development of dietary and nutritional guidelines for the European Community.

2010: The EFSA published a scientific opinion on preparing food-based dietary guidelines, following a lengthy analysis and consultation process initiated in 2006. The opinion provided a detailed seven-step approach for developing dietary guidelines as well as information on guideline monitoring and evaluation (EFSA, 2010). The seven-step approach is discussed in section 3.1 of this document.
2014, Rome: The Second International Conference on Nutrition (ICN2), organized by the FAO and the WHO, was held to assess the impact of changing socioeconomic and environmental factors on the dietary habits, physical activity and lifestyles of people in a number of countries.

Experts noted that people worldwide were consuming large amounts of food high in sugar, salt and fats, especially saturated and trans fats. They also observed that every country in the world was experiencing, to various degrees, malnutrition in all its forms: undernutrition, deficiencies, overweight, obesity, type II diabetes, cardiovascular diseases and certain types of cancers.

In light of these findings, FAO and WHO representatives adopted “The Rome Declaration on Nutrition” (FAO/WHO, 2014a) in order to reaffirm the commitments made at the first International Conference on Nutrition in 1992.

A “Framework for Action,” setting out sixty recommendations divided into fifteen categories, was ratified. The recommendations targeted the creation of a favorable environment for effective action, sustainable food systems promoting healthy diets, international trade and investment, nutrition education and information, and social protection. They also focused on the fight against deficiency-related malnutrition as well as improvements in sanitary health and security systems for food and beverages, including water.

2016, New York: The United Nations General Assembly proclaimed a UN Decade of Action on Nutrition running from 2016 to 2025. Experts the world over reaffirmed the commitment to eradicate hunger and prevent all forms of malnutrition worldwide. This resolution placed nutrition at the heart of sustainable development (ONU, 2016). It also marked a significant step forward in global cooperation in public health, and invited all partners—national governments, international and regional organizations, civil society, the private sector and academia—to take active steps toward the commitment by sharing information on national policies so that they could learn from each other’s experience.
This brief history shows that the fight against hunger has been a priority for many countries since the 1940s. This priority was expanded in the 1980s to include the prevention of chronic diseases related to diet, obesity and sedentary lifestyles.

More recently, sustainable development and “holistic” lifestyles, which contribute to overall health, have become crucial issues. They must be factored into actions aimed at solving all forms of malnutrition and improving dietary habits.

### 1.2 Food-based dietary guidelines and food culture

Before discussing the importance of culture in evolving dietary guidelines designed to improve health, it would be helpful to define “food-based dietary guidelines,” “health” and “culture.” The definitions of these terms, as formulated by official international bodies and experts, are set out in the boxes below.

The constitution of the World Health Organization, adopted by the International Health Conference held in New York in 1946, provides the definition of “health” opposite, which is still used as a reference today.

This global view of health encompasses not only the individual’s physical state, but also the mental, social, cultural and economic dimensions of his or her well-being.

This overall approach to health opens the door to including in dietary considerations all dimensions of eating that relate to the health and well-being of the individual in his or her sociocultural and economic environment.

In 1986, the Charter for Health Promotion was presented at the first International Conference on Health Promotion, organized by the WHO in Ottawa, Canada. It addressed the needs of industrialized countries and emphasized the creation of environments that support health (see box).
There are a great many definitions of “culture” available, including that agreed upon by the World Conference on Cultural Policies held by UNESCO (United Nations Educational, Scientific and Cultural Organization) in Mexico City in 1982 (see box below).

**Ecological approach to health:**

“The inextricable links between people and their environment constitutes [sic] the basis for a socioecological approach to health.” “Good health is a major resource for social, economic and personal development and [an] important dimension of quality of life. Political, economic, social, cultural, environmental, behavioural and biological factors can all favour health or be harmful to it. Health promotion action aims at making these conditions favourable through advocacy for health.”

(“Create Supportive Environments” and “Advocate” sections, pages 2 and 3, Ottawa Charter, WHO Europe, 1986)

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**“Culture”**

“In its widest sense, culture may now be said to be the whole complex of distinctive spiritual, material, intellectual and emotional features that characterize a society or social group. It includes not only the arts and letters, but also modes of life, the fundamental rights of the human being, value systems, traditions and beliefs . . . It is culture that gives man the ability to reflect upon himself. It is culture that makes us specifically human, rational beings, endowed with a critical judgement and a sense of moral commitment.”

(Mexico City Declaration on Cultural Policies, UNESCO, 1982)

“Culture, or civilization, taken in its broad, ethnographic sense, is that complex whole which includes knowledge, belief, art, morals, law, custom, and any other capabilities and habits acquired by man as a member of society.”

(Edward Tylor, Primitive Culture, New York: J.P. Putnam’s Sons, volume 1, page 1. 1871)

“A whole linked through relatively formalized ways of thinking, feeling and acting which, being learned and shared by a multiplicity of people, serves, both objectively and symbolically, to make those people a distinct and specific community.”

(Translation of Guy Rocher, Québec sociologist, 1992)

**“Cultural food processing”**

“If man need nutrients… which he finds in natural products in his environment, he can ingest them or assimilate them only in the form of food, i.e., natural products culturally constructed and emphasized, processed and consumed according to a highly socialized code.” (Translation of Jean-Pierre Poulain, French social anthropologist, 2002a, p. 11)
Other definitions used in the social sciences make it possible to apply the concept of culture to dietary practices. A distinctive characteristic of eating is that it is both natural in light of the biological aspects, and cultural in light of the socio-cultural facets. This is summed up in the following statement written by French sociologist, Edgar Morin, in 1973: “The key to culture is in our nature and the key to our nature is in culture.” Throughout the world, eating to meet one’s nutritional needs depends on a transformation process that is dictated by culture.

Every culture determines the products or substances it considers edible. While factors like survival, ecological availability, accessibility and economics influence the food environment, every social group has its own specific rules as to what is edible based on culture, ethics and religion. These rules define the dietary repertoire and are used as a reference by all members of a society (Fischler, 1990; Fiscler, 2013).

While it is common for people in some parts of the world (Asia, Africa, South America) to eat dogs and insects, it is inconceivable for Europeans and North Americans to do so. In India, the consumption of beef is forbidden because cows are considered sacred, whereas Jews and Muslims avoid pork because they consider it impure (Régnier et al., 2006). French menus include escargot and frogs’ legs, animal protein deemed inedible by a large number of people around the globe.

Other social and cultural norms apply to food preparation, meals, the various consumption patterns and table manners. These culinary and dietary rules reflect values, beliefs and a sense of belonging to a social group. In all cultures, eating plays a social role every day, in particular through family meals. The conviviality of sharing meals with peers contributes to social life and to maintaining rules that are shared and conveyed (Poulain, 2002a; Poulain, 2017).

Eating also includes a culturally-rooted symbolic dimension through shared meaning and values. The symbols recognized by an entire social group become a language and, through that symbolic code, each type of food is identifiable (Trémolières, 1975). The incorporation principle, based on the belief that you are or become what you eat, reflects the desire to take on the symbolic qualities of the food consumed (Fischler, 1990).

Dietary practices and choices contribute to moulding the identity of each culture and defining its differences from others. Dietary identity is experienced by people both on an individual level through their specific culinary habits and preferences, and on a cultural level through their sense of belonging to the group experienced through eating together, sharing values and recognizing symbols (Hubert, 1995).
These diet-related cultural dimensions are fundamental to the concept of cultural acceptability defined in the FAO/WHO report on the preparation of dietary guidelines and food guides (WHO, 1998) (see Table 1).

**Table 1: Cultural Acceptability of Dietary Guidelines**  
(Based on *Preparation and Use of Food-based Dietary Guidelines*, WHO, 1998)

- The choice of foods and colours used in the illustrations should be culturally appropriate.
- Guidelines should be sensitive to religious views and other cultural considerations, particularly those of minority groups.
- Guidelines should not recommend radical changes in current dietary practices.
- Language and dialect can affect the acceptability of recommendations.
- Guidelines should take education level into account (urban areas vs rural).

Some of the sixty recommendations set out in the “Framework for Action” published following the Second International Conference on Nutrition, organized by the FAO and the WHO in 2014 (see 1.1), clearly mention the importance of culture (FAO, 2014b) (see Table 2).

In fact, the FAO has observed that “in recent years, an increasing number of countries [have] developed guidelines that promote and protect traditional food cultures and take into account the impact of dietary patterns and the food system on the natural environment.”

**Table 2: Second International Conference on Nutrition Framework for Action** (FAO/WHO, 2014b, page 4)

*Recommendation 21*: Conduct appropriate social marketing campaigns and lifestyle change communication programmes to promote physical activity, dietary diversification, consumption of micronutrient-rich foods such as fruits and vegetables, including traditional local foods and taking into consideration cultural aspects. . .”

*Recommendation 23*: Use cash and food transfers, including school feeding programmes and other forms of social protection for vulnerable populations to improve diets through better access to food which conforms with the beliefs, culture, traditions, dietary habits and preferences of individuals…”

This is the historical context of the dietary guidelines issued by international agencies to improve nutrition. It is in this context that countries would proceed to publish dietary guidelines and food guides, in accordance with their specific cultures.
1.3 Changing dietary guidelines, through the food guides

1.3.1 Food guides, from design to implementation

Many countries develop food guides to ensure that their populations apply dietary guidelines. Food guides are tools used to disseminate messages in simple language and in graphic form—messages derived from dietary guidelines.

Food guides can meet a number of goals (Fischer and Garnett, 2016; Andrade and Andrade, 2016). They can:

- serve as educational tools to help populations change their eating behaviours;
- support national communication campaigns;
- provide decision-makers with support in determining food, agriculture, education and social protection policies.

Food guides are generally developed by public authorities and government bodies to communicate a country's nutritional guidelines. They can also be developed by private agencies, certain non-governmental organizations (Safefood, n.d.), higher education and research institutions (Harvard School of Public Health, 2011), publishers, and philanthropic foundations (Oldways, n.d.).

The first dietary guidelines date back to the eighteenth century. They were based on a finding by a physician in the British Navy who observed that citrus fruits, such as lemons and oranges, cured scurvy—a disease affecting the gums caused by a vitamin C deficiency—which afflicted many sailors (EUFIC, 2009).

In 1894, Wilbur Olin Atwater, an American chemist, published his nutritional advice in the “Farmers’ Bulletin” (Atwater, 1894 and 1902, cited by Davis and Saltos, 1999). In 1901, he published Principles of nutrition and nutritive value of food, a book providing the first information on food groups and calorie intake.

In it, he discusses the concepts of variety and nutrient richness, while encouraging readers to consume fats, sugar and carbohydrates in moderation.
1.3.1.1 Target groups

The tools developed by the different countries are generally intended for various audiences: the general public, children, parents, and professionals in the health, education and social fields. Some guides are specifically designed for caregivers, to help them support people who are dependent or disabled. Other resources are made available to journalists through the appropriate news services.

To ensure that the nutritional needs of populations are more effectively met, food guides can include messages for particular groups or sub-groups according to different criteria (Health Canada, 2007a; EUFIC, 2009; Montagnese et al., 2015; Fischer and Garnett, 2016):

- **age and gender**: children, teens, adults (men/women), seniors
- **other specific needs**: women of childbearing age, pregnant or breastfeeding women, athletes, vegetarians, etc.
- **socio-professional category**: people in a vulnerable situation
- **region**: Mediterranean diet, Scandinavian diet, etc.
- **cultural or ethnic origin**: overseas departments and territories, indigenous peoples, aboriginals, etc.

Sample message intended for women of childbearing age (taken from *Canada’s Food Guide*): “All women who could become pregnant and those who are pregnant or breastfeeding need a multivitamin containing folic acid every day.” (Murphy and Barr, 2007)

Guides developed in France according to age group: left, guide for parents of children from birth to 3; centre, guide for parents of children 3 to 18; right, guide for teens (PNNS, 2011-2015).

Countries that have developed guides according to ethnicity:

- In Australia, food guides have been developed for the Aboriginals and the Melanesians of the Torres Strait Islands north of Queensland—the two indigenous groups in the country (Australian Government, 2013a).
- In Canada, the food guide has been adapted for First Nations, Inuit and Métis (Health Canada, 2007b) (see 2.2.2 of this document).
1.3.1.2 Nature and content of messages
(Source: FAO, Food-based dietary guidelines, n.d., unless otherwise indicated)

- **Nature of messages**

The different messages appearing in food guides are generally organized around five main themes: practical advice about a balanced diet, with information on the food groups; recommendations to adopt a healthy lifestyle (maintain a healthy body weight, etc.); simple food-preparation principles; hygiene measures and food safety; as well as recommendations about environmental protection. Table 3 below lists the main messages provided in food guides.

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<thead>
<tr>
<th>Table 3: Sample Food Guide Messages</th>
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<tr>
<td>(FAO, Food-based dietary guidelines, n.d.; Musaiger et al., 2012; Montagnese et al., 2015; Fischer and Garnett, 2016; Tee et al., 2016)</td>
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<thead>
<tr>
<th>- Practical advice about a balanced diet, with information on the types of food to emphasize or limit as well as the recommended servings and the nutritional needs (eating fibre, limiting salt and drinking water):</th>
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<tbody>
<tr>
<td>. Enjoy a variety of foods. (Canada, France, Qatar, Singapore, etc.)</td>
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<tr>
<td>. Eat at least one meal together daily with family. (Qatar)</td>
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<tr>
<td>. Eat vegetables with most meals, including snacks. (Qatar)</td>
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<tr>
<td>. Choose unsweetened, low-fat dairy products enriched with vitamin D. (Sweden)</td>
</tr>
<tr>
<td>. Use minimal salt in preparing foods in order to prevent disease. (Guatemala)</td>
</tr>
<tr>
<td>. Limit saturated and trans fats as well as added salt and sugar. (Canada, the United States, Great Britain)</td>
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<tr>
<td>. Drink two cups of tea a day. (the Netherlands)</td>
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<th>- Recommendations about physical activity, tips on maintaining a healthy weight &amp; lifestyle (smoking, drinking alcohol) to prevent chronic diseases:</th>
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<tr>
<td>. Get the equivalent of 30 minutes of exercise a day. (Belgium, France, Qatar, etc.)</td>
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<tr>
<td>. Get regular physical exercise and take at least 6,000 steps a day. (China)</td>
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<tr>
<td>. Eat breakfast every morning. (Canada, Indonesia, etc.)</td>
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<tr>
<td>. Check your weight and blood pressure. (Benin)</td>
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<tr>
<td>. If you enjoy alcohol, do not exceed one drink a day. (Benin, the Netherlands)</td>
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<tr>
<td>. Eat dinner with family as often as possible to preserve dietary culture. (China)</td>
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<th>- Simple culinary principles (preparation, cooking):</th>
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<tr>
<td>. Cook foods at low temperatures, using minimal water or fat. (Germany)</td>
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<tr>
<td>. Limit your use of oil in cooking meals. (Benin)</td>
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<th>- Hygiene and food safety:</th>
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<tr>
<td>. Eat clean uncontaminated food and drink clean uncontaminated water. (Thailand, Sri Lanka)</td>
</tr>
<tr>
<td>. Wash your hands for good hygiene and health. (Guatemala)</td>
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<th>- Recommendations related to sustainable development and resource preservation (food waste):</th>
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<tbody>
<tr>
<td>. Buy local and seasonal products whenever possible. (Brazil)</td>
</tr>
<tr>
<td>. Limit processed foods. (Brazil, the Netherlands, Sweden, Sri Lanka)</td>
</tr>
<tr>
<td>. Eat fresh foods as often as possible in order to reduce unnecessary packaging. (Germany)</td>
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<tr>
<td>. Avoid wasting food. (China)</td>
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The basic food groups
Foods are divided into four to twelve groups in the different food guides. The most common classification, with seven groups, dates back to the twentieth century. It is the result of much analysis and many proposals tested over the decades.

The concept of food groups became widespread after World War II. During the food shortages of the post-war period, nutritional advice focused on the need to ensure adequate intake of calories and certain nutrients (EUFIC, 2009).

In 1943, the United States published a poster of the “Basic 7” groups, displayed in the form of a wheel (USDA, 2011):

- Group 1: Green and yellow vegetables
- Group 2: Oranges, tomatoes, grapefruit, raw cabbage and salad greens
- Group 3: Potatoes, other vegetables and fruits
- Group 4: Milk and dairy products
- Group 5: Meat, poultry, fish, eggs, dried beans, nuts
- Group 6: Bread, flour and cereals
- Group 7: Butter or fortified margarine

This classification, considered too complicated by some people, was revised by the United States in 1956. The number of basic food groups was decreased from seven to four: fruits and vegetables, milk, meat, and breads and cereals. A simplified guide, entitled “Foods for Fitness: A Daily Food Guide,” was then disseminated to the general public to help ensure better coverage of the nutrients provided by the four groups. The guide recommended the number of servings to be eaten from each group, but did not include advice on fat, sugar or calorie intake. It remained in effect in the US until 1992.

The concept of food groups evolved with growing public health concerns about the excessive consumption of sugar and fat, especially saturated fat, and the lack of dietary fibre. Many countries would base their guidelines on the need to emphasize certain foods rich in healthy nutrients and to limit others that could increase the risk of certain diseases if eaten in excess.

Today, numerous countries have developed a simplified approach centred on four basic food groups:

- Cereals
- Milk and dairy products
- Vegetables and fruits
- Meat, fish, seafood and eggs.
Some countries include other groups, such as:

- Fats
- Sweets
- Beverages (water).

The food groups are made up primarily of whole foods. Processed or formulated products are rarely represented in food guides because they are so diverse in nature (Montagnese et al., 2015; ANSES 2017c; FAO, Food-based dietary guidelines, n.d.).

It should be noted that fats and sweets are often grouped in a single category. A “Beverages” group is included in the food guides of many countries to encourage people to drink water. Sugar-added drinks and fruit juices are, in some cases, categorized with sweets. Alcohol is either included in the “Beverages” group or referred to separately. Salt is considered, by some countries, in a distinct category.

In the Netherlands and Malaysia, “Meat, fish, eggs and other sources of protein or protein alternatives” and “Dairy products” comprise a single group.

The composition of food groups can differ widely from one country to another. This is certainly true of legumes, for example. The differences are a reflection of the cultural context and local dietary patterns (FAO, Food-based dietary guidelines, n.d.).

In North America, Europe (Great Britain, Spain, the Netherlands, etc.), Australia, Saudi Arabia, Benin and most Asian countries, legumes are grouped with “Meat, fish, eggs and other sources of protein or protein alternatives,” thus taking into account their significant vegetable protein content.

In other countries, such as France and China, legumes are considered a starch and grouped with “Cereals.” It should be noted that, in Qatar and South Africa, legumes comprise a separate group. In China, soya beans and nuts are included with dairy products in light of their protein content, whereas in Spain, nuts are categorized with “Meat, fish, eggs and other sources of protein or protein alternatives” (Sociedad Española de Dietética y Ciencias, 2016).
Servings are not specified by all food guides around the world. However, those of Canada and Australia clearly define serving information for each food group.

Serving sizes are provided in a number of measurements: gram, cup, glass, tablespoon or teaspoon, fruit or vegetable, slice of bread, etc. (see below) (Health Canada, 2007a; Australian Government, 2013a).

- **Inclusion of exercise in food guides**

In addition to dietary guidelines, numerous food guides include advice about physical activity, such as those published by Argentina, Canada, China, France, Japan and the Scandinavian countries (FAO, Food-based dietary guidelines, n.d.; Nordic Council of Ministers, 2014). Sri Lanka designed a pyramid specifically devoted to physical activity (see below) (FAO, Food-based dietary guidelines, n.d.).
1.3.1.3 Formats

- **Graphic representations**
  Many countries use graphic symbols to illustrate their dietary guidelines. A distinctive feature of all these symbols is that they visually support the messaging and food groupings in a simple manner. Thanks to the explicit colour codes they use, these graphics help a maximum number of people to understand the messages without any particular knowledge of nutrition.

The **food plate** and **pyramid** are the predominant symbols used for food guides around the world. They offer the advantage of portraying, at a glance, the food groups to be eaten, the variety to be enjoyed, and the servings to be consumed—the foods to be emphasized and those to be eaten in moderation. Some countries have opted for local cultural symbols, which are more readily recognizable (see below).

Representation of physical activity in food guides: left, Japan’s spinning top (Murphy and Barr, 2007); centre, China’s pagoda (Chinese Nutrition Society, 2016); right, Sri Lanka’s pyramid (FAO, Food-based dietary guidelines, n.d.).
The graphic representations used to illustrate dietary recommendations in food guides are many and varied (see Table 4). The FAO’s website, which presents food guides from around the globe, includes no less than thirty different symbols. Ranging from standard geometric forms (pyramid, circle or curve), to kitchen and household objects, fruits, characteristic dwellings (igloo, yurt, etc.), and even national and cultural symbols (flag), the representations are numerous and original.

According to the FAO (2017), more than 100 countries around the globe have now developed dietary guidelines. The list can be consulted on the FAO’s website (FAO, Food-based dietary guidelines, n.d.).

### Table 4: Primary Graphics used in Food Guides Worldwide in Recent Decades
(Murphy and Barr, 2007; EUFIC, 2009; Montagnese et al., 2015; Fischer and Garnett, 2016; FAO, Food-based dietary guidelines, n.d.)

<table>
<thead>
<tr>
<th>Category</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geometric forms</td>
<td>- Pyramid: Horizontal/ vertical/3D</td>
</tr>
<tr>
<td></td>
<td>- Circle: Plate, medicine wheel, bicycle wheel, sun</td>
</tr>
<tr>
<td></td>
<td>- Arch: Rainbow, curve</td>
</tr>
<tr>
<td>Kitchen and household objects</td>
<td>- Inuit knife, mortar, jug, pot, basket</td>
</tr>
<tr>
<td></td>
<td>- Water mill, sugar cane mill</td>
</tr>
<tr>
<td></td>
<td>- Spinning top, drum, shell</td>
</tr>
<tr>
<td>Fruits and plants</td>
<td>- Fruits (pineapple, nutmeg, apple, breadfruit)</td>
</tr>
<tr>
<td></td>
<td>- Four-leaf clover, flower, cedar, palm tree</td>
</tr>
<tr>
<td>Dwellings</td>
<td>- Stair steps, house, hut, igloo, yurt, pagoda, boat</td>
</tr>
<tr>
<td>National and cultural symbols</td>
<td>- Flag, map of country, medicine wheel</td>
</tr>
<tr>
<td></td>
<td>- Imperial amazon (bird emblem for Dominica) carrying a basket</td>
</tr>
</tbody>
</table>
1.3.2. Evolution of food guide graphics

The food plate and pyramid were the most commonly used symbols in food guides in the twentieth century.

The pyramid-shaped graphic first appeared in Sweden in the 1970s when the Swedish health authorities introduced the three-level guide, which was pioneered by Anna Britt Agnsäter, a professor of social and family economics (FoodPyramid.com, n.d.).

The bottom of the pyramid included the basic foods (potatoes, pasta, grains and dairy products). The centre and top levels encompassed supplemental foods (fruits and vegetables, meat, fish and eggs). The purpose of the guide was to provide the general public with information about the food groups and the servings they needed to meet their vitamin and mineral requirements at an affordable cost.

In 1992, the United States published a pyramid with six food groups and the recommended number of servings: carbohydrates constituted the largest group at the base (bread, cereal, rice and pasta), followed by fruits and vegetables at the next level, then dairy products and meat toward the top.

The US pyramid was then revised in 2005 (Figure 1). The result, entitled “MyPyramid: Steps to a Healthier You,” includes five food groups illustrated in vertical bands without any indication of hierarchy among the groups (USDA, 2011).

Figure 1: The US pyramid of 2005 (left), compared with that published in the 1990s (right) (USDA,
The pyramid would be used by a number of countries in many different forms to illustrate dietary recommendations.

Different models of pyramids: left, Australia (3D pyramid, 2013); centre, Thailand (flag, inverted pyramid, 2007) and Japan (spinning top, 2005); and right, Sri Lanka (simple pyramid, 2011).

In 2011, the United States replaced “MyPyramid” with “MyPlate®.” As the illustration opposite shows, MyPlate includes five food groups displayed in plate form: fruits, grains, vegetables, protein, and dairy represented by a glass beside the plate (USDA, 2011).

The presentation of MyPlate was criticized in the United States. Some institutions felt that the messaging was too general (Melnick and Siddiqui, 2014; Feldscher, 2015). Some private organizations went on to publish their own separate recommendations. This is true of the Harvard T.H. Chan School of Public Health, which put out the “Healthy Eating Plate©” in 2011 in a number of different languages.

This analysis of the evolution of food guides around the world shows that, for more than seventy-five years now, many countries have endeavoured to design clear, reliable information tools tailored to the nutritional needs of their populations—tools that reflect the cultural dimension of diet.

While dietary patterns have grown more global, food models have become increasingly diversified (French Ministère de l’agriculture, de l’agroalimentaire et de la forêt, 2017). Experts share their thoughts and ideas through international bodies. They collaborate, influence one another, and distinguish themselves through this multitude of ever-evolving representations.
2. France-Canada, differing perspectives

For a number of decades, France and Canada have been developing programs and resources to improve the dietary patterns and ultimately the health of their populations. Both countries are now in the process of updating their dietary guidelines and resources (Health Canada’s healthy eating strategy, Health Canada, 2016a; ANSES, 2017c; HCSP, 2017).

This section discusses how the dietary guidelines issued by these two Western countries have changed over the years. As we will see, both societies have incorporated their own specific cultural dimension in the information tools they develop for the general public.

2.1 Dietary guidelines, the French approach

2.1.1 From the 1930s to the 2010s, between modernity and tradition

Late nineteenth century and early twentieth: Hygienic messages with the advent of processed foods

At the end of the nineteenth century, concerns about hygiene fuelled the fight against disease and prompted action for improvement in water and food quality. During this period, physicians disseminated public health information and guidance about good hygiene and a healthy diet (Mathé et al., 2008).

Advances in agriculture and technology, urbanization and trade brought about the first changes in the supply of food, with sugar, coffee and chocolate, for example, being distributed on a wider scale (Fischler, 1990). The industrial revolution paved the way for the development of flour mills, oil mills, refineries and food processing companies. By the beginning of the twentieth century, the canned foods industry was rapidly growing in Europe. During World War I, many processed foods were created—bouillon cubes, powdered milk, coffee substitutes—to meet the needs of the army (Flandrin & Montanari, 1996).

1930s: The first dietetic laws issued at the end of the economic crisis

France experienced a series of economic, social and cultural crises in the 1930s. People in rural areas suffered from extreme poverty, and workers in the cities were affected by food shortages. Soup kitchens and hunger marches were on the rise (Encyclopédie Larousse, 2017).
During these difficult economic times, many French people endured nutritional deficiencies. Particularly concerned about the health of children, Lucie Randoin, a biologist and hygienist, published the first “Lois de diététique” in 1935 (Masdoua, 2012; AFDN, n.d.).

The industrialization of food continued at a relatively slow pace and impacted primarily the urban population. In rural areas, people continued to eat what they produced on the farm—crops, animals and animal products—until the end of World War II (Lambert, 2009).

1940s: Overcoming the deficiencies from wartime rationing and ensuring a balanced diet
The first prevention campaigns, coordinated by the National Demographic and Social Health Education Center, were carried out in 1945. They focused on limiting alcohol and extolling the nutritional virtues of milk for children.

Jean Trémolières, a biologist and physician, laid the foundation for modern dietetics and nutrition in France. He founded a French-style nutrition school and, in 1948, created the first multidisciplinary nutritional research facility at Hôpital Bichat, which later becomes a benchmark organization.

In 1949, the cover of issue 56 of La Santé de l'homme, entitled “Équilibre Alimentaire: Santé et Diététique,” illustrated the link between nutrition and health, already discussed in scientific publications in France. The questions raised were centred on shortcomings in food hygiene. The recommendations highlighted how to organize the kitchen, table and meals to help ensure that mealtimes were convivial (Chauliac and Hercberg, 2012).

Scientific advances and technological innovations during the 1940s spurred by the war paved the way for discoveries in the prevention, diagnosis and treatment of diseases (Mathé et al., 2008).

1950s: Six food groups, a symbol of modernity, and first concerns about abundance
Dietary patterns evolved more quickly with the accelerated advances in the agri-food industry and the socio-economic changes that had started to take place a few decades earlier (Fischler, 1996, Poulain, 2002a; Lambert, 2009).
The Western world entered an era of abundance in the history of food (Fischler 1996; Poulain, 2002b). The French placed greater emphasis on meat, which was scarce during the war. The younger generations developed a taste for processed products and new sugar-added foods and beverages like ice cream, sherbet, yogurt, fruit drinks and soda pop (Corbeau and Poulain, 2002).

**The guidelines changed and six food groups were proposed** (Chauliac and Hercberg, 2012):

- Fish, meat and delicatessen meats (100 g/day and ½ egg/day), legumes (twice/week);
- Dairy products (two glasses of pasteurized milk and one serving of cheese/day);
- Bread and grain products (according to appetite);
- Butter (on bread and 125 g/week), fats such as oil, margarine and lard (1/2 pound/week);
- Fresh fruits and vegetables (2 dishes/day);
- Cooked fruits and vegetables, potatoes (2 dishes/day).

Excessive sugar and sweets were considered “harmful” for children. On the basis of scientific advances, Trémolières expressed concern about the abundance of food, writing, “After being the secret wish of most of humanity for centuries, overeating has become one of the greatest dangers of our civilization” (translation of Trémolières J., 1955 cited by Chauliac and Hercberg, 2012, p.10).

**1960s: Eating and enjoying food in a consumer society**

In 1964, Yvonne Serville, a dietitian and professor of home economics at the Institut National d'Hygiène and a collaborator of Jean Trémolières, published *Petit guide de l'alimentation familiale*.

According to Trémolières, food was not only to nourish and provide nutrients, but also to give people enjoyment and bring them together around the table. He believed that food had symbolic significance—significance related to identity. During the 1960s, the French sought out nourishing and satisfying foods like carbohydrates, meat symbolizing strength, and sugar which supplied beneficial energy (Barthes, 1961; Trémolières, 1968 cited by Poulain 2002b; Lambert, 2009).

France quickly entered the consumer age, as supermarkets sprang up and car and television ownership soared. These developments reflected a higher standard of living and level of education. Urbanization continued and people adopted a more sedentary lifestyle (Fischler 1996).
1970s: “Eat less” messages central to the overweight/thinness paradox

The Comité Français d'Éducation pour la Santé (CFES) was set up in 1972, and succeeded the Centre national d'éducation sanitaire démographique et sociale. The idea of dividing foods into groups was put forward and dietary guidelines promoting good, balanced nutrition were issued (Chauliac and Hercberg, 2012). With the support of the health education departments and regional committees, the CFES conducted national health and disease prevention campaigns targeting the general public.

In the 1970s, body images promoted by the fashion industry, media and advertising emphasized increasing thinness. People became concerned about body weight and image, particularly women. As a result, media and diet-related messages become more and more anti-fat and antisugar (Fischler, 1990; Defrance, 1994).

At the same time, the findings of nutrition experts exposed the harmful effects of overabundance. In his book written for the general public, Diététique et art de vivre (1975), Jean Trémolières questioned the malaise created by consumer society. He advocated an approach revolving around the art of living and knowledge about eating well.

In 1979, sociologist Claude Fischler published an article, “Gastro-nomie et gastro-anomie, Sagesse du corps et crise bioculturelle de l'alimentation moderne,” which examined the challenges of the modern eater. In it, he portrayed the modern eater as increasingly solitary, detached from sociocultural points of reference, and losing faith in an agro-industrial society that supplied standardized foods (Fischler, 1979).

1980s: Preventing the risks of nutrient excess and deficiency and improving balance through official nutritional messages

In the 1980s, “official” nutrition recommendations were introduced in France. The first edition of "Apports nutritionnels conseillés (ANC) pour la population française" (dietary reference intakes (DRIs) for the French population) was edited by Professor Henri Dupin and published in 1981.

The recommendations were then revised in 1992 (Dupin, 1981; Dupin et al., 1992).
Dietary reference intakes (DRIs)\(^1\) are a set of nutrient reference values established on the basis of research as well as epidemiological and clinical data; they are adapted according to age, gender and specific physiological state (pregnant, breastfeeding, athlete, etc.). They take changing lifestyles into account (decrease in energy expenditures and requirements); they are intended to avert the risk of nutrient excesses and deficiencies and to prevent chronic diseases.

In addition to the nutritional risk prevention messages of this decade, a back-to-the-land movement based on environmental values advocated a more natural diet, and rejected industrialization and junk food (Poulain, 2002a).

\textbf{1990s: Giving the modern eater nutritional points of reference} 

The CFES published a food guide, “La santé dans l’assiette,” setting out guidelines around seven food groups. Fruits and vegetables, both raw and cooked, were included in a single group. Two new groups were added: beverages, and sugar and sugar-added products. The guide used the following colour codes to illustrate the seven categories:

- Milk and dairy products
- Meat, fish and eggs
- Vegetables and fruits
- Cereals and their derivatives, potatoes and legumes
- Fats
- Sugar and sugar-added products
- Beverages

The guide provided advice on meal preparation, foods to include in meals (breakfast and snacks), and cooking.

In the 1990s, a plethora of publications, reports and analyses on changing dietary patterns in France were issued. Researchers and experts from every field as well as the media and consumer organizations strove to understand the crises, the eater’s anxieties, and the obesity epidemic (Poulain, 2002a; Fischler, 1990). Fischler describes the profusion of nutritional information, dietetic data and culinary messages as a veritable dietary cacophony (Fischler, 1990).

\(^{1}\) See the glossary at the end of this document.
The 2000s: New dietary reference intakes to better meet nutritional needs and prevent chronic diseases

The third edition of the dietary reference intakes was published in 2001 by Professor Ambroise Martin, in collaboration with more than eighty experts (Martin et al., 2001). Martin distilled the data of some 1,800 publications in a single guide for professionals working with health services, institutional food services and agri-food companies.

The guide incorporates an innovative tool, which professionals can use to evaluate whether populations have a balanced diet. Users respond to a simple web questionnaire about the number of daily servings from the food groups. The tool uses an algorithm to compare that information with the recommended daily intakes, then provides personalized results in the form of a boat.

2.1.2. Nutrition program in France: large-scale implementation

2001: France rolls out its national public health program and resources

In January 2001, France paved the way for a national nutrition policy when the Ministry of health introduced its National Nutrition and Health Program (PNNS). The PNNS set out the nutrition objectives and strategy for the following five years with a view to implementing a nutrition policy in France. The commitment expressed: to improve the health of the entire population by taking action on nutrition, a major determinant of health.

In light of the human, social and economic impact of chronic diseases, the National Nutrition and Health Program constituted a veritable public health priority for France. The PNNS established a frame of reference, and relied on the work of two expert commissions: the General Directorate of Health in 1999, and the High Council for Public Health in 2000. The program was overseen by an interdepartmental committee (see table opposite).
The program revolved around six main strategic orientations, maintained and built upon over the years:

1. Inform, guide and educate consumers about food choices and nutritional status by creating a favorable environment.
2. Prevent, detect and manage nutritional disorders in the health system.
3. Involve agri-food companies, institutional food services, and consumers through consumer associations as well as their chapters and committees.
4. Implement systems to monitor the general public’s diet and nutrition.
5. Develop research on human nutrition, including clinical, behavioural and epidemiological research.
6. Initiate complementary public health actions and measures targeting specific groups of the population.

To support the first strategic orientation, nutritional goals were defined:
- increasing the intake of fruits and vegetables, calcium and complex carbohydrates;
- recommending a decrease in alcohol consumption, but also taking action regarding health indicators such as cholesterolemia, blood pressure, the prevalence of overweight and obesity, and physical activity.

To meet the needs of certain target groups, as indicated in the sixth strategic orientation, specific nutritional goals were developed:
- reducing the risk of deficiencies in sub-groups of the population: iron in pregnant women; folates in women of childbearing age;
- encouraging women to breastfeed;
- improving the iron, calcium and vitamin D status of children and teens; the calcium and vitamin D status of the elderly; and preventing undernutrition of the elderly;
- reducing deficiencies in people in precarious situations and protecting people on restrictive diets;
- taking food allergies into account.

These measures were supported by quantifiable data and reassessed at the end of each period. In order to meet the program’s information, education and prevention requirements, a collection of guides intended for the general public, health professionals and caregivers was prepared by public health scientific authorities. These resources, made available to all stakeholders, can now be downloaded on the PNNS websites for the general public and for professionals.

"La santé vient en mangeant"

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2 A group of nutrition experts including members of ANSES (Agency for food, environmental and occupational health & safety), the public health expert committee assembled by the General Directorate of Health (DGS) and the PNNS strategic committee. It was also presented to the Conseil National de l’Alimentation.
The food guide, “La santé vient en mangeant” (health comes with eating), constitutes a reference in France and is intended for the population as a whole. It provides a list of profiles that correspond to various lifestyles, and offers advice and guidance for each one. The advice is designed to steer consumers toward healthy food choices without overlooking the convivial or pleasurable aspects of food. An accompanying information guide for health professionals was also developed.

<table>
<thead>
<tr>
<th>Sample profiles provided:</th>
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<tbody>
<tr>
<td>- I want to eat, protect my health... and enjoy my food;</td>
</tr>
<tr>
<td>- I have trouble making ends meet;</td>
</tr>
<tr>
<td>- I often entertain; I like having parties;</td>
</tr>
<tr>
<td>- I’m a vegetarian;</td>
</tr>
<tr>
<td>- I often eat exotic dishes or foreign cuisine.</td>
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<thead>
<tr>
<th>PNNS Resources (Santé Publique France, n.d.)</th>
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<tbody>
<tr>
<td><strong>Collection of PNNS guides and tip sheets:</strong></td>
</tr>
<tr>
<td>- La santé vient en mangeant (health comes with eating)</td>
</tr>
<tr>
<td>- La santé vient en bougeant (health comes with moving)</td>
</tr>
<tr>
<td>- Le guide nutrition pendant et après la grossesse (nutrition guide before and during pregnancy)</td>
</tr>
<tr>
<td>- Le guide l’allaitement maternel (breastfeeding guide)</td>
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<tr>
<td>- Le guide pour les parents d’enfants de la naissance à 3 ans (guide for parents of children from birth to 3)</td>
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<tr>
<td>- Le guide pour les parents d’enfants et d’adolescents (0-18 ans) (guide for parents of children and teens (from birth to 18))</td>
</tr>
<tr>
<td>- Le guide nutrition pour les ados « J’aime manger, j’aime bouger » (teen nutrition guide “I like to eat, I like to move”)</td>
</tr>
<tr>
<td>- Le guide nutrition à partir de 55 ans (nutrition guide for people 55 and over)</td>
</tr>
<tr>
<td>- Le guide nutrition pour les aidants des personnes âgées (nutrition guide for caregivers of the elderly)</td>
</tr>
<tr>
<td>- A collection of tip sheets on the food groups and physical activity</td>
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</tbody>
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<thead>
<tr>
<th>Memory jogger, developed by target group:</th>
</tr>
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<tbody>
<tr>
<td>- “Le meilleur du goûter” (“The best of snacks”), for children</td>
</tr>
<tr>
<td>- “Vous avez un projet de bébé?” (“Planning to have a baby?”), for women of childbearing age</td>
</tr>
<tr>
<td>- “Mémo nutrition” (a nutrition memory tickler, to stick on the fridge), for the elderly</td>
</tr>
</tbody>
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<tr>
<th>Drinking guideline posters for specific groups:</th>
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</thead>
<tbody>
<tr>
<td>- For food aid employees and volunteers, to help people in a precarious situation</td>
</tr>
<tr>
<td>- For the deaf and visually impaired (in braille)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Interactive tools:</th>
</tr>
</thead>
<tbody>
<tr>
<td>- La fabrique à menu (menu maker), to help the general public create balanced menus online</td>
</tr>
<tr>
<td>- Calendrier des saisons (seasonal calendar), to encourage people to eat fresh fruits and vegetables all year long</td>
</tr>
<tr>
<td>- Panier à idées (ideas basket), an interactive space for sharing good food ideas</td>
</tr>
</tbody>
</table>
Launched in 2001, the National Nutrition and Health Program (PNNS) was extended in 2006 for five years (PNNS 2), then renewed from 2011 to 2015 (PNNS 3). The fourth edition (PNNS 4) should be released in 2017 for the period from 2017 to 2021 (Ministère de l'emploi et de la solidarité - Ministère délégué à la santé, 2001; Ministère de la santé et des solidarités, 2006; Ministère du Travail, de l'Emploi et de la Santé, 2011; HCSP, 2017).

At the same time, public health agencies were reorganized. In 2002, the CFES was replaced by the Institute for Health Promotion and Health Education (INPES). The institute fulfills an expert assessment and advisory mission in promoting health and preventing disease in addition to developing health education throughout France.

In 2016, the national public health agency, Santé publique France (SPF), was created. It has incorporated the mission of INPES, as well as epidemiological monitoring and surveillance.

The National Nutrition and Health Program involves all public health stakeholders in France, including the general public, health professionals, the healthcare system, educators, communities, food companies, institutional food services, and commercial catering.

Over the years, the program has provided for the implementation of:

- various action plans (Plan Obésité, Plan Alimentation et Insertion, Programme national pour l’alimentation) covering agricultural products, short supply chains channels, food safety, etc.;
- incentive mechanisms to support actions (food advertising, nutrition labelling, regulation, nutrition guidelines for institutional food services, etc.);
- numerous actions intended to guide consumers toward healthier food choices and to create favorable environments, such as:
A tool labelling system overseen by committees of experts to rally “active” communities, cities, associations and institutions. These actions have been supported by training programs for professionals.

A voluntary nutritional progress commitment charter, encouraging the food industry to work toward reformulating products, in particular in terms of sugar, fat and salt content, so as to comply more closely with the PNNS dietary guidelines.

Between 2001 and 2017, thirty-seven food companies came forward and signed the charter, making a commitment to modify their products according to specific criteria defined and evaluated by a committee of experts. The results achieved in product reformulation have been significant (Ministère des Affaires sociales et de la Santé, n.d.).

One of the approaches identified as a future priority in France is to take social inequalities in health into account as they relate to nutrition. Often associated with disparities in income, these inequalities can also be due to a number of other factors:
- family status (separated, single parent, etc.);
- employment situation (employment precarity, unemployed, forced part-time, student, young worker, etc.);
- level of education;
- cultural origin;
- migration status;
- immediate environment (elderly and isolated, etc.).

As part of its initiatives, the PNNS is planning means of taking targeted action. Reducing social inequalities in France as they relate to nutrition is part of a global approach to prevention; it requires specific, local measures that consider the difficulties and constraints faced by the socioeconomic groups concerned.

Numerous stakeholders, both professional and institutional, are involved: municipal players (civic centres for social action, city-health workshops, recreation centres, etc.), general consultants (PMI), social workers, and the community (sports clubs, food aid, etc.).

A multisectoral, interventional research effort was launched in recent years to gain a better understanding of how to reduce such social equalities. It encompasses numerous sectors: economics, sociology, political science, food technology, food
Specific to France is the fact that the country includes a number of overseas departments and territories. PNNS 3 was adapted to take this particular situation into account. The prevalence of obesity and associated pathologies (diabetes, high blood pressure, cardiovascular diseases) is higher in the overseas departments and territories than in Metropolitan France (Ministère du Travail, de l’Emploi et de la Santé, 2011a).

Here are some examples of initiatives developed to take the geographic specificities of France and its territories into account:

- **Guiana**: a nutrition survey with a specific sociological and ethnological focus was conducted;
- **Martinique, Guadeloupe and Réunion**: factors of social health-related inequality were taken into consideration in the messages disseminated (low agricultural production and consumption of local resources);
- **Mayotte**: specific tools were developed to address the impact of accelerated nutrition changes and the worsening of malnutrition (undernutrition in children and obesity in women) (IREPS, 2017). An example is the poster shown here “Manger, Bouger, C’est la santé,” which illustrates local products (fruits, vegetables and corn, and physical activities appropriate to the region).

The dietary situation overseas is closely linked to cultural and economic factors; it is also influenced by geography and climate. Particular attention is to be paid to the cultural specificities and to optimizing local resources that play a decisive role. Basic principles in reducing inequalities include: ensuring that healthy food is readily available; providing information; and raising awareness about a healthy diet, foods to limit, and the importance of physical exercise.
2.2 Canada, healthy eating in a multicultural society
Canada is a federation of ten provinces (Alberta, British Columbia, Manitoba, New Brunswick, Newfoundland and Labrador, Nova Scotia, Ontario, Prince Edward Island, Québec and Saskatchewan,) and three territories (Northwest Territories, Nunavut and Yukon).

The provinces and territories independently manage the health policy for their populations.

However, an office of the federal department of health—the Office of Nutrition Policy and Promotion (ONPP)—oversees the development of dietary guidelines and food guides. The ONPP is responsible for decisions relating to healthy-eating and nutrition policies and promotion in Canada (Health Canada, 2005).

2.2.1 A brief history: dietary guidelines from 1942 to the 2010s
In 2007, the federal department of health published a history of food guides. As it indicated, the purpose of food guides has remained the same over the years: to promote the nutritional health of Canadians (Health Canada, 2007c). This section takes a look at the various guides issued over the past seventy-five years. While the formats and messages have changed, the guidelines themselves have remained faithful to their original purpose.

1940s: Prevent deficiencies and improve health despite food rationing and wartime poverty
Canada’s Official Food Rules, designed by the Nutrition Division of the federal Department of Pensions and National Health and approved by the Canadian Council on Nutrition, were first published in 1942 in both French and English (Health Canada, 2007c).

They were intended to help “everyone in Canada toward the health that comes from eating the right foods” (Pett, 1942, cited by Health Canada, 2007c) by encouraging them to include foods from the six groups in their daily diets: milk, fruits, vegetables, cereals and bread, meat and fish, and eggs. The rules specified the quantity of food to eat from each group every day.

In 1944, this publication became Canada’s Food Rules with five food groups: eggs and cheese were included in the meat and fish group. Butter was mentioned in the cereals and bread group. Drinking water and using iodized salt were recommended.
During the 1940s, the Canadian government devoted considerable resources to the promotion of healthy eating based on Canada’s Food Rules. Messages were disseminated over the radio, in daily newspapers and in magazines. Information sheets for adults and teachers (score sheet for one day’s meals, food shopping list, etc.) were distributed with paycheques.

In 1946, the government asked Canadians to show their solidarity with the world by conserving food despite the poverty affecting some groups of the population. The government’s message was as follows: “Food is urgently needed in Europe and the Far East. Do your bit for hungry humanity by conserving food. Buy less. Use Less. Waste nothing.” (Health Canada, 2007c, p 7).

1950s: Better nutrition knowledge and focus on variety
In 1949, the federal Nutrition Division published a revised version of Canada’s Food Rules (Health Canada, 2007c). In light of the experience gained by nutritionists in all the provinces and the improvement in nutrition knowledge, the five food groups were amended: for example, the quantity of milk was tailored to age, the butter reference grew to include margarine, and bread was no longer limited to “Canada Approved” choices.

The message to conserve food because of the global scarcity now included the idea that overeating was harmful. As urbanization and industrialization grew in post-war Canada, the food supply and consumer demands became more diversified (Jourdan and Poirier, 2012). The score sheet for each day’s meals was updated and Canada’s Food Rules – A Dietary Framework for All, outlining a day’s eating plan, was published.
1960s: Guiding food choices toward greater variety

In 1961, *Canada’s Food Guide* replaced *Canada’s Food Rules*. The recommendations were updated in terms of content, tone and visual design. The guide was more flexible, as it presented a wider variety of fresh and processed foods that could meet nutritional needs (Health Canada, 2007c).

It retained the five food groups and specified the quantity of milk and dairy products according to age and for expectant and nursing mothers. It also indicated that eggs, cheese or dried beans could be eaten in place of meat. The 1960s were a time of significant change with the massive influx of women in the workplace, the drop in the birth rate, the increase in immigration, and the development of food services outside the home (Jourdan and Poirier, 2012).

1970s: Knowledge of dietary patterns and public awareness

In 1977, an updated version of *Canada’s Food Guide* was published, in a double-sided format, with the four food groups and the recommended servings forming a wheel around the sun.

Fruits and vegetables were combined into one group. The milk group became “milk and milk products,” which included cheese and yogurt. The “meat and fish” group was changed to “meat and alternates.” “Bread and cereals” indicated that enriched products could be eaten as well as whole grain (Health Canada, 2007c).
The guide was accompanied by *Canada’s Food Guide Handbook*. These tools were created following the Nutrition Canada National Survey of 1973 and a thorough analysis of what contributes to good health (Health and Welfare Canada 1973).

**1980s: Variety, energy balance and moderation**

The 1982 update of the food guide included messages concerning the prevention of diet-related chronic diseases (Health Canada, 2007c). Following a report by Health and Welfare Canada in 1977 (Health and Welfare Canada, 1976), the guide placed greater emphasis on energy balance and moderate amounts of fat, sugar, salt and alcohol. The four food groups remained the same, but the meat group was changed to “meat, fish, poultry and alternates.”

**1990s: Eating well, new dietary guidelines**

Based on information assembled from experts and consumers, *Canada’s Food Guide to Healthy Eating* (1992) took a total diet approach, focusing on the types of foods and the minimal quantities people should eat every day to meet their requirements (Health Canada, 2007c).

The four food groups (grain products, vegetables and fruit, milk products, and meat and alternatives) were displayed in a rainbow graphic. The bands of the rainbow varied in size according to the number of servings people could select to meet their specific energy needs.

The guide included “Other Foods,” described as providing taste and enjoyment but to be eaten in moderation because they are high in fat and calories. It also encouraged people to engage in regular physical activity.

At the same time, food guides represented by a flower were developed by a Québec nutritionist, to address the specific needs of vegetarians and vegans (Lamontagne, 1992).
The 2000s: Healthy diet and physical activity for all Canadians

*Eating Well with Canada’s Food Guide* was published in 2007 after a rigorous consultative process spanning five years (Health Canada, 2007c).

Published in a six-page format in both official languages (French and English), it retains the four food groups and the rainbow graphic. Vegetables and fruit now form the largest band in the rainbow. The guide provides numerous practical tips on healthy living (see detailed analysis in section 2.3). A fifty-page booklet, titled “A Resource for Educators and Communicators,” was also printed.

The 2010s: Interactive online tools to encourage Canadians to eat well

As a complement to the 2007 food guide, Health Canada prepared online tools, including videos. These resources provide individuals and families with practical advice and ideas according to their lifestyle, age, and food-preparation skills.

The following resources, for example, are found on Health Canada’s website (Government of Canada, 2016a; Health Canada, 2016b):

- Healthy school lunches (2013)
- Nutrition for different ages and stages (2015)
- Tips for a well-stocked kitchen: Preparing healthy meals and snacks, Meal planning basics (2015)
- Tips for eating out (2015)
- Healthy eating for children (2016)
- Tips for little chefs (2017)

The “Eat Well Plate” created in 2016 was developed as an interactive tool to help people visualize the proportions of the four food groups to be eaten every day. It clearly shows that vegetables and fruit represent half the plate.

“My Food Guide” is an interactive tool and mobile application that enables people to personalize *Canada’s Food Guide* by indicating their age, gender and favorite foods from each group.
2.2.2. Multicultural approach

Canada is a multicultural country, with 20.6% of the population born abroad. Initially, immigrants came primarily from Europe. However, in the past ten years, newcomers have emigrated mainly from Asia and the Middle East, as well as Africa (Algeria, Morocco and Nigeria), the Antilles (Haiti), Central America (Mexico), South America (Columbia), the United States and Europe (Statistics Canada, 2011).

To provide the many immigrant populations living in Canada with dietary information, *Eating Well with Canada’s Food Guide* was translated into an additional ten languages in 2011: Arabic, Chinese, Korean, Spanish, Farsi (Iran), Urdu (Pakistan), Punjabi (India), Russian, Tagalog (Southeast Asia), and Tamil (Sri Lanka).

Some 1.4 million people in Canada identify as Aboriginal (see map opposite). The Canadian Constitution recognizes three groups of Aboriginal peoples: First Nations, Inuit and Métis (Indigenous and Northern Affairs Canada, 2017).

In 2007, “Eating Well with Canada’s Food Guide” was tailored to First Nations, Inuit and Métis (Health Canada, 2007b). It is available in French and English as well as four other languages: Inuktitut for the Inuit, Ojibwa, Plains Cri and Woods Cri for First Nations.

Depicting a medicine wheel, the guide takes into account the cultural, spiritual, emotional and physical significance of traditional foods. The links between food, the earth, family and community are illustrated in the centre of the wheel (traditional food-preparation practices, gathering, hunting and fishing). The foods available at an affordable cost are shown in the outer circle. The back of the guide provides a number of tips. For example, it states that people who do not consume dairy products should eat wild plants and seaweed, fish with bones, shellfish, nuts and beans, as well as bannock, a traditional bread made with baking powder.
The food guide for the Atikamekw nation in Québec was prepared in 1999. The revised version of 2009 uses the same principles and format as the First Nations, Inuit and Métis food guide.

The four sections of the medicine wheel depict symbols of importance to the nation (Roy, n.d.):

- At the top, the north, the winter, white products (dairy for bones and teeth) on a blue background representing old age;
- On the right, the east, the spring, grains (cereal products) on a yellow background depicting the sun, the beginning of life, energy;
- At the bottom, the south, the summer, seeds (vegetables and fruit), on a green background portraying youth and vitality;
- On the left, the west, the fall, hunting (meat and alternatives), on a red background symbolizing muscles, blood and maturity.

The food guide for Nunavut, a federal territory where the majority of the Inuit in Canada live, was published in 2011. Illustrated with a traditional knife, the guide contains the following general message: “Choose country foods and healthy store-bought foods for a strong body.” It is available in the four official languages: Inuktitut, English, French and Inuinnaqtun (Nunavut Department of Health, n.d.).
The food guide for Nunavik, the territory in the great north of Québec where the Inuit of Québec live, was developed in 2012 by the Nunavik Regional Board of Health and Social Services, and features an igloo on the cover. It applies the same principles as Canada’s Food Guide but incorporates the cultural practices of the Inuit (hunting and fishing, and Inuit cuisine) (Nunavik Regional Board of Health and Social Services, n.d.).

The food guide for the Cri of James Bay, Québec, is illustrated by a plate (“The plate method”) divided into three food groups. Apart from milk, this community does not consume dairy products. Published in 2010, this bilingual guide (English-Cri) emphasizes traditional foods (Cree Board of Health and Social Services of James Bay, 2010).

Another bilingual guide (English-Cri), inspired by the rainbow, is intended for expectant Cri women. Printed in 2014, “Building a Healthy Baby” illustrates the benefits of the four food groups for the development of the fetus (Cree Board of Health and Social Services of James Bay, 2014).
2.2.3 Québec’s original vision

Along with the food policies and guides issued at the federal level by Health Canada, each province develops programs for its own residents. This is certainly true of Québec, which adopted an original vision of dietary guidelines in the 2000s.

Basing itself on the ecological health model set out in the Ottawa Charter for Health Promotion (WHO, 1986), the Québec government issued policies devoted to the promotion of healthy lifestyles and the development of environments supporting health and preventing obesity and chronic diseases.

- **An action plan on diet and weight: Investir pour l’avenir**

  In 2006, the Québec government published its 2006-2012 action plan (the “Action Plan”) to promote healthy lifestyles and prevent weight-related problems. The plan, entitled *Investir pour l’avenir*, is the result of a collaborative effort by seven Québec government departments and three government agencies (Lachance et al. 2006).

  It targets, in particular, young people from birth to age 25 and their families. It sets out actions aimed at the home and various other environments in an effort to reach the entire population. The Action Plan is centred on five main priorities: a healthy diet, physically active lifestyle, favorable social norms, services for people grappling with a weight problem, as well as research and knowledge sharing.

  It should be noted that *Investir pour l’avenir* addresses the weight issue from a two-fold perspective—overweight and the thinness obsession—an approach initiated in Québec in the 2000s (ASPQ, 2004 and 2006).

  In the 2000s, healthy diet initiatives were based on the Québec nutrition policy of 1977, which would be revised, and on the recommendations set out in Canada’s Food Guide to Healthy Eating published in 2002 (Health Canada, 2007c).

- **Healthy diet: vision for food supply stakeholders**

  In 2010, within the framework of the Action Plan, the Ministère de la Santé et des Services Sociaux published *La vision de la saine alimentation pour la création d’environnements alimentaires favorables à la santé* (MSSS, 2010) (healthy diet vision for the creation of food environments conducive to health), together with six other government departments and two government agencies. The goal in doing so was to define a common vision for all health professionals and stakeholders with businesses and organizations influencing the food environment.
“Healthy diet”

“A healthy diet is made up of a variety of foods and emphasizes nutritionally rich foods in terms of the quantity eaten and the frequency. In addition to their nutritional content, the foods have gastronomical, cultural and emotional value.

A healthy diet includes foods that are eaten daily, occasionally and exceptionally as well as servings adapted to individual needs. The various food environments must supply foods in accordance with their missions, where the proportion of daily, occasional and exceptional foods can vary.” (Translation of MSSS, 2010, page 5)

The approach consisted in defining the serving sizes for different foods and how often those foods should be eaten. The foods were then divided into three categories:

- daily foods, with high nutritional value, to be emphasized;
- occasional foods, to be eaten less often;
- exceptional foods, with low nutritional value, to be included on menus more occasionally (see illustration below).

With the help of these points of reference, healthcare establishments, educational institutions and the food services industry are encouraged to provide tasty, nutritious foods, including this frequency of the three categories.

Concrete examples as well as means of applying the healthy diet vision are provided on the MSSS website (MSSS, 2017).
The vision encompasses the five dimensions of a healthy diet: the sociocultural, biological and economic dimensions as well as food security and sustainable development. The sociocultural dimension includes the time devoted to meals, the place of consumption and the social context, as well as food preferences and enjoyment.

Sustainable development, although not discussed in detail, refers here to the positive impact of a balanced diet on the population’s well-being and development as well as on the economy and the environment. To support that positive impact, food supply stakeholders need to facilitate healthy food choices for people every day and to help them gradually make healthy eating the norm.

The vision document is complementary to Canada’s Food Guide (2007), which remains the most appropriate resource for individual reference and action.

- **Taking action in environments favorable to health**

  In 2012, the Ministère de la Santé et des Services Sociaux published a document written in cooperation with Québec en Forme and the Institut national de santé publique du Québec, entitled *Pour une vision commune des environnements favorables à la saine alimentation, à un mode de vie physiquement actif et à la prévention des problèmes reliés au poids* (For a common vision of environments favorable to a healthy diet, physically active lifestyle and the prevention of weight-related problems) (Mongeau et al., 2012).

  The document defines a common vision stemming from the Action Plan (Lachance et al., 2006) for the many stakeholders actively promoting healthy lifestyles at the local, municipal and regional levels under the Québec en Forme fund set up in 2007.

  The fund is the result of a partnership between the Québec government and the Lucie and André Chagnon Foundation for the promotion of healthy lifestyle habits in young people from birth to age 17 (Québec en Forme, 2013).
Based on a general environmental approach involving all levels of government, this original vision developed in Québec provides a framework for action as well as a tool for promoting favorable environments and for inspiring all partners concerned.

The environments in which action must be taken to improve lifestyle habits have been divided into four categories (see figure opposite):

- Sociocultural: beliefs and behaviours regarding food and physical activity that young people are regularly exposed to and consider “normal”;
- Physical: the built environment, facilities, equipment and healthy food offerings;
- Economic: financial accessibility of food and services, as well as business practices;
- Political: measures, policies, laws and foundational strategies adopted by organizations to promote and encourage healthy lifestyle habits.

It is essential to consider the interaction of the various environments as well as the reciprocal influence between individuals and their environments (Figure from Québec en forme, Together for a healthy Québec, n.d.).

**Transforming social norms: to improve health**

Les saines habitudes de vie, c'est bien normal!, a report written by Québec en forme and the MSSS was published in 2014 (Groupe de travail sur la transformation des normes sociales, 2014). Arising from the Action Plan, the report discusses the change needed in social norms to foster healthy lifestyle habits (healthy diet and physically active lifestyle) and cultivate a variety of body images (positive body image and self-esteem).

In public health, social norms are defined as “rules or models of socially shared conduct, based on common values and involving pressure to adopt specific conduct, for fear of reproval by society or the reference group” (translation of Baril and Paquette, 2012, p. 6). A social norm, often implicit, unwritten and diffuse in social messages, differs from a science-based norm (for example, the guideline to eat five servings of fruits and vegetables a day).
The report discusses all the stages in the creation of a social norm (emergence, cascading and internalization) and ways of changing, in the long term, social norms detrimental to health into social norms conducive to health.

Eating fruits and vegetables is a behaviour that is not always viewed positively in teen culture. Based on the vision of favorable environments mentioned above (MSSS, 2012), the report shows potential action that can be taken with young Quebeckers so as to change the social norm on eating fruits and vegetables (see Table 5).

**Table 5: Sample Action on Social Norms by Stakeholders in the Sociocultural Environment**

(adapted from Groupe de travail sur la transformation des normes sociales, 2014, p.13).

<table>
<thead>
<tr>
<th>Focus</th>
<th>Behavioural goal</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Physical environment</strong></td>
<td>For young people to eat more fruits and vegetables</td>
</tr>
<tr>
<td></td>
<td>Improving physical access to fruits and vegetables, in particular, at schools (e.g., including more vegetables on the cafeteria menu, offering more desserts with fresh fruits, etc.)</td>
</tr>
<tr>
<td><strong>Economic environment</strong></td>
<td>Subsidizing healthy meals in the school environment</td>
</tr>
<tr>
<td></td>
<td>Financially supporting initiatives for the distribution of local fruits and vegetables in schools</td>
</tr>
<tr>
<td><strong>Political environment</strong></td>
<td>Incorporating a provision in the dietary policies of the environments frequented by young people, requiring such environments to include two vegetables in the main dish</td>
</tr>
<tr>
<td></td>
<td>Working to change the image of fruits and vegetables, to make them more desirable to young people (e.g., improving variety in the ways they are used and presented in the school cafeteria)</td>
</tr>
<tr>
<td><strong>Sociocultural environment</strong></td>
<td>Making fruits the standard snack alternative to junk food</td>
</tr>
<tr>
<td></td>
<td>Developing a communication strategy using “natural” opinion leaders recruited from among young people to promote the idea of eating fruits and vegetables (use Web 2.0)</td>
</tr>
</tbody>
</table>

The Québec government adopted a global approach to dietary guidelines over fifteen years ago, involving both health professionals and food supply environments. This approach provides for the creation of favorable environments, the transformation of social norms on healthy eating and active lifestyles, and the prevention of weight-related problems, including excessive concern about weight, body image and self-esteem.
2.3 Canada and France: similarities and differences

The dietary guidelines issued by Canada and France are compared in this section (see Tables 7 and 8). The main messages stated in these guidelines are analyzed, and the similarities and differences examined. The documents referred to are *Canada’s Food Guide* (Health Canada, 2007a) and a table entitled “Les Repères nutritionnels correspondant aux objectifs du PNNS” (French Ministère du Travail, de l’Emploi et de la Santé, 2011).

While new guidelines for diet (2017) and physical activity (2015) have been published in France (ANSES, 2015; ANSES, 2017c; HCSP, 2017), they have not yet been transcribed into messages for the general public. As a result, they will not be included in this analysis. The new dietary guidelines developed in France are discussed in section 3.

- **Similarities in messages, differences in presentation**

*Canada’s Food Guide* groups the dietary guidelines together in a single, six-page colour document. The food groups are illustrated in the bands of the rainbow and associated with a characteristic colour. The foods to be eaten most often are included in the wider bands, while those to be eaten with more moderation appear on the narrower bands (see Tables 6 to 8 as well as the French and Canadian guidelines).

France’s PNNS dietary guidelines are also colour-coded, but presented in table form by food group. Dietary advice is provided in a collection of small guides. The supporting documents include a poster illustrating the food groups in the form of stair steps. The foods to be eaten more frequently are shown at the top of the steps, while those to be eaten with moderation at the bottom. The idea of physical exercise is portrayed by a family climbing the steps.

The messages in both the Canadian and French guidelines are tailored to the different groups and ages. The resources used by both countries contain general messages about a balanced diet, healthy lifestyle and regular physical activity.
Table 6: Main Characteristics of the Canadian and French Guidelines
A Comparison
(for the food guides and guidelines, see the following pages)

<table>
<thead>
<tr>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Graphic illustration</strong></td>
<td></td>
</tr>
<tr>
<td>Rainbow</td>
<td>Table/Steps</td>
</tr>
<tr>
<td><strong>Food groups</strong></td>
<td></td>
</tr>
</tbody>
</table>

- Adults
- Children 2-3, 4-8 and 9-13 years of age
- Teens 14 to 18, males and females
- Adults 19-50, males and females
- Adults 51 and over, males and females
- Women of childbearing age

- Adults
- Children and teens 3 to 18
- Adults over 55
- Pregnant and breastfeeding women

**4 groups:**

- Vegetables and fruit, 4 to 10 servings a day depending on age and gender
  At least one dark green and one orange vegetable every day. Potatoes are included in this group.

- Grain products, 3 to 8 servings a day depending on age and gender
  At least half of the grain products to be eaten should be whole grain: barley, brown rice, oats, quinoa, wild rice (as well as whole wheat pasta). Bread, bagels and flat breads (pita or tortilla) are illustrated.

- Milk and alternatives, 2 to 4 servings a day depending on age and gender
  Fortified soy beverages for people who do not drink milk.

- Meat and alternatives, 1 to 3 servings a day depending on age and gender
  Meat alternatives such as beans, lentils and tofu.
  Foods illustrated: Peanut or nut butters, shelled nuts and seeds
  Cooked fish, shellfish, poultry and lean meat.

**Group presented separately:**

- Oils and fats, limit consumption and choose unsaturated fats

**7 groups:**

- Vegetables and fruit, at least 5 a day
  Raw, cooked, unprocessed or prepared.
  Fresh, frozen or canned.
  At every meal and for a snack.
  Choose whole grains and brown bread.
  Eat a variety.

- Bread and other grain products, potatoes, dried beans, at every meal according to appetite.

- Milk and milk products, 3 times a day
  Choose cheeses high in calcium, low in fat and salt.

- Meat and poultry, fish products and eggs, 1 to 2 times a day
  In a lesser quantity than the accompanying food.
  Meat: Eat a variety of meat and select the leanest cuts.
  Fish: at least twice a week.
  Eat a variety.

- Fats, limit consumption
  Limit foods that are high in fat and sugar (cakes and pastries, cream puddings, chocolate, frozen desserts, etc.).
  Use vegetable oils (olive oil, rapeseed oil, etc.).
  Limit animal fat (butter, cream, etc.).

- Sweets, limit consumption

- Beverages, drink as much water as you like
Table 7: Main Characteristics of the Canadian and French Guidelines
A Comparison
(for the food guides and guidelines, see the following pages)

<table>
<thead>
<tr>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td><strong>Other messages</strong></td>
<td><strong>Eating habits</strong></td>
</tr>
<tr>
<td>Enjoy a variety of foods from the four food groups. Limit salt.</td>
<td>Eat a variety of foods.</td>
</tr>
<tr>
<td><strong>Beverages:</strong> Drink water regularly.</td>
<td>Salt: Limit consumption. Choose iodized salt. Do not add more salt to food before tasting it. Reduce the amount of salt added to cooking water. Limit salty cheeses, delicatessen meats and starters.</td>
</tr>
<tr>
<td><strong>Servings:</strong> Measured in cups. Information on how to count the number of servings in a meal.</td>
<td><strong>Beverages:</strong> Limit sugar-added beverages (choose light beverages) with and between meals. Alcoholic beverages: Do not drink more than 2 glasses of wine/day (10 cl) for women and 3 glasses for men. 2 glasses of wine are equal to 2 half pints of beer and 6 cl of spirits. No indication of servings, except fruits and vegetables (80 g) and meat, fish and eggs (in a quantity less than the accompanying food)</td>
</tr>
<tr>
<td><strong>Eating habits</strong></td>
<td><strong>Physical activity</strong></td>
</tr>
<tr>
<td>Information included in the guide: Information on balanced meals, eating enjoyment and socializing: “Enjoy eating with family and friends!” “Take time to eat and savour every bite!” Indication of the types and quantities of foods recommended daily (limit foods and beverages high in calories, fat (including trans fat), sugar and salt (sodium). Read food labels. Vitamin D supplement for people over 50.</td>
<td>For adults: At least the equivalent of a half hour’s brisk walk a day. To be integrated into daily life: walking, climbing stairs, cycling, etc. For children: At least the equivalent of a half-hour or an hour’s brisk walk a day.</td>
</tr>
<tr>
<td><strong>Lifestyle</strong></td>
<td><strong>Source:</strong> Health Canada Consultative Committee on the Food Guide Interdepartmental Task Force on the Food Guide Consultative Committee of Experts on Dietary Reference Intakes</td>
</tr>
<tr>
<td>Advice for different ages and stages for children, women of childbearing age, and men and women over 50.</td>
<td><strong>Source:</strong> PNNS expert committee Including members of ANSES, the committee of public health experts brought together by the General Directorate of Health and the PNNS strategic committee</td>
</tr>
</tbody>
</table>
Canada’s Food Guide defines four food groups (Vegetables and Fruit, Grain Products, Milk and Alternatives, Meat and Alternatives). France’s guidelines include these four groups as well as three others: Fats, Sweets and Beverages. Canada’s guide mentions “alternatives” or substitutes for dairy products (fortified soy beverage) and meat (legumes, tofu). There are no alternatives in the French guidelines. While foods such as nuts (whole nuts, shelled seeds, peanut butter, etc.) are considered meat alternatives in Canada’s guidelines, they are absent from the French recommendations.

Canada’s guide encourages consumers to eat dark green and orange vegetables because of the specific vitamins they contain, whereas the French guidelines indicate how and when to eat these foods, i.e., “Raw, cooked, unprocessed or prepared; fresh, frozen or canned; at every meal and for a snack.” Both countries encourage consumers to drink water and to limit salt, sugar and fat.

One of the features of Canada’s Food Guide is the full page devoted to the number of servings from each food group to be eaten every day. The French guidelines, for their part, specify how often foods should be eaten, i.e., per meal, per day or per week.

The Grain Products group in Canada’s Food Guide provides a good example of the cultural dimension of food. The variety of breads illustrated clearly reflects the cultural diversity of Canada. The group depicts bagels and flat breads (pita, tortilla, naan) as well as grains typical of Middle Eastern, Central American, Indian and Pakistani cuisines.

Similarly, the inclusion of legumes indicates that both traditional recipes (baked beans, pea soup) and ethnic dishes (humus, chili, couscous, burritos, etc.) are part of Canadian cuisine.

In France, the guidelines include limits for alcohol, a symbol of French tradition and cuisine. This is not true of the Canadian guidelines, which simply mention alcohol in a list of foods and beverages to limit because they are high in calories, fat, sugar or salt.

This comparison indicates the importance of including information on foods and beverages that reflect cultural traditions and preferences.
Table 8: French Dietary Guidelines

Dietary recommendations based on the objectives of the PNNS (FAO, n.d.):

- **Increase the consumption of fruits and vegetables**, regardless of their forms (raw, cooked, natural, prepared, fresh, frozen or canned), to achieve at least 5 servings of fruits and vegetables per day.

- **Increase the consumption of starchy foods**, including cereals (especially whole grain cereals, which provide fibre), potatoes, pulses, etc. They should be present at each meal.

- **Consume foods that are rich in calcium** (mainly dairy products, in addition to vegetables and mineral water rich in calcium, for those who consume mineral water).

- **Eat meat, fish, other seafood and eggs alternating 1 or 2 times per day** (in a smaller quantity than xxx), giving preference to leaner meat cuts and fish (at least twice a week).

- **Limit the consumption of total fat and particularly of saturated fat**; these are provided by certain foods which are best consumed in moderation (pastry, meats, butter, sauces and certain cheeses).

- **Limit the consumption of sugar and foods high in sugar** (soft drinks, candies, chocolate, pastries, desserts, etc).

- **Drink water at will**. Limit the consumption of alcoholic drinks, which should not exceed 2 glasses (10 cl) of wine for women and 3 for men per day (2 glasses of wine of 10 cl are equal to 2 pints of beer or 6 cl of spirits).

- **Limit the consumption of salt** and always prefer iodized salt; enjoy the benefits of sunlight in moderation; and monitor your weight regularly.

- **Increase physical activity in daily life to achieve at least the equivalent of 30 minutes of fast walking per day** (take the stairs, running errands on foot, etc.) and reduce sedentary activities in children (time spent watching TV, playing video games, etc.).
BIEN MANGER, BOUGER, PROTÈGE VOTRE SANTÉ.

1 ou 2 fois par jour
Viandes, œufs et poissons

3 par jour
Produits laitiers

5 par jour au moins
Fruits & légumes

A chaque repas selon l'appétit
Bouger au moins 30 minutes par jour !

Limiter la consommation

Pour plus d'informations www.mangerbouger.fr
### Recommended Number of Food Guide Servings per Day

| Food Group          | Child 1-2 | Child 3-8 | Teen | Multi *
|---------------------|-----------|-----------|------|-----------
| Fruits and Vegetables | 4         | 5         | 6    | 7         |
| Grains and Alternatives | 3         | 4         | 6    | 7         |
| Milk and Alternatives | 2         | 3         | 3    | 3         |
| Meat and Alternatives | 1         | 1         | 2    | 3         |

* Multi includes 1 cup of milk.

#### What is One Food Guide Serving?

- Look at the examples below.

#### Make each Food Guide Serving count…

- Make at least half of your plate vegetables and legumes each day.
- Choose grains products whole grains each day.
- Drink 8 glasses of water daily.
- Choose food products that are lower in fat, sugar, and salt.
- Choose dairy products that are lower in fat, sugar, and salt.
- Choose meat alternatives such as beans, lentils and tofu.
- Enjoy a variety of foods from the four food groups.

#### Oils and Fats

- Include a small amount of olive or canola oil for cooking and salad dressing.
- Use flavored oils such as garlic, onion, and lemon.
- Choose soft margarines that are low in saturated and trans fats.

#### Enjoy your thirst with water!

- Enjoy a glass of water as a healthy and refreshing beverage.
- Drink at least 8 glasses of water daily.
- Choose water as a healthy beverage for children.

* Source: Canada's Food Guide. For more information, visit www.canada.ca.
3. Nutrition recommendations, implementation processes

The preparation of dietary guidelines is generally part of an overarching initiative to evaluate the nutrition recommendations for a population. This process includes defining dietary reference intakes (see glossary for the terminology used by different countries.)

To develop nutrition recommendations, many countries adopt a scientific methodology. Their experts begin by systematically collecting and analyzing a great deal of epidemiological data, which enable them to assess the links between diet, lifestyle and the development of chronic diseases. They go on to identify the foods that supply the main nutrients to be included in the recommendations. They then transpose this information into simple messages conveyed in food guides in an attractive graphic form.

The methodology used and the frequency of revision vary from one country to another. In this section, three methodological approaches to developing dietary guidelines are discussed: that of France, Canada and Brazil. The new trends observed by countries updating their guidelines, with the inclusion of a more holistic approach to diet, are outlined in 3.4. Means of making the revised guidelines more comprehensible are proposed.

3.1 Development of new dietary guidelines in France

- France, a methodology in step with the European recommendations

In the European Union, the first harmonized nutrition recommendations on calorie and nutrient intakes were put forward by the Scientific Committee for Food (SCF) in 1993 (ANSES, 2017b).

Following the publication of a report by a FAO/WHO committee of experts, entitled *Preparation and Use of Food-based Dietary Guidelines* (1996), a number of consultative meetings were organized in the European Union, in particular, two working conferences in Lithuania and Slovenia (1997) and a scientific conference in Parma, Italy (2006). Their purpose was to define a common working methodology (EUFIC, 2009).

In 2010, the European Food Safety Authority (EFSA) published a *Scientific Opinion on establishing Food-Based Dietary Guidelines* (EFSA, 2010), which sets out the scientific methodology adopted for the development of dietary guidelines by the member states. The EFSA advocates a seven-step approach, which is outlined in Table 9.
Table 9: Development of Food-Based Dietary Guidelines
(EFSA, 2010)

The seven-step approach makes it possible to identify:

1. the links between certain foods and the risks of chronic non-communicable diseases;
2. country-specific public health problems;
3. nutrients of public health significance (groups for which there is a risk of deficiency or excessive intake) and the study of their bioavailability;
4. foods and food groups relevant to dietary guidelines;
5. food consumption patterns in the population;

and to:

6. characterize the dietary patterns of the population; and
7. define dietary guidelines that will be used as a basis for developing food guides.

In its approach, the EFSA urges countries to provide for the monitoring and updating of their dietary guidelines.

In Europe, despite the similarities observed in diet and lifestyle, notable differences exist among countries. For that reason, the EFSA recommends that each country develop its own dietary guidelines. Draft guidelines and food guides can be tested on certain groups of consumers, according to a defined protocol, to check whether the messages and expressions used are properly understood, practical, and tailored to the country’s social, cultural and economic situation.

- The approach of ANSES

Dietary guidelines are based on scientific data that must be revised to support public health nutrition objectives. In its strategic orientations, the French National Nutrition and Health Program (PNNS) provides for the updating of guidelines for diet and physical activity in order to take the evolution of scientific data into account (ANSES, 2015).

In France, the Agency for Food, Environmental and Occupational Health & Safety (ANSES)—a monitoring, research and expert scientific assessment organization—updated the country’s nutrition recommendations for the period from 2012 to 2017.
The update was carried out following a formal request in April 2012 from the Director General for Health (DGS). The work involved a revision of the dietary reference intakes (DRIs) and the PNNS guidelines for both diet and physical activity. The Agency was also asked to clarify the role of certain foods within the different categories and to quantify the servings. The issues associated with certain chemical contaminants in foods were also studied.

In 2017, the Agency published the following public reports describing the work carried out by the groups of experts:


The Agency’s scientific approach to the development of dietary guidelines was defined in accordance with EFSA recommendations. The methodology was based on the expertise of different thematic working groups that were set up for the project, as well as on numerous audits, and consultations with experts, scientific agencies, learned societies and professional organizations.

The approach was based on a review of the literature available up to April 2013. It included an analysis of international consensus documents (EFSA, WHO) as well as the following reports (cited in ANSES, 2017c):

- World Cancer Research Fund, WCRF, 2007 and 2011;
- WHO/International Cancer Research Centre, ICRC, 2015;
- National Cancer Institute, (NCIa), 2014;
- Australian National Health and Medical Research Council (NHMRC), 2011.

The experts began by updating the dietary reference values for vitamins, minerals and macronutrients (fats, carbohydrates and protein).
Then, on the basis of epidemiological studies, the links between the food groups and the risk of the main non-communicable diseases (cardiovascular diseases, type 2 diabetes, overweight/obesity, breast, prostate and colorectal cancers, bone diseases and mental illness) were determined.

Close attention was paid to the quantities of food associated with reductions or increases in risk. However, the difficulty of extracting quantified recommendations from these data was emphasized by the experts.

A number of factors must be taken into account in assessing risk: the characteristics of the populations studied, dietary survey methods, inter-study variabilities, etc. The food groups associated with reductions or increases in risk were identified and divided into three categories: food groups that reduce the risk of chronic diseases, those that increase the risk (especially as people advance in age), and those that are likely to reduce the risk of some diseases and increase the risk of others.

This approach may result in a new categorization of food groups and definition of representative serving sizes for the French diet. Figure 2 below outlines the methodology used by the Agency, and the coordination of the work (ANSES, 2017a).

A computerized diet optimization tool, based on algorithms with several parameters, was used. This innovative approach enabled the Agency to evaluate different combinations of food groups (including thirty-two categories) that meet the needs of the adult population. The evaluation was then used to formulate guidelines that meet the public health objectives set.

Figure 2: Coordination of Working Group and Meaning of Color Codes. Green boxes represent data from studies (INCA2, TDS2) and databases (CIQUAL). Orange boxes, the areas to be examined by the Working Group. Blue boxes, the stages of the mathematical optimization process and its interpretation. Purple boxes, the descriptive and contextual elements of food intake to be taken into account for formulating the food-based dietary guidelines.
Toward new guidelines for diet and physical activity

The Agency’s conclusions led to important changes in comparison with the previous guidelines. Its main recommendations are as follows:

- regular consumption of legumes (lentils, beans, chickpeas) should be encouraged;
- whole grain cereal products (bread, pasta, brown or semi-milled rice) should be given preference;
- vegetable oils rich in alpha linolenic acid (omega-3), such as canola and nut oils should be emphasized;
- consumption of fruits and vegetables should be reinforced, while giving preference to vegetables;
- consumption of deli-catessen meats (ham, sausage, pâté, rillettes, etc.) and non-poultry meats (beef, pork, lamb) should be reduced, and consumption of fish, in particular fatty fish (sardines, mackerel, salmon), should be encouraged;
- consumption of sugar-sweetened beverages (soda and fruit juice) should be limited to less than one glass a day. Substances like sugar and salt are now issues of public health concern when consumed in excess.

- For the Agency, it is important for heavy users of salt to reduce their intake.
- As for sugar, the Agency was not able to differentiate the health impact of sugar naturally present in food from that of added sugar. A reduction in the total intake of sugar, particularly in beverages, is still encouraged for some populations.

To ensure optimal coverage of vitamin D needs, the Agency proposed a series of actions, ranging from screening and food fortification to personalized supplementation.

As for physical activity, the report shows that exercise and a reduction in sedentary behaviour help prevent chronic diseases. The Agency recommends that:

- physical activity in various forms be encouraged as beneficial for body functions (cardiorespiratory system, muscle strength, flexibility);
- all opportunities for physical activity at home and at work be identified: moving, carrying weight, walking up and down the stairs, etc.
- sedentary behaviour be reduced by minimizing the total time spent sitting every day;
- physical activity be promoted by suggesting conducive environments: the workplace, school, in transit.

The expert assessment carried out by the Agency paved the way for the development of guidelines for diet and physical activity in France in 2016. On the basis of the Agency’s work (ANSES, 2015), the High Council for Public Health (HCSP, 2017)—an expert consultative body contributing to the development, monitoring and assessment of the national health strategy—translated the Agency’s conclusions into qualitative and quantitative consumption indicators for the food groups.
The 2017 food-based dietary guidelines proposed by the Council must still undergo consultation with health professionals and learned societies before they are issued in their official form. They do not constitute recommendations, but rather objectives to aim for in the population’s daily diet—objectives that emphasize variety (in food types, production and supply location).

As for what is new, the guidelines provide information on purchasing and eating habits that highlight a sustainable diet. The Scientific Opinion confirms the tendency of public authorities in different countries to emphasize the consumption of vegetable protein and to reduce that of animal protein.

Consumers are encouraged to choose whole foods and products in season, to favour short supply chains, and to give preference to eco-friendly means of production that limit pesticides by choosing organic.

Before the guidelines can be formulated for the general public and introduced, the most suitable format must be determined and assessed. The messages formulated for the food guides will need to include the idea of sharing meals and enjoying food. The Scientific Opinion already indicates that consumers should be urged to take the time to savour their food and to avoid snacking between meals.

When it comes to the National Nutrition and Health Program, the National Nutrition Health Study (ENNS) of 2006 found that the French have difficulty applying the messages. The data provided in Tables 10 and 11 indicate the percentage of the population (adults and children) that meet the nutrition recommendations set out in the program. The figures are particularly low when it comes to the consumption of fruit and vegetables; bread, cereals, potatoes, pulses; and milk and dairy products.

In the 2006 survey, only 20% children and 43% of adults reported that they eat at least five servings of fruits and vegetables a day. Some 33% and 29% respectively claimed that they eat grain products at every meal. Only 43% of children and 29% of adults said that they follow the recommendations for dairy products (three servings a day for children and two for adults) (INVS, 2007; Ministère du travail et de la solidarité, 2011).

These figures have been confirmed, in part, by a more recent study on the food consumption and eating habits of the French (INCA 3), published by the Agency for Food, Environmental and Occupational Health & Safety in June 2017 (ANSES, 2017e). The study surveyed more than 5,800 people (3,157 adults aged 18 to 79, and 2,698 children from birth to 17) in France.
10- Adult subjects (aged 18 to 74) whose food consumption meets the nutritional recommendations set out in the PNNS (expressed as a %)

<table>
<thead>
<tr>
<th>Food groups</th>
<th>Guideline</th>
<th>Indicator</th>
<th>Women</th>
<th>Men</th>
<th>Adults</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fruit and vegetables</td>
<td>At least 5 per day</td>
<td>% consuming at least 5 portions per day</td>
<td>43</td>
<td>43</td>
<td>43</td>
</tr>
<tr>
<td>Bread, cereals, potatoes, pulses</td>
<td>At each meal and according to appetite</td>
<td>% consuming 3 to 6 portions per day</td>
<td>38</td>
<td>60</td>
<td>49</td>
</tr>
<tr>
<td>Milk and dairy products</td>
<td>18-51 years old: 3 servings per day for men</td>
<td>% of 18- to 54-year olds consuming 2.5 to 3.5 portions per day (and 2.5 to 4.5% among 55- to 74-year-olds)</td>
<td>27</td>
<td>31</td>
<td>29</td>
</tr>
<tr>
<td></td>
<td>55 years and over: 3 to 6 per day</td>
<td>% consuming at least 1 portions per day</td>
<td>54</td>
<td>51</td>
<td>52</td>
</tr>
<tr>
<td></td>
<td>Fish: at least twice a week</td>
<td>% consuming at least 1 portions of fish per week</td>
<td>32</td>
<td>28</td>
<td>30</td>
</tr>
<tr>
<td>Added fats</td>
<td>Limit intake</td>
<td>% consuming less than 16% of the non-alcoholic daily energy intake as added fats</td>
<td>89</td>
<td>93</td>
<td>91</td>
</tr>
<tr>
<td></td>
<td>Opt for vegetable fats and oils</td>
<td>Average proportion of added fats from vegetable sources</td>
<td>55</td>
<td>50</td>
<td>53</td>
</tr>
<tr>
<td>Sugary foods</td>
<td>Limit intake</td>
<td>% consuming less than 12.5% of the non-alcoholic energy intake as total simple carbohydrates from sugary foods</td>
<td>74</td>
<td>73</td>
<td>74</td>
</tr>
<tr>
<td>Drinks</td>
<td>Water in unlimited quantities</td>
<td>% of subjects consuming more than 1 L of water (including coffee, tea, etc..) and less than 250 mL of sweet drinks</td>
<td>72</td>
<td>67</td>
<td>69</td>
</tr>
<tr>
<td></td>
<td>Limit consumption of sweet drinks</td>
<td>% of women consuming less than 20 g of alcohol per day and</td>
<td>91</td>
<td>77</td>
<td>83</td>
</tr>
<tr>
<td></td>
<td>Alcohol consumption must not exceed 2 glasses per day for women and 3 for men</td>
<td>% of men consuming less than 30 g of alcohol per day</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salt</td>
<td>Limit intake</td>
<td>% consuming less than 8 g of salt per day</td>
<td>74</td>
<td>34</td>
<td>54</td>
</tr>
</tbody>
</table>

(Source: ENNS, 2006-2007)

**Tables 10 and 11: Percentage of children and adults whose food consumption meets the PNNS nutrition recommendations (INVS, 2007; Ministère du travail et de la solidarité, 2011).**
Only a small percentage of respondents knew the dietary guidelines established by the Agency in 2001, with the exception of those on fruits and vegetables and physical activity:

- In general, more women knew the guidelines than men;
- More adolescents and teens (aged 11 to 17) than adults knew the guidelines on fruits and vegetables (74% vs 59%), dairy products (38% vs 22%), and grains (10% vs 7%);
- Adults had a better knowledge of the guidelines on fish (36% vs 29%) and physical activity (71% vs 31%);
- The percentage of adults and adolescents who knew the guidelines on meat, fish and eggs was roughly the same (52% vs 51%).

The survey found that there are wide discrepancies in behaviour and knowledge depending on age, gender and level of education. In future recommendations, messages should accommodate the various situations of people so as to better target the different groups, in particular the groups farthest from meeting the national guidelines (ANSES, 2017e).

The recommendations can be adapted for other groups of the population defined according to physiological criteria (age, gender, physical activity), specific eating patterns or behaviours (allergies, exclusions, intolerances, preferences), and incomes (precarious situation).

The Agency also plans to supplement the study with an evaluation of the health impact of consumption contexts (frequency and structure of meals, where meals are eaten, etc.).

When it comes to physical activity, the Agency has shown the positive effects of exercise in preventing chronic diseases. Yet the level of physical activity is generally inadequate and falls short of the World Health Organization guidelines.

In its Scientific Opinion (ANSES, 2017c), the Agency proposes guidelines adapted to each group of the population (children, teens, adults, pregnant women and the elderly), in order to encourage people to adopt an active lifestyle and limit sedentary behaviours from a young age.

For these objectives to be achieved, it is essential to examine how to remove obstacles to physical activity. A number of factors must be considered, including: creating spaces reserved for pedestrians and cyclists, promoting public transit, and reorganizing work and school time.

Action must be taken with respect to the major nutrition determinants, so that the different recommendations included in the National Nutrition and Health Program (PNNS) serve to improve the health of the population.
3.2 Canada’s methodological approach

In Canada, dietary guidelines are defined by Health Canada, the federal government department responsible for helping citizens maintain and improve their health.

The guidelines are a cornerstone of the national nutrition policy. They enable Canadians make food choices that promote health and reduce the risk of nutrition-related chronic diseases (Health Canada, 2016c).

Health Canada must ensure that Canadians follow the guidelines. In doing so, it oversees every step of the guideline process, from collecting and analyzing data on the daily diets of Canadians to incorporating those findings into recommendations that consider lifestyles and ease of food guide use. The roles of the Canadian government and stakeholders in developing dietary recommendations are outlined in Figure 3 below.

Figure 3. Roles of the Canadian government and stakeholders in dietary guidelines (Health Canada, 2016c).

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3 Referred to as “guidance” by Health Canada.
3.2.1 Evidence Review Cycle for Dietary Guidance

Nutrition information changes rapidly. Means of accessing information have evolved considerably in the past few years. It is important for Health Canada to maintain the reliability of the dietary recommendations it issues. It does so by relying on a transparent, systematic approach to gathering, assessing and analyzing scientifically-based data. This approach, known as the “Evidence Review Cycle for Dietary Guidance,” is outlined in Figure 4 below (Health Canada, 2016c).

The Evidence Review Cycle (ERC) provides a documented scientific basis that ensures the relevance of the dietary guidance developed. It takes into account scientific evidence establishing relationships between diet and health, as well as the specific eating patterns of Canadians, their understanding of existing guidelines and their effective use of them.

The ERC examined numerous sources of data or evidence from 2006 to 2015, including:

- official reports on dietary reference intakes (US Institute of Medicine);
- reports published on food and health by official agencies and international scientific organizations (World Cancer Research Fund, etc.);
- systematic reviews of the literature;
- data (surveys) produced by Health Canada (dietary intake, nutritional status, health status of Canadians);
- the results of the report “Assessment of the Use of Eating Well with Canada’s Food Guide,” a survey carried out on 9,700 Canadians on the awareness of the food guide (Canadian Community Health Survey, nutrition focus, 2012).
The link between food intake and certain health conditions was demonstrated by over twenty reports included in the ERC. The scientific evidence showed in particular that:

- replacing saturated fat with unsaturated fat reduces the risk of cardiovascular diseases;
- there is a link between the high consumption of sugar-sweetened beverages and an increased risk of obesity.

As for eating patterns, survey data showed that (Garriguet, 2004):

- the majority of Canadians have low intakes of fruits and vegetables, milk and alternatives and whole grains; the mean consumption of dark green or orange vegetables was one serving a day;
- about one third of total calories come from processed foods high in fat, simple sugar and/or salt;
- many groups of the population (age and gender) have inadequate intakes of minerals (calcium, magnesium, potassium and zinc), vitamins (A, C and D) and fibre;
- less than 50% of the people surveyed comply with the food guide in their choices from the “Milk and Alternatives” group, and less than 40%, from the “Meat and Alternatives” group;
- people over 70 and adolescent girls were identified as groups of “particular concern.”

The rates of obesity (Statistics Canada, 2015) and chronic diseases have increased in recent decades (Health Canada 2016c). The availability, advertising and low cost of certain highly-processed foods (high in fat, sugar and salt) contribute to a poorer quality diet in Canada (Moubarac et al., 2014; Moubarac et Batal, 2016).

The way in which various groups of Canadians use the 2007 edition of Canada’s Food Guide was studied. The study showed that Canadians have difficulty:

- understanding the messages conveyed, especially those about serving sizes;
- translating the information into healthy meals and snacks.

The Evidence Review Cycle (Health Canada, 2016c) also found that Canada’s Food Guide, in its current design, does not meet users’ needs:

- Although recognized as a reliable source by consumers, the food guide is ranked as the fourth most frequent resource consulted for information about healthy eating, behind research on the Internet, family or friends, and television programs. It should be noted that health professionals (doctors, dietitians, nutritionists) rank it fifth in the resources they consult.
- Health professionals underscored the need to update the food guide regularly to ensure that it does not become quickly outdated.
- Changes in the eating behaviours of Canadians (such as eating out; greater emphasis on different cuisines, etc.) must be taken into account; information on the
dietary intakes of populations such as First Nations, Inuit and Métis must be incorporated.

- It is challenging to include all key messages for all groups of the population in a single document. The food guide is both a guidance document and an educational tool.

- Complementary resources may be developed in more accessible formats: mobile phone apps, interactive websites, etc. However, stakeholders identified the need to maintain a printable version of the food guide.

Thus, the scientific work initiated must be continued so that future decisions on dietary guidance can be even better supported. Many obstacles must still be overcome in making the guide easy to use.

Health Canada has made a commitment to a multi-year revision process for Canada’s Food Guide. The goals of the process are:

- To meet the needs of different audiences more effectively (consumers, policymakers, health professionals);

- To ensure the relevance and usefulness of the guidelines for Canadians in their everyday lives;

- To help health professionals apply the dietary guidance by making adapted resources available.

3.2.2 The new Healthy Eating Strategy

- Background and principles
Following the Evidence Review Cycle, the Canadian government announced in October 2016 that it would be developing a new strategy for improving the diet of Canadians: Healthy Eating Strategy (Health Canada, 2016a; Government of Canada, 2016b).

The strategy is being carried out in collaboration with all stakeholders concerned: health professionals, academia and experts, non-governmental organizations, industry and retail, and all levels of government: federal, provincial and the territories.

The government clearly stated how it intends to achieve the objectives of this collaborative effort; these
means include a new approach for communication with the general public, stakeholders and experts (Health Canada, 2016a; Government of Canada, 2016b). The general public and stakeholders are invited to participate in discussions on government policies and priorities concerning healthy eating. To ensure as much transparency as possible, reports can be consulted online as guidelines and regulations are developed. All measurements of the progress made and evaluations of the actions taken are available on the Government of Canada website (Health Canada, 2016a; Government of Canada, 2016b).

The five aims of the Healthy Eating Strategy
To make healthier food choices easier, the Canadian government has defined five goals:

- To improve healthy eating information: revising *Canada’s Food Guide* and issuing new guidelines;
- To strengthen labelling and claims: updating the Nutrition Facts table and List of Ingredients on food labels. Canadians will be consulted on the new nutrition information on the front of food packaging (sugars, sodium and saturated fats);
- To improve the nutrition quality of foods: collaborating with the food industry, restaurants and food services to decrease salt (sodium) and eliminating trans fats;
- To protect vulnerable populations: restricting the commercial marketing of products to children (sugar-added drinks and foods high in sugar, salt and fat);
- To support access to and availability of nutritious foods: helping make perishable nutritious foods more accessible and more affordable to residents of isolated northern communities.

Revision of Canada’s Food Guide, a phase-by-phase process
Health Canada’s Office of Nutrition Policy and Promotion (ONPP) is responsible for carrying out the food guide revision. The ONPP is the authority that sets the guidelines for nutrition and healthy eating policy and promotion in Canada. It supports the nutritional health and well-being of Canadians by collaboratively defining, promoting and implementing evidence-based nutrition standards.

Throughout the process, Health Canada consults with independent experts and public bodies, including academics and researchers, health professional associations, public servants (federal, provincial and territorial) as well as certain non-governmental health organizations. The consultation reports are available online. An online consultation of the public is under way (see time frame in Table 12).
| Time Frame          | Table 12: Canada’s Food Guide Revision Process  
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2013-2014</td>
<td>Review of the scientific evidence, ERC</td>
</tr>
<tr>
<td>2016-2018</td>
<td>Development of the new food guide policy, consultation of experts:</td>
</tr>
<tr>
<td></td>
<td>- academics and researchers</td>
</tr>
<tr>
<td></td>
<td>- health professionals and associations</td>
</tr>
<tr>
<td></td>
<td>- federal, provincial and territorial public servants</td>
</tr>
<tr>
<td></td>
<td>- non-governmental health organizations</td>
</tr>
<tr>
<td>October 24 – December 8, 2016</td>
<td>Open online public consultation (phase one):</td>
</tr>
<tr>
<td></td>
<td>Questioning of different groups to gain a better understanding of how to use the healthy eating recommendations, i.e.:</td>
</tr>
<tr>
<td></td>
<td>- consumers</td>
</tr>
<tr>
<td></td>
<td>- health professionals</td>
</tr>
<tr>
<td></td>
<td>- all levels of government</td>
</tr>
<tr>
<td></td>
<td>- academics and researchers</td>
</tr>
<tr>
<td></td>
<td>- educators and communicators</td>
</tr>
<tr>
<td></td>
<td>- industrial and commercial associations</td>
</tr>
<tr>
<td></td>
<td>- non-governmental health organizations</td>
</tr>
<tr>
<td></td>
<td>- non-governmental consumer organizations</td>
</tr>
<tr>
<td>June 10 – July 25, 2017</td>
<td>Open online public consultation (phase two):</td>
</tr>
<tr>
<td></td>
<td>Presentation of the revised material</td>
</tr>
<tr>
<td>Late 2017</td>
<td>Publication of the strategic report on dietary guidance</td>
</tr>
<tr>
<td></td>
<td>- intended for health professionals and policymakers</td>
</tr>
<tr>
<td></td>
<td>- accompanied by key messages and complementary resources for Canadians</td>
</tr>
<tr>
<td>2018/2019</td>
<td>Introduction and dissemination of the new food guide and tools:</td>
</tr>
<tr>
<td></td>
<td>- new healthy eating models (types and quantities of foods recommended)</td>
</tr>
<tr>
<td></td>
<td>- accompanying resources to communicate guidelines to Canadians</td>
</tr>
<tr>
<td></td>
<td>- dietary guideline report offering clear, concise evidence-based recommendations</td>
</tr>
</tbody>
</table>
From October to December 2016, Canadians were invited to comment on the present format of “Canada’s Food Guide” and on their understanding of the practical recommendations. In total, over 20,000 suggestions and opinions were provided by the general public, professionals and organizations.

The report, prepared by market study firm Ipsos, shows respondents’ interest in the new dietary guidelines (Government of Canada, 2017a). Respondents provided considerable feedback on the use of the guidelines and means of improving their acceptance by consumers. They also expressed their opinions on the most useful guidelines, the recommendations on the amounts of foods, the relevance of the food groups, the level of food processing, and sugar consumption.

Following the report preparation phase, a second phase of public consultation was launched in June 2017. The three main guiding principles for the new dietary recommendations are as follows (Government of Canada, 2017b):

- A variety of nutritious foods and beverages are the foundation for healthy eating.
- Processed or prepared foods and beverages high in sodium, sugars, or saturated fat undermine healthy eating.
- Knowledge and skills are needed to navigate the complex food environment and support healthy eating.

These principles must take numerous factors related to the living conditions of all Canadians into account. They will be adapted to the cultural diversity of Canada by considering the food traditions and preferences of each community, in particular the Aboriginal peoples.

The environmental implications of the dietary recommendations and food waste have also been included in an effort to respond to the concerns of consumers, health professionals and non-governmental organizations.

Canadians are invited to express their opinions and provide their input through a survey and discussion forums (Government of Canada, 2017c). The phase two report will be published in late 2017. The material developed should be issued and tested in 2018.
3.3 Brazil's innovative approach

The first official dietary guidelines appearing in Brazil date back to 2006. The Ministry of Health updated the guidelines from 2011 to 2014 on the basis of rigorous scientific evidence. This process was carried out thanks to the expertise of the team of Dr. Carlos Monteiro, Professor of Nutrition and Public Health and Director of the Centre for Epidemiological Studies in Health and Nutrition at the University of Sao Paulo.

In October 2014, the new Brazilian food guide was introduced to the general public. It was developed by means of an innovative methodological approach. The main principles underlying that approach are discussed in this section.

The actual food guide document does not look like an ordinary catalogue or brochure. Rather, it is a book, to be looked through slowly, page by page; it is as if each chapter tells a story. The guide aims to promote a “dietary model” that incorporates messages emphasizing the country’s food traditions.

The principles underpinning the guidelines are based on various considerations (Dietary Guidelines for the Brazilian Population, Ministry of Health of Brazil, 2014):

- Diet, as well as involving nutrients, is about foods, meals, eating and enjoyment, as well as the social and cultural aspects.
- Dietary recommendations must be in step with the times, which are marked by the paradox of malnutrition and overeating.
- A healthy diet depends on the social and environmental sustainability of the food system.
- Varied sources of information enrich dietary knowledge (scientific publications, dietary surveys, anthropological data, culinary know-how, recipes).
- Dietary guidelines provide useful and reliable information that gives people greater autonomy in the food choices they make.
Brazilian society has undergone profound changes in the past few decades, with economic and demographic development, the nutrition transition, and the implementation of social policies (Ministry of Health of Brazil, 2014). These changes have had a significant impact on lifestyle habits and have let to growing problems of overweight and obesity. While public health policies have helped to stem malnutrition considerably, chronic diseases now constitute the primary cause of death in Brazil: one adult in two is overweight and one child in three (Ministry of Health of Brazil, 2014).

Several factors have been observed (Monteiro et al., 2011):

- The relationship between food intake and the development of chronic diseases in Brazil has been demonstrated;
- People who cook and maintain culinary traditions tend to have healthier diets;
- The growing use of processed foods decreases the nutrient density of diets.

Carlos Monteiro’s team devised means of analyzing the composition of the various food products consumed in Brazil according to level of processing: the NOVA classification (see Table 13).

The foods eaten by Brazilians could then be analyzed using this tool. This approach enabled experts to examine the relationship between the level of processing and the nutritional quality of foods by studying the processing methods.

This approach constitutes one of the foundations of the new dietary guidelines in Brazil (see figure below).
Experts believe that the NOVA food classification, along with key messaging introduced in an original way, can have a positive impact on consumer behaviour. The methodology used to develop the dietary guidelines for Brazil is outlined in Table 14.
One of the strengths of the Brazilian guide is that it is based on scientific evidence and food surveys that take the context in which meals are eaten into account.

In developing the dietary guidelines, Brazilian experts endeavoured to formulate messages emphasizing culinary traditions, lost in the wake of the nutrition transition following the country’s economic development. **Figure 5.**

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**Table 14: Brazilian Dietary Guidelines Methodology**

(Moubarac, 2015)

**Inclusive:**
- involving all Brazilians (two years of age and over), from all classes and regions

**Multidisciplinary, representative and modern, based on:**
- scientific principles and evidence from many fields (nutrition, sociology, psychology, anthropology)
- a national food survey (2008-2009), 24-hour dietary recall

**Consultative:**
- two formal meetings with researchers, health professionals, educators and representatives of civil society
- regional meetings in 26 states and the federal district
- public consultations (3,125 responses)

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**Figure 5** shows menus provided in the food guide that include small amounts of processed foods (bread, cake, fruit juice) but that are made up primarily of whole or slightly processed foods (fruit, couscous).
The guide was deemed easy to apply by the general public because the messages are simple and presented in “step” form (see Table 15).

Table 15: Ten Steps to a Healthy Balanced Diet
(Dietary Guidelines for the Brazilian Population, Ministry of Health of Brazil, 2014)

1. Make fresh or minimally processed foods the basis of your diet.
2. Use oil, butter, salt and sugar in small amounts in seasoning and cooking fresh or minimally processed foods and in preparing recipes. Limit consumption of processed foods.
3. Avoid consumption of ultra-processed foods.
4. Eat regularly and mindfully in appropriate environments and, whenever possible, in the company of others.
5. Shop in places that offer a wide variety of fresh or minimally processed foods.
6. Develop, use and share cooking skills.
7. Plan your time so as to make food and eating important in your life.
8. When eating out, choose restaurants that offer “home-made” food.
9. Develop keen judgment about food advertising and marketing.

The Brazilian approach takes local food cultures into account and accommodates all diets, including vegetarian and vegan. The recommendations emphasize sustainable food systems, which have received approval from local environmental protection agencies. In fact, natural or minimally processed foods use fewer natural resources than ultra-processed products, which have many added ingredients and require several stages of processing, packaging and transportation.

This approach has provided a new vision of dietary guidelines, while preserving Brazil’s cultural identity. It highlights the social role of meals and the importance of conveying culinary knowledge through education. It encourages people to make enlightened choices on their own and to develop their dietary autonomy. An important feature of this approach is that it is based on simple principles that can be easily adapted by other countries.

Sweden (National Food Agency Sweden, 2015) and Uruguay (Ministry of Public Health of Uruguay, 2016), for example, which recently revised their food guides, have drawn considerably from the Brazilian concept. Their approaches are detailed further on.
This overview of three methodological approaches—those of France, Canada and Brazil—indicate the importance of carrying out complementary analyses that are based on:

- a review of scientific evidence establishing a link between diet and the risk of chronic diseases;
- food consumption surveys that provide both qualitative and quantitative data;
- information from sociodemographic, economic and anthropological studies that provide a better understanding of the sociocultural context and culinary traditions.

By using multidisciplinary approaches, authorities are able to prepare dietary guidelines that are tailored to changing eating patterns and that incorporate the country’s food culture, as recommended by the FAO and the WHO.

In future, it will be essential to build on the new approaches developed and put forward in the past few years around the globe.

3.4 Focus on dietary guidelines in the twenty-first century

3.4.1 New trends

- **Toward more sustainable dietary patterns**
  One of the trends observed in recent years is that sustainable food systems have been incorporated in dietary guidelines at the instigation of the FAO, the WHO, and the UN:

  - Following the Second International Conference on Nutrition (ICN 2) organized by the FAO and the WHO in 2014 in Rome, the framework for action recognizes the need to act on means of production in order to take environmental factors into account and to limit losses and waste, while ensuring a balanced diet for populations.

  - The resolution adopted by the United Nations on April 1, 2016 proclaiming the “United Nations Decade of Action on Nutrition (2016-2025)” states “that the Sustainable Development Goals and targets are integrated and indivisible and balance the three dimensions of sustainable development . . . [which are] to end hunger, achieve food security and improved nutrition and promote sustainable agriculture, as well as the interlinked targets of other Goals.” (UN, 2016, p. 2)

  - The FAO report “Plates, pyramids, planet” (Fischer and Garnett, 2016), published in 2016 in collaboration with the international, interdisciplinary Food Climate Research Network (FCRN) at the University of Oxford in England, underscores the importance of taking the issues of climate change and sustainable development into account in promoting “good nutritional health.”
At the international scientific symposium “Biodiversity and Sustainable Diets: United Against Hunger” held in 2010, the FAO provided a consensus definition of "sustainable diet" (see box).

“The Sustainable Diet”

“Diets with low environmental impacts which contribute to food and nutrition security and to healthy life for present and future generations . . . [and are] protective and respectful of biodiversity and ecosystems, culturally acceptable, accessible, economically fair and affordable . . . [and] nutritionally adequate, safe and healthy, while optimizing natural and human resources.” (FAO, Final report of the international scientific symposium “Biodiversity and Sustainable Diets: United Against Hunger,” 2010, p. 1)

The report recently published by the FAO and the FCRN (Fischer and Garnett, 2016) provides an analysis of dietary guidelines around the world, and identifies the countries that make a link between dietary patterns and environmental concerns.

Given that few countries incorporate sustainability messaging into their guidelines, the FAO is now urging the countries with dietary guidelines to take steps to promote healthy and sustainable food systems and models.

When the report came out in 2016, fewer than twelve countries had taken measures to include environmental considerations in their national dietary guidelines. The initiatives discussed in the report (Fischer and Garnett, 2016) include the following:

- In Germany, the dietary guidelines published in 2013 incorporate messaging about enjoying a variety of foods and eating seasonal products. At the same time, the German government contributed to the development of a guide on all consumer products intended to help the general public make choices most consistent with environmental protection. Practical tips are provided on recycling, organic products, and meat consumption (meat, eggs, etc.).

- In Qatar, the dietary guidelines (Supreme Council of Health of Qatar, 2015) include recommendations on conserving water and natural resources. A buyer’s guide is also included on how to plan meals and shop to reduce food waste.

- In the United States, the Dietary Guidelines for Americans (USDA, 2015) do not include any specific information on sustainability. However, the appendix provides tips on vegetarian and Mediterranean-type diets. There is also information on anti-waste measures in the online tools for creating menus.
The dietary guidelines considered compatible with sustainability, according to the report (Fischer and Garnett, 2016), are listed in Table 16.

### Table 16: Dietary Guidelines Compatible with “Good Health” and Low Environmental Impact

- A diversified diet including a wide variety of foods.
- Balance between energy intake and energy needs.
- Diet focusing on minimally processed tubers and whole grains, legumes, fruits and vegetables, particularly those that are field grown, “robust” (less likely to spoil) and less dependent on energy-intensive modes of transport. Meat is to be eaten in moderate quantities, and all parts are to be consumed.
- Dairy products and alternatives (products fortified with calcium and other nutrients) are to be consumed in moderation.
- Preferably unsalted nuts and seeds.
- Small quantities of fish and seafood sourced from certified fisheries.
- Limited consumption of foods high in fat, sugar or salt and low in micronutrients, like chips, confectionery and sugar-added drinks.
- Oils and fats preferably with a beneficial omega-3 to omega-6 ratio such as rapeseed and olive oil.
- Tap water in preference to soft drinks.

According to the report, the countries that have incorporated sustainability concepts in their guidelines include Brazil, Germany, Sweden and Qatar. It should be noted, however, that since the report was published, the Netherlands, the United Kingdom, Uruguay and France have included environmental considerations in their guidelines (FAO, n.d.; HCSP, 2017).

The messages strive to promote a more balanced ratio (fifty-fifty) of protein sources in diets, by increasing plant sources (fruits, vegetables, shelled nuts, legumes, seeds, etc.) and decreasing animal protein.

Brazil was cited as an example by the FAO for its approach (see 3.3 above), which combines socioeconomic considerations with more sustainable practices. Its recommendations encourage consumers to choose more whole, minimally processed products that are high in nutrition and more closely aligned with the traditional diet.

Brazil’s emphasis on whole, minimally processed foods is part of an approach to sustainability reflecting greater concern about the environment and resource preservation, as recommended by the UN (2016) in its action in support of food security and improved nutrition for the next decade.
According to Carlos Monteiro and his colleagues (2017), the ultra-processed foods defined in the NOVA classification (in 3.3 above) generally require more resources to produce than whole foods eaten in their natural form. In addition, excessive intake of ultra-processed foods is linked to the risk of overweight and chronic diseases.

In light of the sustainability goals set by the UN for its Decade of Action on Nutrition 2016-2025 (Monteiro et al., 2017), the production and consumption of ultra-processed products, which is ever increasing, constitutes a global challenge and should be reduced.

In response to this challenge, Uruguay and Sweden have incorporated messages in their guidelines encouraging their populations to cook more and to reduce the amount of highly processed foods they eat.

**The Uruguayan Food guide**
The Uruguayan Ministry of Public Health updated its national dietary guidelines for the general public in 2016 following a thorough revision of its food guide (Ministry of Public Health of Uruguay, 2016).

The guiding principles are two-fold:
- advice on a healthier diet and information on servings;
- specific considerations about the environment, food preparation, and enjoying meals at the table.

The messages highlight the importance of eating fruits and vegetables and limiting processed foods. The guide illustrates foods from each group that are whole, minimally processed, processed and ultra-processed, in order to raise consumer awareness.
The guide emphasizes the need for consumers to take their time to eat and not to skip meals. Pictograms were specifically developed to make the messages easy to understand. They are designed to encourage consumers to buy fresh products and to eat their meals at the table as a family, without television or telephone.

The Swedish food guide

Swedish food guide is quite original (National Food Agency, Sweden, 2015), as it revolves around three simple messages illustrated in traffic light colours:

**Green:**
Eat more vegetables, fruits, berries, fish, shellfish, nuts and seeds and get exercise!

**Amber:**
Switch to whole grains, healthy fats and low-fat dairy products.

**Red:**
Consume less red and processed meat, salt, sugar and alcohol.

The guide also provides advice about physical activity and more eco-friendly means of transport (walking, biking, etc.).
Benin’s food guide

Benin’s food guide (2014) also highlights culinary traditions in line with local culture. This is conveyed by messages like, “Conserve and teach your children traditional cuisine in order to maintain health and preserve culture.”

A distinctive aspect of Benin’s food guide is that it is the result of cross-cutting collaboration by a number of partners: the Hub in French-Speaking Africa on the Double Burden of Malnutrition, the Regional Public Health Institute, and the WHO Collaborating Centre on Nutrition Changes and Development (TRANSNUT) under the coordination of Hélène Delisle, then professor of international nutrition, department of nutrition, faculty of medicine at the Université de Montréal (Conseil National de l’Alimentation et de la Nutrition du Bénin, 2014).

3.4.2 Making guidelines easier to apply

The development of food-based dietary guidelines under public health programs worldwide and the methodologies used have been amply discussed in this monograph. Over the years, the question has been raised as to how effective these guidelines actually are. A number of limitations in their implementation and application have been identified by public health experts and must be taken into account.

These limitations are found at many levels, including the:

- **Scientific**

  The information conveyed in food guides does not always reflect advances in nutrition knowledge. Moreover, in some cases the messaging contradicts the conclusions of recent publications (e.g. encouraging eating healthy sources of fat instead of promoting the reduction of total fat intakes). This has prompted organizations to publish their own guidelines, thus creating some confusion.
Regulatory
Guideline documents need to be supported by appropriate regulatory measures. Food guides are generally a reliable source of information; however, other complementary tools, such as nutritional labelling systems, can help consumers better understand the nutritional value of foods (Green, 2015).

Certain terms used by the WHO, such as “added sugars” and “free sugars,” are not standardized on a regulatory level in some countries, including the United States. This makes it difficult for those countries to adapt the recommendations issued by the international agency.

Nutritional
Macronutrients (proteins, carbohydrates, fats) are used in calculating the energy value of foods. Thus, the reduction in sugar intakes that people are urged to make necessarily affects the proportion of fats and proteins in the diet (WHO, 1998).

The foods that contribute to fat and sugar intakes are not necessarily found in the same food groups. It is therefore advisable for separate messages to be developed for the two groups.

The recommendations about the composition of foods that consumers best understand are often those providing practical information rather than advice about consuming more or less of a particular food or nutrient. For example, a message like “Remove the skin and all visible fat from chicken and meat before eating it” is more easily understood than “Reduce your intake of saturated fat” (Andrade and Andrade, 2016).

In addition, information on serving sizes is, in some cases, poorly understood and may encourage consumers to eat too much of some foods and not enough of others.

Cultural
If local dietary practices, cultural food preferences and culinary traditions were incorporated in dietary guidelines, it would be easier for some population groups to apply their food guide and change their dietary behaviours.

With the globalization of dietary patterns, people around the world are able to share culinary trends, specificities and traditions. This contributes to the fusion, reinterpretation and differentiation of cuisines but, at the same time, it can erode and shrink food models (French Ministère de l’agriculture, de l’agroalimentaire et de la forêt, 2017).
• Economic
Budget constraints and income disparities can create an obstacle and increase social inequalities in health. Countries need to adopt measures enabling them to take associated factors into account to facilitate guideline monitoring.

• Toward new approaches
New approaches aimed at facilitating guideline monitoring—and removing the barriers identified—have been developed in the past few years. The guidelines on diet and physical activity, disseminated through guides and other resources, are part of a vast collection of tools designed to improve the overall health of populations.

The Québec example: How to do better
In Québec, the Evaluation Platform on Obesity Prevention (PEPO) and the Institut National de Santé Publique du Québec (INSPQ) recently carried out a project, Comment Faire Mieux, on the promotion of healthy lifestyle habits and the prevention of obesity (Le Bodo et al., 2015).

The report they issued presents the findings of the project, which compares actions discussed in the international scientific literature with those implemented in Québec between 2006 and 2014 under the Québec government action plan and the Québec en Forme fund.

The report identified public health initiatives worldwide that are among the most effective in promoting healthy eating habits and physical activity and in preventing obesity.

Its authors developed an original rating system to evaluate the quality of the recommendations identified (see Table 17).

<table>
<thead>
<tr>
<th>Rating</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Très élevé</td>
</tr>
<tr>
<td>B</td>
<td>Élevé</td>
</tr>
<tr>
<td>C</td>
<td>Intermédiaire</td>
</tr>
<tr>
<td>D</td>
<td>Discutable</td>
</tr>
<tr>
<td>E</td>
<td>Faible</td>
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</tbody>
</table>

Table 17: Rating System for International Scientific Recommendations (Le Bodu et al., 2015)
The best avenues for action based on the most frequent and convincing international recommendations (levels A and B) were then selected.

At the same time, a critical assessment of 166 actions developed in Québec between 2006 and 2014 was carried out, and the strengths and points to be improved were identified. A deliberative forum with experts from Québec and France was then organized to select the proposals with the strongest support.

Through this three-fold analysis process, the fifty most promising actions in the Québec context were selected. The actions were then categorized according to the level at which they must be taken: individual or within the environments defined (physical, sociocultural, political and economic)—environments which are discussed in detail in 2.2.3 of this document (Mongeau et al., 2012).

Three diet-related actions are considered imperative:

1. Investing in monitoring the nutritional quality of foods and beverages in order to support the reformulation of processed foods.
2. Reorganizing the school and daycare environments to offer spaces conducive to convivial meals.
3. Conducting mass awareness campaigns that communicate a series of simple, positive guidelines on healthy eating.

The third action is related to the sociocultural environment. It underscores the importance of strengthening public awareness through clear, positive messages adapted to the food culture. It is in line with the concept of cultural acceptability advocated by the FAO (n.d.).

In fact, the authors specify that “it is generally advisable to implement intensive, long-term, culturally appropriate campaigns centred on clearly identified behavioural changes through simple messages, for example, reduce sugar-sweetened beverages and introduce children to the taste of fruits and vegetables.” (Translation of Le Bodo et al., 2015, p. 226)
Conclusion

While, according to the FAO (n.d.), numerous countries have developed dietary guidelines, much remains to be done to improve their effective implementation. In their dissemination of messages to the general public, food guides must be considered educational tools.

Today, with the globalization of food systems, shared trends and increasingly interdependent economies, food guides can also act as levers of change for sociocultural norms by encouraging people to adopt healthy and more eco-friendly dietary behaviours (French Ministère de l’agriculture, de l’agroalimentaire et de la forêt, 2017).

Many barriers must still be overcome to provide for the development of dietary guidelines that are effective and properly understood.

To summarize the different processes discussed in this monograph, an approach to the preparation of dietary guidelines could include the following steps:

- Documenting the relationship between diet, lifestyle and the development of chronic non-communicable diseases through a stringent scientific methodology, and ensuring public authorities are presented with the findings;
- Involving the general public and stakeholders through collaborative approaches;
- Securing the firm commitment of the national government to the strategic orientations and the allocation of resources for the development and implementation of the program;
- Setting up a cross-cutting steering committee to ensure oversight of the program, its implementation and its evaluation on the local, regional and national levels;
- Mobilizing all sectors concerned and adopting an inter-sectoral approach, including opinion leaders and the public at large;
- Ensuring the training and support of the different stakeholders involved in implementing the approach;
- Regularly revising the guidelines so as to take into account new scientific publications and the evolution of consumers’ dietary behaviours.

In this multicultural context with an abundance of research on new nutrition recommendations, the Louis Bonduelle Foundation will follow, with keen interest, the dietary guidelines developed in this decade of action on nutrition.
GLOSSARY

DIETARY REFERENCE INTAKES WORLDWIDE

- **Canada and the United States**
  
  **DRIs Dietary Reference Intakes**: « The Dietary Reference Intakes (DRIs) are a comprehensive set of nutrient reference values for healthy populations that can be used for assessing and planning diets. DRIs have been published since 1997 and replace previously published Recommended Nutrient Intakes (RNIs). They are established by Canadian and American scientists through a review process overseen by the U.S. National Academies, which is an independent, nongovernmental body. The DRIs reflect the current state of scientific knowledge with respect to nutrient requirements and are published as a series of reports by the U.S. National Academies. » (Health Canada, 2017).
  

  The DRIs encompass different types of nutrient reference values, each with different uses:
  
  - **Estimated Average Requirement (EAR)** - the amount of a nutrient that is estimated to meet the requirement of half of all healthy individuals in a given age and gender group. This value is based on a thorough review of the scientific literature.
  
  - **Recommended Dietary Allowance (RDA)** - the average daily dietary intake of a nutrient that is sufficient to meet the requirement of nearly all (97-98%) healthy persons. This is the number to be used as a goal for individuals. It is calculated from the EAR.
  
  - **Adequate Intake (AI)** - only established when an EAR (and thus an RDA) cannot be determined because the data are not clear-cut enough; a nutrient has either an RDA or an AI. The AI is based on experimental data or determined by estimating the amount of a nutrient eaten by a group of healthy people and assuming that the amount they consume is adequate to promote health.
  
  - **Tolerable Upper Intake Level (UL)** - the highest continuing daily intake of a nutrient that is likely to pose no risks of adverse health effects for almost all individuals. As intake increases above the UL, the risk of adverse effects increases.
  
  - **Acceptable Macronutrient Distribution Range (AMDR)** - the percentage range of protein, fat, and carbohydrate intakes that is associated with reduced risk of chronic disease while providing adequate intakes of essential nutrients.

- **France et Europe**
  
  European dietary reference values for nutrient intakes are set by EFSA. The EFSA opinion on principles for deriving and applying dietary reference values provides definitions for the terminology and concepts underlying DRVs. (Dietary Reference Values for nutrients Summary report, EFSA 2017).
  
  
Dietary Reference Values (DRVs): “an umbrella term for the complete set of nutrient reference values, for energy and all other nutrients, which indicate the amount of a nutrient which must be consumed on a regular basis to maintain health in an otherwise healthy individual (or population). They are key concepts in the nutrition field. They provide the scientific bases on which nutrition recommendations are built. They are the references used in diet assessment and diet planning, at the population and individual level. They also serve as the basis for setting reference values in food labelling, and in establishing food based dietary guidelines. For these reasons, they are helpful to health professionals, scientists, risk managers, policy makers, industry and many more.”

They include:

- **The Population Reference Intake (PRI):** the level of (nutrient) intake that is adequate for virtually all people in a population group. On the assumption that the individual requirements for a nutrient are normally distributed within a population and the interindividual variation is known, the PRI is calculated on the basis of the AR plus twice its standard deviation (SD). This will meet the requirements of 97.5% of the individuals in the population.

- **The Average Requirement (AR):** the level of (nutrient) intake estimated to satisfy the physiological requirement or metabolic demand, as defined by the specified criterion for adequacy for that nutrient, in half of the people in a population group, given a normal distribution of requirement.

- **The Adequate Intake (AI):** the value estimated when a PRI cannot be established because an AR cannot be determined. An Adequate Intake is the average observed or experimentally determined approximations or estimates of nutrient intake by a population group (or groups) of apparently healthy people that is assumed to be adequate. The practical implication of an AI is similar to that of a PRI, i.e. describe the level of intake that is considered adequate for health reasons. The terminological distinction relates to the different way in which these values are derived and to the resultant difference in the “firmness” of the value.

- **The Reference Intake range (RI):** the intake range for macronutrients, expressed as % of the energy intake. These apply to ranges of intakes that are adequate for maintaining health and associated with a low risk of selected chronic diseases.

Terms used to define Dietary references have varied between authors and time worldwide. The Table below lists the different terms used to express the same concept.

<table>
<thead>
<tr>
<th>France (Afssa 2001)</th>
<th>Apport nutritionnel conseillé (ANC)</th>
<th>Besoin nutritionnel moyen (BNM)</th>
<th>-</th>
<th>Apport nutritionnel conseillé (ANC)</th>
<th>Apport nutritionnel conseillé (ANC)</th>
<th>Limite de sécurité</th>
</tr>
</thead>
<tbody>
<tr>
<td>Europe (EFSA 2010a)</td>
<td>Population Reference Intake (PRI)</td>
<td>Average requirement (AR)</td>
<td>Lower threshold intake (LTI)</td>
<td>Adequate Intake (AI)</td>
<td>Reference intake range (RI)</td>
<td>Tolerable upper intake level (UL)</td>
</tr>
<tr>
<td>Etats-Unis (IOM 2000a)</td>
<td>Recommended Dietary Allowance (RDA)</td>
<td>Estimated average requirement (EAR)</td>
<td>-</td>
<td>Adequate Intake (AI)</td>
<td>Acceptable macronutrient distribution ranges (AMDR)</td>
<td>Tolerable upper intake level (UL)</td>
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<td>Lower limit of intake (UL)</td>
<td>-</td>
<td>-</td>
<td>Upper intake level (UL)</td>
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<td>Estimated average requirement (EAR)</td>
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<td>Recommended Dietary Intake (RDI)</td>
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<td>-</td>
<td>Adequate Intake (AI)</td>
<td>Acceptable macronutrient distribution ranges (AMDR)</td>
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Bibliography


86

87


