

AHFES

A QUADRUPLE HELIX ATLANTIC AREA HEALTHY FOOD ECOSYSTEM FOR GROWTH OF SMES

**D3.2 Report on current strategies & policies for
innovation growth in healthy food and lifestyles**

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Abbreviations and Acronyms

AA	Atlantic Area
AESAN	Spanish Agency for Food Safety and Nutrition
ANSES	National Food, Environment and Occupational Health and Safety Agency
APED	Portuguese Association of Distribution Companies
APN	Portuguese Nutritionists Association
CATAA	Agrifood Technological Center
CEIDSS	Center for Studies and Research on Social Dynamics and Health
COSI	Childhood Obesity Surveillance Initiative
DGAL	General Direction for Food
DGAV	General Direction of Agriculture and Veterinary
DGS	Director General of Health
EIPAS	Integrated Strategy to Promote Healthy Eating
FBDGs	Food-based Dietary Guidelines
FIPA	Federation of Portuguese Agro-Food Industries
FOP	Front of Pack
FSA's	Food Standards Authorities
FSAI	Food Safety Authority
HiAP	Health in all Policies
HFSS	High food in saturated fats, trans-fatty acids, free sugars, or salt
IBEC	Irish Business and Employers Confederation
JPI	Joint Programming Initiative
NCDs	Noncommunicable Disease
PAT	Territorial food projects
PHE	Public Health England
PIA	Investment Programme for Tomorrow
PNA	National Food Programme
PNNS	National Programme for Health and Nutrition
PNPAS	National Programme for the Promotion of Healthy Eating
PNSE3	National Health and Environment Plan
POAPMC	Social Security Operational Programme to Support the Poorest
PRSE3	Third Regional Health and Environment Plan
RIS3	Research and Innovation Strategies for smart specialisation
SACN	Scientific Advisory Committee on Nutrition
SBRI	Small Business and Research Initiative
SRAE	Regional Support and Expertise Structure
SRDEII	Regional framework for the economic development, innovation and internationalisation
TFA	Trans fatty acids
UK	United Kingdom
WHO	World Health Organisation

Executive summary

There has been a significant rise in noncommunicable diseases (NCDs) over the last number of years and currently, it is a severe and urgent problem to health, social and economic development and also environmental sustainability. Cardiovascular disease, cancer and diabetes are the main causes of death at a global level.

The present report compiles the experiences, policies and innovative products in the area of healthy food and lifestyles from five selected countries in the Atlantic Area (AA): France, Ireland, Portugal, Spain, and the United Kingdom. It summarizes the recent European policies and the methods of implementation at a national, regional and local level for each country.

In general, all countries applied the World Health Organisation (WHO) recommended NCD policies at a national and regional level, but there is a gap in the local policies. To improve healthy food and lifestyles of the population, it is necessary to regularly re-evaluate policies and consequent effects on the health status of the population. In addition, there is insufficient collaboration between the key stakeholders of government-university-industry-consumer. In most cases, consumers are not involved in the design, implementation and evaluation of the policies. It is clear that a quadruple helix approach will greatly enhance the efficacy of new policies in this domain.

1 Introduction

The present deliverable (AHFES, D3.2) analyses the current strategies and policies for innovation growth in healthy food and lifestyles of each partner region. It will provide primary source of information about the strategies, different approaches and tools to improve healthy food and lifestyles policies.

Building on a literature review and information about the existing regional strategies and policies collected by each project partner, key learnings and gaps were analysed and are summarised in this document.

Partners were asked to address the following topics to prepare the overview of the existing strategies and policies in their region/ country:

- Healthy food and lifestyles and innovation policies (approximately 6000 characters but not less than 5000 including spaces)
- Innovation Tools (approximately 2000 characters but not less than 1500 including spaces)
- Existing support structures and reforms (approximately 3000 characters but not less than 2000 including spaces)
- Overall region/country trends (approximately 3000 characters but not less than 2000 including spaces)

This deliverable contributes to the overall aim of WP3, capitalisation, reinforcing the knowledge between the stakeholders and contributing to filling the knowledge gaps between actors with complementary resources, capabilities and policies. It also feeds into the joint learning sessions, which are the focus of D3.1. In addition, it aligns directly with D4.1, which provides a more specific focus on cooperation policies and practices. The summarised knowledge of WP3 and WP4 is essential for building intelligence for innovation and growth in healthy food and lifestyles, which is the object of WP5. Furthermore, D3.2 provides some keys related to the gaps and best strategies for delivering support services for innovation and growth in healthy food and lifestyles, which will be dealt in WP6. Finally, it relates directly with WP2, where the information about the strategies approaches and tools to improve healthy food and lifestyles policies are communicated and disseminated to target groups (SMEs, academics, citizens, and policymakers).

2 Key concepts and interrelations between food, health and lifestyles

A review of the existing literature shows a correlation between diet and health.

First, it is common to see in the literature that the concepts of *healthy lifestyle* and *healthy living*, on the one hand, and of *healthy diet* and *healthy eating* are used interchangeably, being that a healthy diet is a key component of a healthy lifestyle. The definition of key terms is outlined below:

A **healthy lifestyle** is a way of living that favours optimal health and well-being, lowering the risk of being seriously ill or dying earlier.

A **healthy diet** (eating healthy) helps to maintain good health through optimal nutrition and is critical to achieve a healthy lifestyle. It should be varied and there are recommendations on the proportions/balance between the different types of foods. A healthy diet helps to protect against malnutrition in all its forms, as well as noncommunicable diseases (NCDs). Likewise, an unhealthy diet and the lack of physical activity constitute leading global risks to health.

Foods make up diets and eating healthy foods contribute to achieving a healthier diet. **Healthy foods are safe and of nutritional value.** However, a product is not to be considered healthy on its own, as it depends on the way it is produced and consumed and the overall diet of the individuals. Nevertheless, there are a series of recommendations that can be taken into consideration.

Research on healthy foods and diets tend to focus on the nutritional needs and the impact of food on physiological functions and physical and mental performance of the individual. However, food are more than just collections of nutrients. Specific dietary patterns are associated with reduced risk of specific diseases; the protective effect could be due to a single nutrient, a combination of foods or non-nutrients, or the replacements of some other foods in the diet. At the same time, some food components may have beneficial biological functions, but the exact mechanisms and compounds have not yet been completely identified, also because nutrients interact differently, depending on the food matrix. We should be aware that methods of food processing, preparation and cooking influence the nutritional value of foods.

Foods and diets have cultural, ethnic, social and family aspects that individual nutrients themselves do not have. These aspects need to be taken into consideration when thinking about food and food production. Consumers increasingly demand access to safe, healthy, high quality and affordable food that adjusts to the contemporary way of living.

When thinking about producing healthy foods, the food industry should consider, not only the nutritional value of the product, but also the preferences of consumers and product feasibility. The following parameters are important to be considered, the literature says:

- Food Safety & Quality
- Health & Nutritional Value
- Consumer acceptance (taste, texture, price, sustainability concerns)
- Feasibility (production costs, sustainability of supply chain)
- Handling & processability

Back in 2010, EFSA identified what they called *Nutrients of public health importance*. These are nutrients for which there is evidence of a dietary imbalance in the population that might influence the development of overweight and obesity or diet-related diseases.

Nutrients that might be consumed to excess	Nutrients for which intake might be inadequate
<ul style="list-style-type: none"> • energy • total fat • saturated and <i>trans</i> fatty acids • sugars • salt 	<ul style="list-style-type: none"> • unsaturated fatty acids • dietary fibre • vitamins and minerals (such as vitamin D, folate, potassium, calcium, iron, iodine)

Table 1. Nutrients of public health importance (EFSA, 2010)

Likewise, *Food Groups that are sources of nutrients of public health importance* have also been identified.

Meat & meat products
Cereals & cereal products of which: pizza, white bread, biscuits/buns/cakes/ pastries
Milk & milk products of which: cheese, Butter & spreading fats
Potato & savoury snacks of which: chips, savoury snacks
Eggs & egg dishes
Vegetables (excluding potatoes)
Fish & fish dishes
Sugar preserves & confectionery
Fruit & nuts
Other

Table 2. Food Groups that are sources of nutrients of public health importance (EFSA, 2010)

In a similar path, research within the current framework programme for research and innovation in the European Union, identifies the following key research points at the level of Food and Healthy Diet:

- Promoting informed consumer choices
- Delivering strategic solutions for healthy and safe foods and diets for all
- Creating opportunities for a sustainable and competitive agri-food industry, through innovation in food processing

Thus, consumers and their families have a role in achieving a healthier diet and they can put pressure from the demand side on both the food industry and policy makers. The food industry has a role in contributing to a healthier diet, incorporating the demands of the consumers and the recommendations from experts. Policy makers have a role in providing incentives for the food industry and the consumers and their families to achieving a healthier diet.

In the table below, we present a summary of the key aspects found in critical documents from the literature review conducted.

DOCUMENT	DEFINITION	KEY ASPECTS addressed	RECOMMENDATIONS on diet	RECOMMENDATIONS for the food industry
WHO (2018) Healthy diet Key concept: healthy diet	A healthy diet helps to protect against malnutrition in all its forms, as well as noncommunicable diseases (NCDs).	Physical activity Breastfeeding Energy intake Intake of free sugars Salt intake	More Fruit & vegetables (5 portions), legumes, nuts and whole grains. Less free sugars. Less fats -Unsaturated better. Less salt - Iodised better	Encouraging reformulation of food products to reduce the contents of saturated fats, trans-fats, free sugars and salt/sodium, with the goal of eliminating industrially produced trans-fats. Implementing the WHO recommendations on the marketing of foods and non-alcoholic beverages to children.
EUPHA (2017) Healthy and Sustainable Diets for European Countries Key concept: sustainable diets	Sustainable diets are nutritionally adequate, safe, and healthy, while having low environmental impact. They are also culturally acceptable, accessible, equitable, economically fair and affordable, contributing to food and nutrition security and to healthy lifestyles for present and future generations.	Plant based-, sustainable diet	More vegetables, pulses, fruits and whole-grain cereals. Less animal-origin foods. Less trans and saturated fats. Less sugar. Less salt.	Produce healthy, nutritious (minimally processed) foods in a sustainable manner, which contain low contents of sugars, salt and additives that could adversely affect health. Production and marketing should be honest and transparent, with consumer-friendly food labelling, and with restrictions on the marketing of junk food and sweet beverages, especially to children.
FDA (2016) Use of the Term "Healthy" in the Labelling of Human Food Products: Guidance for Industry Key concept: Healthy Food /claim "healthy" to label food products	To use the implied nutrient content claim: Are not low in total fat, but have a fat profile makeup of predominantly mono and polyunsaturated fats; or contain at least ten percent of the Daily Value (DV) per reference amount customarily consumed (RACC) of potassium or vitamin D in addition to iron and calcium, protein and fibre. The definition for "healthy" also includes a nutrient contribution criterion. Healthy dietary patterns not only restrict nutrients that increase risk of chronic disease, but also help assure nutrient adequacy to ensure sufficient intake of nutrients that are important in sustaining body function and reducing the risk of disease	Low amounts of saturated fat, sugar and sodium	Vegetables, Fruits, grains, dairy, protein, foods	this guidance is intended to advise food manufacturers of our intent to exercise enforcement discretion relative to foods that use the implied nutrient content claim "healthy" on their labels which: (1) Are not low in total fat, but have a fat profile makeup of predominantly mono and polyunsaturated fats; or (2) contain at least ten percent of the Daily Value (DV) per reference amount customarily consumed (RACC) of potassium or vitamin D
ARENA et al. (2015). Healthy lifestyle interventions to combat noncommunicable disease (...) key concept: healthy lifestyle	A lifestyle that helps prevent (and manage) noncommunicable diseases.	Cigarette smoking Hypertension Hyperglycemia Dyslipidemia Obesity Physical inactivity Poor nutrition (overweight and obesity, excess of calories		Improve the overall nutritional quality of their products. Offer healthy food and beverage options that are affordable. Modify their advertising approaches and practices.
EFSA (2010) Scientific Opinion on establishing Food-Based Dietary Guidelines	A diet that would help to maintain good health through optimal nutrition.	Nutrients of Public Health Importance Food-based dietary guidelines (FBDG) Energy balance Total fat	Balance energy intake with energy expenditure. Control excess intake of: total fat, saturated and trans fatty acids, sugars and salt	Consider FBDG in the composition of food products and on food reformulation. Communicate FBDG messages (leaflets, booklets, media campaigns, TV promotional

<p>Key concept: <i>healthy diet/eating</i></p>		<p>Fatty acid pattern Fruit and vegetables Dietary fibre Sugars Vitamins and minerals Alcohol Water</p>	<p>Control deficient intake of: unsaturated fatty acids, dietary fibre, as well as some vitamins and minerals (such as vitamin D, folate, potassium, calcium, iron, iodine)</p>	<p>activities, labels and logos on food products)</p>
<p>WHO (1999) Healthy living: What is a healthy lifestyle? Key concept: <i>healthy lifestyle / healthy living</i></p>	<p>A way of living that lowers the risk of being seriously ill or dying early.</p>	<p>Tobacco Physical activity Healthy eating Alcohol</p>	<p>Do not smoke Be physically active Eat healthy Control alcohol intake</p>	

Table 3. Highlights from the literature review

2.1 Health and wellbeing in Global and European policies

Over the past decades, a rapid growth in industrialisation, urbanisation and market globalisation occurred, which had a significant impact on population diets and lifestyles. At the same time, the living standards improved, the food availability expanded and became more diversified, and the access to services increased. However, that has also increased inappropriate dietary patterns and physical inactivity, which resulted in an increase in diet-related chronic diseases. So, the changes in dietary and lifestyles patterns led to an increase of the chronic noncommunicable diseases (NCDs), including obesity, diabetes, cardiovascular disease, hypertension, stroke and cancer. It was determined that in 2001 chronic burden diseases contributed 46% in the world and that in 2020 will increase to 57%. Considering these numbers, there is a growing concern, not only because they affect a large proportion of the population, but also due to the fact that NCDs start to appear earlier in life¹.

Nowadays, the main goal of public health policy is to allow people to have the best chance to live a healthy and active life. The 1986 **Ottawa Charter for Health Promotion** and subsequent documents on this topic highlight the importance of thinking about health in all policies, healthy environments and healthy lifestyles². WHO implemented the “**Health in all Policies**” (HiAP) which is an approach to public policies across sectors that considers the health implications of the decision, creates synergies and avoids harmful health impact to improve population health and health equity. This concept is essential once many of the determinants of health and health inequalities in populations have a social, environmental, and economic origin (Figure 1) which are directly influenced by the health sector and health policies. So, it is essential to pay attention to all factors around the human, such as place residence, surrounding environment, lifestyles, genetics, education, socioeconomic status or even social support network³.

1 https://www.who.int/nutrition/topics/2_background/en/

2 S. R. Thompson, M. C. Watson & S. Tilford (2018) The Ottawa Charter 30 years on: still an important standard for health promotion, International Journal of Health Promotion and Education, 56:2, 73-84, DOI: 10.1080/14635240.2017.1415765

3 Ferrari, Carlos. (2018). Implementation of public health policies for healthy lifestyles promotion: What Brazil should tell us?. Health Promotion Perspectives. 8. 243-248. 10.15171/hpp.2018.33.

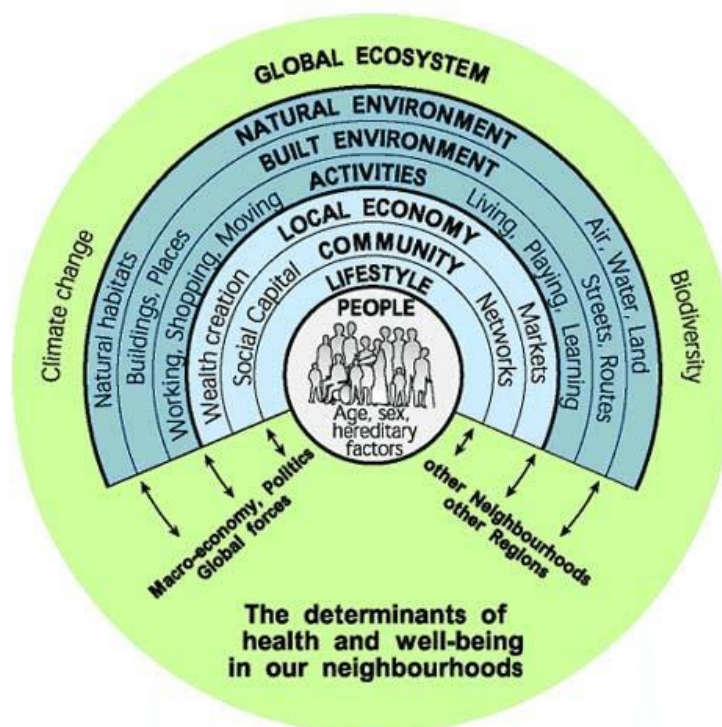


Figure 1. The determinants of health and well-being

In terms of global healthy food and lifestyles policies, the member's states of the WHO have established a new universal policy framework – **Health 2020**. The new goals are to “significantly improve the health and well-being of populations, reduce health inequalities, strengthen public health and ensure people-centred health systems that are universal, equitable, sustainable and of high quality”. This new programme recognizes the diversity of each European country, identifying two critical strategic directions with four policy priority action areas. So, to achieve real improvements in health, the governments need to work in two linked strategic objectives, improving health for all and reducing inequalities and, at the same time, improving leadership and participatory governance for⁴. The four priority areas for policy action are:

- 1) investing in health through a life-course approach and empowering people;
- 2) tackling the Region’s significant health challenges of noncommunicable and communicable diseases;
- 3) strengthening people-centred health systems, public health capacity and emergency preparedness, surveillance and response;
- 4) creating resilient communities and supportive environments.

Also, WHO recognises the importance of NCDs in public health and developed the **WHO Global Action Plan for the Prevention and Control of NCDs 2013-2020**. The goal of this plan is to reduce the preventable and avoidable burden of morbidity, mortality and disability due to noncommunicable diseases through multisectoral collaboration and cooperation at national, regional and global levels. This action plan has six objectives:

- To raise the priority accorded to the prevention and control of noncommunicable diseases in global, regional and national agendas and internationally agreed with development goals, through strengthened international cooperation and advocacy;

⁴ WHO. Health 2020. A European policy framework and strategy for the 21st century (2013)

- To strengthen national capacity, leadership, governance, multisectoral action and partnerships to accelerate country responsible for the prevention and control of noncommunicable diseases;
- To reduce modifiable risk factors for noncommunicable diseases and underlying social determinants through the creation of health-promoting environments;
- To strengthen and orient health systems to address the prevention and control of noncommunicable diseases and the underlying social determinants through people-centred primary health care and universal health coverage;
- To promote and support national capacity for high-quality research and development for the prevention and control of noncommunicable diseases;
- To monitor the trends and determinants of noncommunicable diseases and evaluate progress in their prevention and control.

Furthermore, the European Commission published the **Joint Programming Initiative (JPI)** document that provides a roadmap for harmonised and structured research activities, defining priorities to achieve well-being and prosperity in Europe. There are three critical interreacting research areas:

- Determinants of diet and physical activity: ensuring the healthy choice is the natural choice for consumers. The challenge is to understand the most effective ways of improving public health through interventions targeting dietary and physical activity behaviours;
- Diet and food production: developing high-quality, healthy, safe and sustainable food products. The challenge is to stimulate European consumers to select foods that fit into a healthy diet and to stimulate the food industry to produce healthier foods sustainably.;
- Diet-related chronic diseases: preventing diet-related, chronic diseases and increasing the quality of life. The challenge is to prevent or delay the onset of diet-related chronic diseases by gaining a better understanding of the impact of nutrition and lifestyle across Europe on human health and diseases.

All the areas are based in the strategies for research, development and innovation activities and also in communication and dissemination to all stakeholders⁵.

2.2 Non-Communicable Diseases and risk factors in AA countries

The status of non-communicable diseases is different among the AA countries (Figure 2). In 2018, Spain and Ireland stood out for having the highest percentage of NCDs deaths, in contrast, Portugal is the country with the lowest percentage⁶.

⁵ EC, Joint Programming Initiative A HEALTHY DIET FOR A HEALTHY LIFE The vision for 2030 (2010)

⁶ https://www.knowledge-action-portal.com/en/country_action

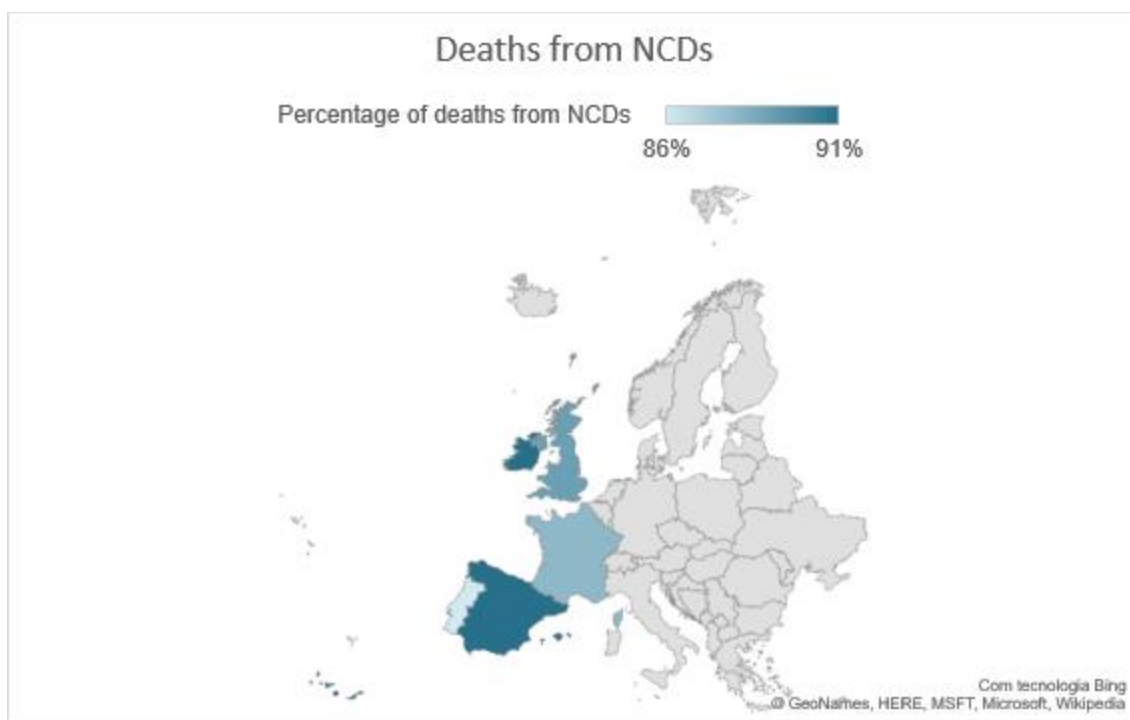


Figure 2. Percentage of NCDs deaths by country (2018)

The country with the highest physical inactivity and the raised blood pressure is Portugal. In contrast, France stands out for its higher prevalence of tobacco and alcohol, and in the case of the United Kingdom, obesity stands out (Figure 3 and Figure 4). So, the prevalence of NCDs risk factors is different among the countries. Besides, the status of health, such as reference before is related not only with these factors. Therefore, each country can base the health policies in the WHO programme, but at the same time there is a need to understand the gaps and the determinants to develop new or modified policies.

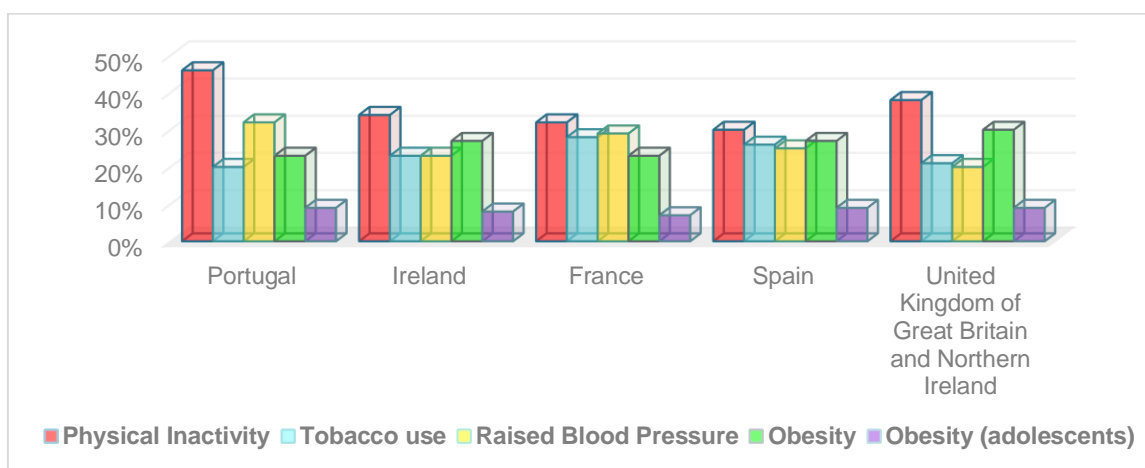


Figure 3. NCDs Risk Factors in 5 AA countries (France, Ireland, Portugal, Spain and United Kingdom)

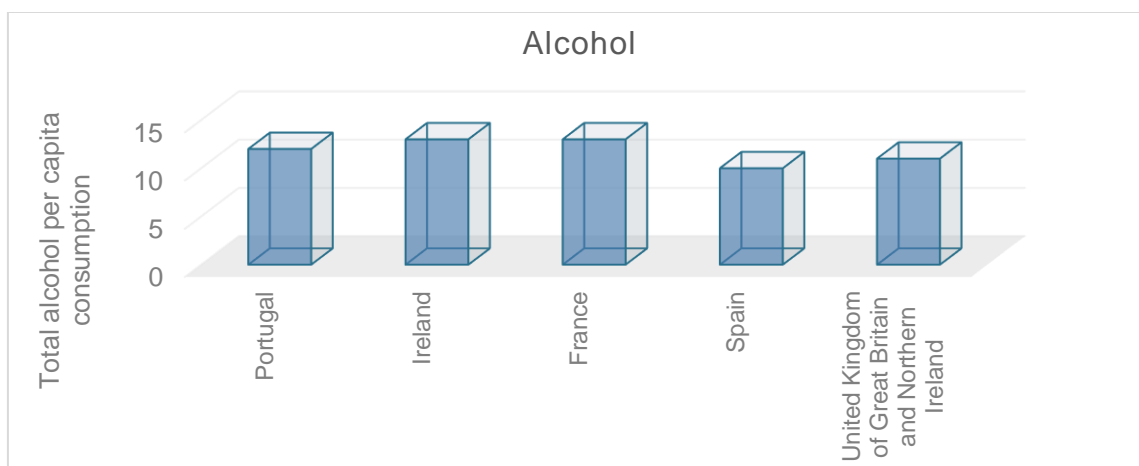


Figure 4. Comparison of total alcohol per capita consumption of the 5 AA countries

3 Analysis of current strategies and policies for innovation growth in healthy food & lifestyles in AA countries

This chapter summarises and analyses the strategies and policies for innovation growth in healthy food & lifestyles in the regions and countries covered by the AA programme. The detailed information corresponding to the countries and regions addressed are presented in chapter 5 - Annex: strategies & policies for innovation growth in healthy food and lifestyles for each AHFES country.

3.1 Health and lifestyles programmes and policies

WHO developed a WHO Global Action Plan 2013-2020 to reduce 25% in overall mortality from four significant NCDs, which included cancer, diabetes, cardiovascular and chronic respiratory disease by 2015⁷. Among all the strategies, two of them intend to reduce deaths by targeting obesity and diabetes, whereas other strategies focus more on a combination of decreased alcohol intake, increasing physical activity, reducing salt intake, reduce smoking and enhancing hypertension control. Each country is required to fill up the WHO Global Action Plan objectives, and therefore needs to evaluate their own data about the health status of the population and the healthcare system at both a national and regional level. In this evaluation, it is necessary to comprehend the social, economic, political determinants and the individual characteristics and behaviours of the population.

The present work showed that the five countries (France, Ireland, Portugal, Spain and United Kingdom) implemented a Health National Plan based on the WHO Action Plan goals (figure 5). The first country to integrate the NCDs policies was France in 2010 by the National Programme for the Promotion of Healthy Eating (PNPAS). Then, in 2011 Spain established the Nutrition, Physical Activity and Obesity Prevention (NAOS) strategy, which consists of the implementation of new strategies in the area of physical activity, obesity and nutrition. In 2012, Portugal joined to this group with an identical programme from France, National Programme for the Promotion of Healthy Eating (PNPAS). Later, Ireland established strategies for alcohol, physical activity and obesity in the “Healthy Ireland: A framework for improved health and wellbeing 2013-2025”. The United Kingdom only joined in 2015 with the programme living well for longer. More recently, some countries published new documents in the area of NCDs, such as Portugal (EIPAS), Spain (Chronicity approach strategy) and France (National Health Strategy).

⁷ https://www.who.int/nmh/events/ncd_action_plan/en/



Figure 5. National Nutrition Policies Strategies and Actions Plans ⁸

All of the selected countries analyzed have created measures and policies that are applied and adapted to the national context, existing legislation and individual culture. Figure 6 shows the most common policies and measures globally. There are several policies and actions to increase and encourage healthy diets and nutrition, with nutrition and diet counselling playing a prominent role, as well as dietary guidelines. However, other actions are also necessary but are not yet being implemented in all countries. The main target of these strategies is the older population and children regarding healthy eating and physical activity. Some examples of these policies and measures in the selected countries are presented below.

⁸ https://gateway.euro.who.int/en/indicators/gnpr_survey_1-national-nutrition-policies-strategies-and-action-plans/

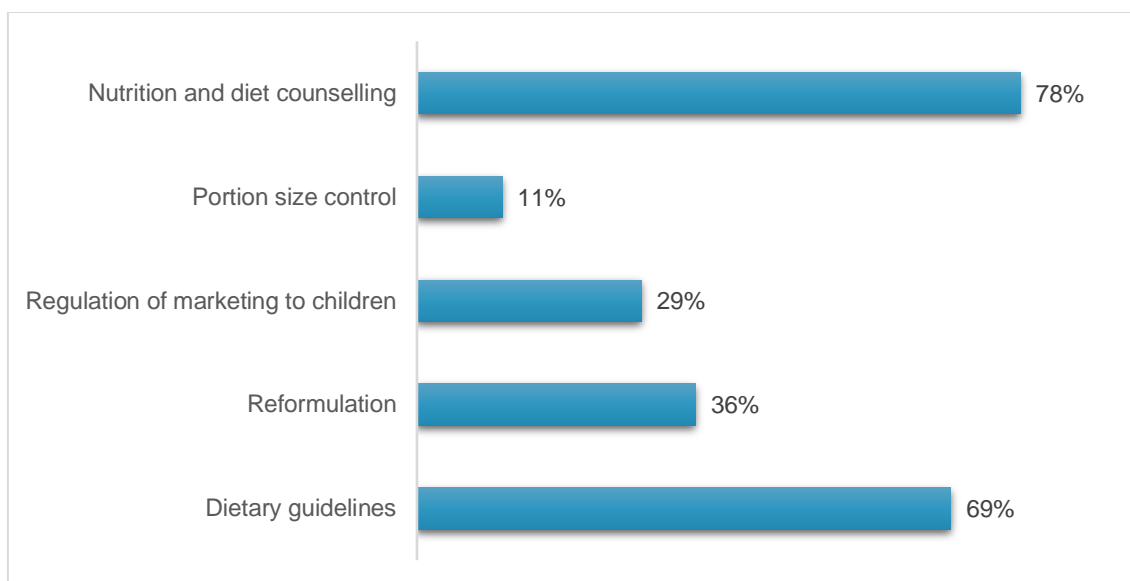


Figure 6. Key policies actions and measures to promote healthy diets and nutrition at a global level⁹

3.1.1 Nutrition and diet counselling

Most of the countries in the current sample provide advice on nutrition and healthy eating. Typically, these actions take place in schools, work, communities and even primary health care settings.

There are several ways to advise on nutrition, which is most effective when involving multiple components. Guidelines can be used for communication, question-answer sessions and activities developed by the communities. It should be noted that in most of these actions the effect of fats, sugars and salt on human health is disclosed, how to consume healthier diets, portion sizes and also gave practical skills about how to interpret a nutrition label.



Figure 7. Sintra Grows healthy project

An example is the “Sintra Grows healthy project” in Portugal (figure 7). This is an intervention project at the community level, in which it promotes healthy lifestyles for children. Its main objectives are the development of an intervention model to promote healthy lifestyles in the school context, assess the impact and disseminate the respective intervention model.

Another example is the Initiatives for Healthy Eating in Euskadi, in Spain, that aim to promote health through what we eat. There is a total of 18 initiatives to be developed by 2020, which encompass actions ranging from reducing consumption and salt and sugar to promoting healthy eating

in schools.

⁹ <https://www.who.int/nutrition/topics/global-nutrition-policy-review-2016.pdf>

3.1.2 Portion size and dietary guidelines

Food-based dietary guidelines aim to guide toward recommended food consumption to provide required nutrients and to promote health. In the analysed countries, there are several models adopted, such as pyramids, wheel, plate and stair.

The Portuguese food wheel reflects the dietary principles of the Mediterranean diet (figure 8). However, this does not include considerations regarding the diet-health relationship, but only the intake of energy and nutrients. In the case of the United Kingdom, the model developed in 2016 is the Eatwell guide which includes the conclusion of the scientific advisory committee on nutrition's carbohydrate and health report (figure 9).



Figure 8. Portuguese Food Wheel¹⁰



Figure 9. United Kingdom Eatwell Guide¹¹

Two countries apply the food pyramid, Ireland and Spain. The Irish model aims to achieve the goals set for the intake of energy and nutrients, and it is still based on the relationship between diet and health (figure 10). However, the Spanish model is also a pyramid but is organized

¹⁰<https://www.dgs.pt/promocao-da-saude/educacao-para-a-saude/areas-de-intervencao/alimentacao.aspx>

¹¹<https://ec.europa.eu/jrc/en/health-knowledge-gateway/promotion-prevention/nutrition/food-based-dietary-guidelines>

differently (figure 11). This model is based on dietary recommendations aligned with the traditional Mediterranean diet, which is divided into three levels of consumption. Besides, this model also includes recommendations on physical activity.

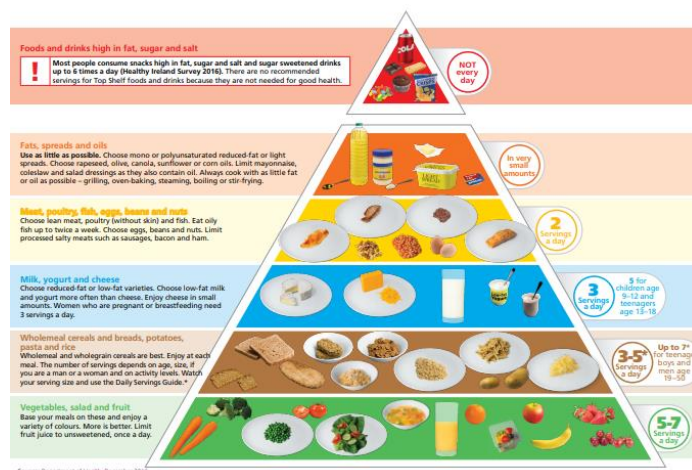


Figure 10. Ireland Food pyramid¹²



Figure 11. Spain Food Pyramid¹³

Finally, the most recent and comprehensive approach corresponds to France. This stair model combines the various aspects that include other Food-based dietary guidelines (FBDGs) (figure 12). Although the elements of sustainability and specific segmentation of target groups are not yet added. This model includes nine rules that accompany the stairs, with the foods that people

¹² <http://www.fao.org/nutrition/education/food-dietary-guidelines/regions/countries/ireland/en/>

¹³ <http://www.fao.org/nutrition/education/food-dietary-guidelines/regions/countries/Spain/en>

can consume more being at the top of the stairs and, consequently, the foods that people should eat only in small quantities are at the bottom¹⁴.



Figure 12. France Food Stairs¹⁵

Previously, the process for developing FBDGs was based on disease prevention and nutrient recommendations. However, nowadays, with scientific advances and social developments (lifestyle change, interest in personalized health, concern for sustainability), the development process of the FBDGs needs constant reorientation.

3.1.3 Regulation of marketing to children

The marketing of high food in saturated fats, trans-fatty acids, free sugars, or salt (HFSS) and non-alcoholic beverages can influence the younger population's food preferences, diets and health. Thus, there is an urgent need to address the issue of marketing to children in terms of political measures. Of the countries analyzed, all are applying measures to restrict marketing to children (figure 13). These measures can be divided according to the medium used for marketing, that is, from traditional transmission marketing to marketing carried out in stores and outdoor¹⁶.

¹⁴ Bechthold, A., Boeing, H., Tetens, I., Schwingshackl, L., & Nöthlings, U. (2018). Perspective: Food-based dietary guidelines in Europe-scientific concepts, current status, and perspectives. *Advances in Nutrition*, 9(5), 544–560. <https://doi.org/10.1093/ADVANCES/NMY033>

¹⁵ <http://www.fao.org/nutrition/education/food-dietary-guidelines/regions/countries/France/en>

¹⁶ World Health Organization. (2018). Evaluating implementation of the WHO set of recommendations on the marketing of foods and non-alcoholic beverages to children: Progress, challenges and guidance for next steps in the WHO European Region. 1–56. http://www.euro.who.int/__data/assets/pdf_file/0003/384015/food-marketing-kids-eng.pdf

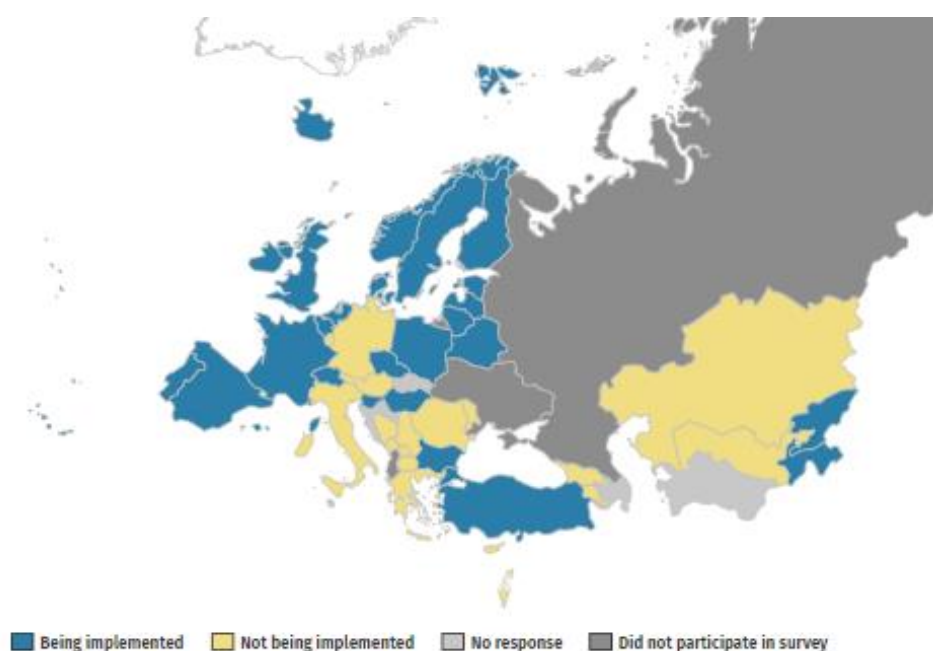


Figure 13. Measures to regulate or guide marketing of food and non-alcoholic beverages to children¹⁷

Regarding marketing restrictions on traditional broadcast media, all countries applied measures. The first country to introduce regulations was the United Kingdom in 2007. The laws specifically targeted the marketing of food to children to limit children's exposure to television advertising to reduce opportunities and persuade children to demand consumption from consumers. On the other hand, in Ireland, the Commercial Communications Regulatory Code for 2013 prohibited advertising, sponsorship, teleshopping, and placing HFSS food products during children's programs. In addition, celebrities and sports stars are not allowed to promote food or drinks to children under 15. In Portugal, the HFSS food and beverage advertising code were changed on television and in the audiovisual media between the 30 minutes before and after children's programs and television programs. Other countries have chosen to transmit co-regulatory or self-regulatory codes of conduct, such as Spain, which adopted the PAOS code. This code is voluntary and applies to food advertising messages disseminated by self-visual means. However, this code does not define the nutritional criteria for which food products it uses. As for France, this country did not explicitly restrict the marketing of HFSS foods to children. However, it requires the insertion of health messages for all advertisements promoting HFSS foods. In 2009, a voluntary letter on nutrition and physical activity were added, in which members of the food and advertising industries are committed to strengthening responsible food marketing practices.

With the increase in the use of other media, such as online services, games and social networks, it is also necessary to pay attention to the application of measures concerning these media. In the UK, in 2017, self-regulatory rules were introduced to restrict advertising of HFSS products to children on social platforms and online applications. The following year, Ireland launched a similar code. In Spain, the law and co-regulation have been updated to cover marketing directed to children under 15 on the internet.

¹⁷https://gateway.euro.who.int/en/indicators/gnpr_survey_21-measures-to-regulate-or-guide-marketing-of-food-and-non-alcoholic-beverages-to-children/

As for marketing in schools, all countries have rules regarding marketing in educational facilities. In Spain, the government passed the law on nutrition and food security, which establishes that kindergartens schools must be free of advertising. In turn, in Portugal, the sale of HFSS foods in pre-schools, primary and secondary schools was prohibited. Also, the same rules apply to establishments within 100 meters of schools.

Finally, concerning marketing, which includes sponsorships, product packaging, in-store promotion and billboards, few measures are applied. In Ireland, the code of practice mentioned above also applies to outdoor marketing and commercial sponsorship. However, no action has been implemented in the UK, but the government has announced its intention to limit in-store promotions.

3.1.4 Reformulation

The reformulation in food processing offers an opportunity to improve an individual's health status by improving the nutritional properties of foods. All the countries implemented measures to reformulate foods and beverages (figure 14).

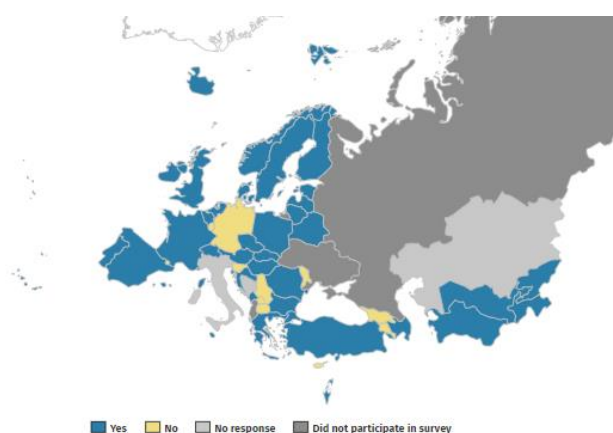


Figure 14. Measures to reformulate foods and beverages which are high in saturated fatty acids, trans fatty acids, sugars or salt¹⁸

3.1.4.1 Salt

More and more countries are seeing the benefits of salt reduction for health. Several countries have already reported measures to reduce the level of salt. Most programs are voluntary.

In the case of Portugal, there is a protocol with a group of food industry associations that aims to reduce salt in foods such as breakfast cereals, yoghurts, bread, soups, and chips. There are also projects with the specific objective of reducing the salt content in bread to less than 1%. It should be noted that in 2009 a salt value of 1.4g salt per 100g of bread was reached in bread.

More recently, in the case of Spain, an agreement was reached to reduce salt by 10% by 2020. On the other hand, Ireland started a salt reduction program that aims to voluntarily reduce salt in

¹⁸ https://gateway.euro.who.int/en/indicators/gnpr_survey_17-reformulation-measures-for-foods-and-beverages/

processed foods. In addition, it is essential to note that the Irish Business and Employers Confederation reported food reformulation in 15 major FoodDrink Ireland members companies, encompassing CocaCola, Kelloggs and Nestlé. In the United Kingdom, the government has set specific targets for reducing salt in more than 80 foods in 4 years. More recently, the targets to be achieved by the industry were revised, with the target completion date being changed to 2023.

Since 2002, France has initiated strategies to reduce the salt content of the food. The National Nutrition Program from 2006 to 2010 aimed to reduce the average salt intake to less than 8 g / day, or more concretely a 20% reduction in five years. In 2010, voluntary commitments were made by the industry in which they aim to reduce salt to 25%.

In the case of salt reduction, it is observed that there are several measures implemented and that 3 countries have obtained satisfactory results. It should be noted that for Portugal it is only mentioned that some bakeries in Portugal have already reduced the salt content in bread to less than 1g of salt per 100g of bread.

- France: 12% in bread, 32% in soups and 23% in pizzas (2008 – 2011)¹⁹
- Ireland: 28% (2005 - 2017)²⁰
- Spain: 23% in bread (2005 - 2009)²⁰
- UK: 20 to 40% (2006 - 2014)²¹

3.1.4.2 *Trans fatty acids*

Fats are produced from vegetable fats and are used in the food industry. However, they are harmful to health. There are several measures adopted by each country regarding the reduction of fat in food. Overall, the objective of initiatives focused on decreasing the intake of saturated fats is to contribute to reaching levels of population intake and dietary standards according to EFSA and WHO. From the beginning, Portugal has proposed additional limits for trans fatty acids (TFAS) and pastry, to 1g or less by 100g of fat. This limit is to be reached by 2021.

On the other hand, Spain, as for salt, the target of a 10% reduction in fat by 2020, was applied. In France, in 2010 the industry committed itself to reduce the fat content in foods. However, in both Ireland and the United Kingdom, regulations have been applied, limiting the amount of fat in processed foods after 2021.

¹⁹ Webster, J., Trieu, K., Dunford, E., & Hawkes, C. (2014). Target salt 2025: A global overview of national programs to encourage the food industry to reduce salt in foods. *Nutrients*, 6(8), 3274–3287. <https://doi.org/10.3390/nu6083274>

²⁰ Food Drink Ireland, & Ibec. (2019). Reformulation and innovation: supporting Irish diets The evolution of food and drink in Ireland. [https://www.ibec.ie/IBEC/Press/PressPublicationsdoclib3.nsf/vPages/Newsroom~new-report-details-progress-of-food-and-drink-reformulation-20-02-2019/\\$file/The+evolution+of+food+and+drink+in+Ireland+2005+-+2017+-+Reformulation+and+Innovation+++Supporting+Iri](https://www.ibec.ie/IBEC/Press/PressPublicationsdoclib3.nsf/vPages/Newsroom~new-report-details-progress-of-food-and-drink-reformulation-20-02-2019/$file/The+evolution+of+food+and+drink+in+Ireland+2005+-+2017+-+Reformulation+and+Innovation+++Supporting+Iri)

²¹<https://www.gov.uk/government/publications/salt-targets-2017-progress-report/salt-targets-2017-progress-report-summary>

In this group there are several measures implemented, some referring to total fat, others to trans fatty acids. But it should be noted that there is significant progress in reducing fat in food in 3 countries.

- France: - 2.14 tons per year of saturated fatty acids²²
- Ireland: 10% (2005-2017)²¹
- UK: 70% for saturated fats²³

In Portugal and Spain, there are still no results on the progress of the implemented measures.

3.1.4.3 Sugar

WHO published guidelines on the intake of free sugar. Throughout Europe, different measures have been taken to reduce sugar consumption.

The UK recently challenged all sectors of the food industry to reduce global content to 20% by 2020. However, new targets for 2021 have already been set, in which the industry is encouraged to reduce 5% of sugar in juices, 20% in milk and milk substitutes. In 2008, the French government proposed voluntarily. In recent years, the government of Spain has made an agreement with the food industry "2017-2020 Collaborative Plan for improving the composition of food drink and other measures". The agreement aims to reduce sugar by 10%, and for some products, it reaches 18%. In Portugal, a co-regulation pact was made in 2015, which challenges the food industry to decrease the sugar content by 20% in 7 years.

In general, given the implementation of the measures and actions carried out so far, it appears that all countries have reduced the sugar content in food.

- France: produced less than 10.4 tonnes / year²⁴
- Ireland: 8% (2005 - 2017)²¹
- Portugal: 15% reduction in total sugar²⁵
- Spain: 23% in soft drinks (2005 - 2014)²⁶
- UK: 19% (between 2013 and 2018)²⁷.

²² Food Drink Ireland, & Ibec. (2019). Reformulation and innovation: supporting Irish diets The evolution of food and drink in Ireland. [https://www.ibec.ie/IBEC/Press/PressPublicationsdoclib3.nsf/vPages/Newsroom~new-report-details-progress-of-food-and-drink-reformulation-20-02-2019/\\$file/The+evolution+of+food+and+drink+in+Ireland+2005+-+2017+-+Reformulation+and+Innovation+-+Supporting+Iri](https://www.ibec.ie/IBEC/Press/PressPublicationsdoclib3.nsf/vPages/Newsroom~new-report-details-progress-of-food-and-drink-reformulation-20-02-2019/$file/The+evolution+of+food+and+drink+in+Ireland+2005+-+2017+-+Reformulation+and+Innovation+-+Supporting+Iri)

²³ Public Health Authority of the Slovak Republic. (2016). Best practices of the Member States in food reformulation. Survey on Member States "Trio questionnaire 2016." 33.

²⁴ Sebillotte, C. (2019). Efficiency of public-private co-regulation in the food sector: The French voluntary agreements for nutritional improvements. OCL - Oilseeds and Fats, Crops and Lipids, 26(December), 0–33. <https://doi.org/10.1051/ocl/2019029>

²⁵ <https://nutrimento.pt/noticias/reducao-do-consumo-de-acucar-em-portugal-evidencia-que-justifica-acao/>

²⁶ Van Gunst, A., Roodenburg, A. J. C., & Steenhuis, I. H. M. (2018). Reformulation as an integrated approach of four disciplines: A qualitative study with food companies. Foods, 7(4). <https://doi.org/10.3390/foods7040064>

²⁷ <https://www.gov.ie/en/press-release/3a9bcc-government-welcomes-european-commission-approval-of-sugar-sweetened-/>

3.1.4.4 Industry examples in food reformulation

Several companies, globally, have joined the process of reformulating food products. Below are some examples.



Britvic Ireland is known for its iconic Irish brands such as Ballygowan, MiWadi, Club, TK, and Cidona and has become the number one low-sugar soft drink business on the island of Ireland. The company is committed to making a positive difference in the health of its consumers, improving the nutritional value of its drinks, reducing calories and sugar levels.

Figure 15. Britvic Enterprise



Kellogg's is Ireland's largest cereal company. This company is committed to helping people in Ireland make healthier choices in the morning reflected in the recent review of its cereal portfolio, including significant sugar reduction, salt reformulation, removing artificial colours, and launching new foods without adding sugar and vegans.

Figure 16. Kellogg's enterprise



The company plans an average 10% salt reduction in Maggi products by 2020 and will add more vegetables and other nutrient-rich ingredients. The changes are part of an initiative that is being implemented across the company to reduce sodium, saturated fat, and sugar.

Figure 17. Nestlé enterprise

The innovation tools are directly related to the science, and industry programmes/calls generally open by the government. In general, Europe has three principal calls in the area of Healthy food and lifestyles, such as INTERREG, PRIMA and HORIZON 2020. Although each country has national calls to improved innovation products in the area of healthy food (Figure 188). With these calls, not only have an increase of new products and strategies, but at the same time, there is a need for quadruple helix collaboration, such as science, governments, industry and finally population.

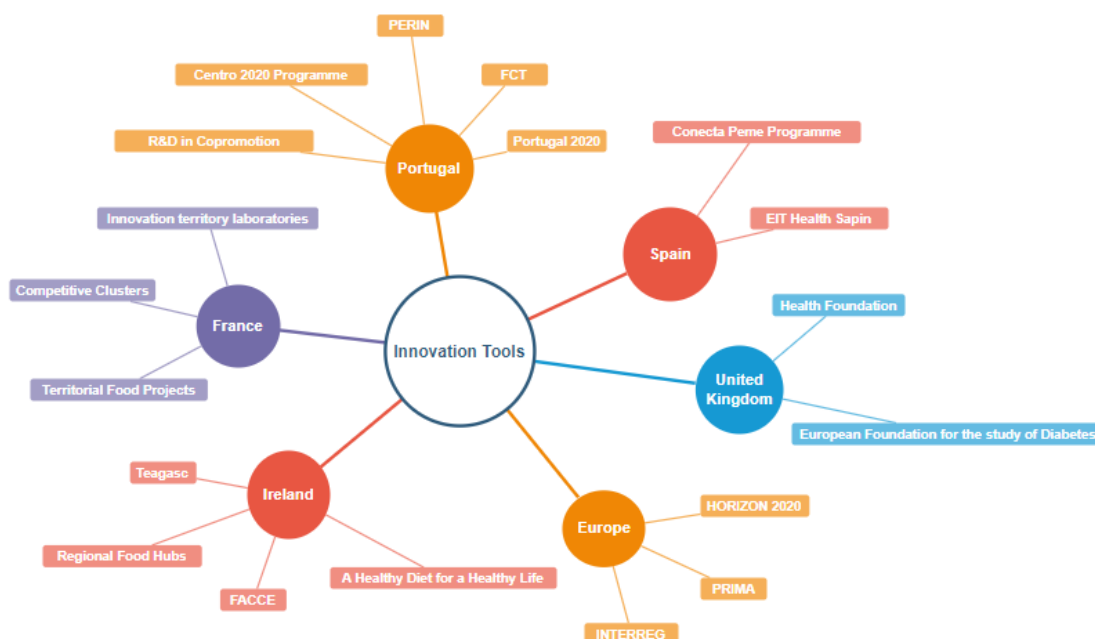


Figure 18. Calls in the area of healthy food and lifestyles

3.2 Support structures and reforms

Following the complementary and multi-complementary nature of healthy eating and healthy lifestyles strategies and policies, there are supportive structures and reforms for better consumer awareness. Based on the AHFES partner's reports, there are four main structures and reforms:

- Public awareness campaigns;
- Education in specific settings;
- Projects funded;
- Taxes and nutrition labels.

3.2.1 Public awareness campaigns

The public awareness campaigns have the aim of creating awareness and changing behaviour among the general population. The transmission of the information to the general public can be done by different channels, such as public relations events (talks, demonstrations and tours), social media and mass media (television programmes, newspaper and, radio). In the last years, these structure as a focus in nutrition, and physical activity.

- Less salt more taste of life, is a Portuguese campaign that aims to inform the public about the risks of hypertension and raise awareness of the importance of prevention through food. Reducing salt consumption and adopting a healthy lifestyle are the main messages of this event;
- *PLAN CUÍDATE +*²⁸ and Xente con Vida, are Spain campaigns which provides nutritional information, a personalised and downloadable 4-week plan to achieve healthier habits, and healthy recipes;
- Stop targeting kids is an Irish campaign that aims to prevent various forms of marketing of unhealthy food and drink brands to children;

²⁸ www.plancuidatemas.aesan.msssi.gob.es/default.htm

- 5 a day is an UK campaigns that promote the consumption of fruit & vegetables;
- Know your numbers is also a UK campaign that outlined the target number of calories desirable to be consumed at each per meal.
- Make the best choice, go down the stairs is Portuguese campaign as the purpose of drawing attention to the inherent benefits of small gestures like climbing the stairs instead of using the elevator.
- Change 4 life is a UK campaign where the healthy eating message was part of an overall campaign for an intergrated approach to health and well being which also features more exercise.

3.2.2 Education in specific settings

Schools are considered a primary target to deliver nutrition education to the children and at the same time to their families. In a global level, WHO recommends schools policies and programmes, such as the adoption of healthy diets and physical activity²⁹. So, in most schools, there are three main areas to developed mainly with children, food education, healthy diet guidelines for implemented in the school canteen and the physical activity.

In general, schools are providing knowledge about the relationship between a proper diet, physical activity and health in the classroom. This pass is crucial to increase population literacy that it is a real problem in some of the countries. There is a need to invest in population literacy in the area of healthy food and lifestyles. This factor is related to population health. Besides, in terms of physical activity, some countries implement extra-curricular activities for sport in school.

3.2.3 Projects funded

Of the health plans and programmes implemented in each country, projects at the national level are generally used to facilitate the monitoring, implementation and dissemination of healthy lifestyles and healthy eating. All countries analysed in the AA zone apply this structure mainly for monitoring and also dissemination. For example:

- projects to implement a monitoring system for obesity;
- projects to develop a study about consumers and nutrition label;
- projects to map and disseminate good practices in community;
- Intervention projects for risk factors preventions.

²⁹ WHO. School policy framework : implementation of the WHO global strategy on diet, physical activity and health (2008)

Within the projects developed in the various countries, some products developed during the RIS3 Portugal, Galicia and R & D & I projects in France stand out.

In Portugal, since 2017 there has been a marked increase in new products launched in the market, such as products with no added sugars, gluten-free and organics (figure 19).

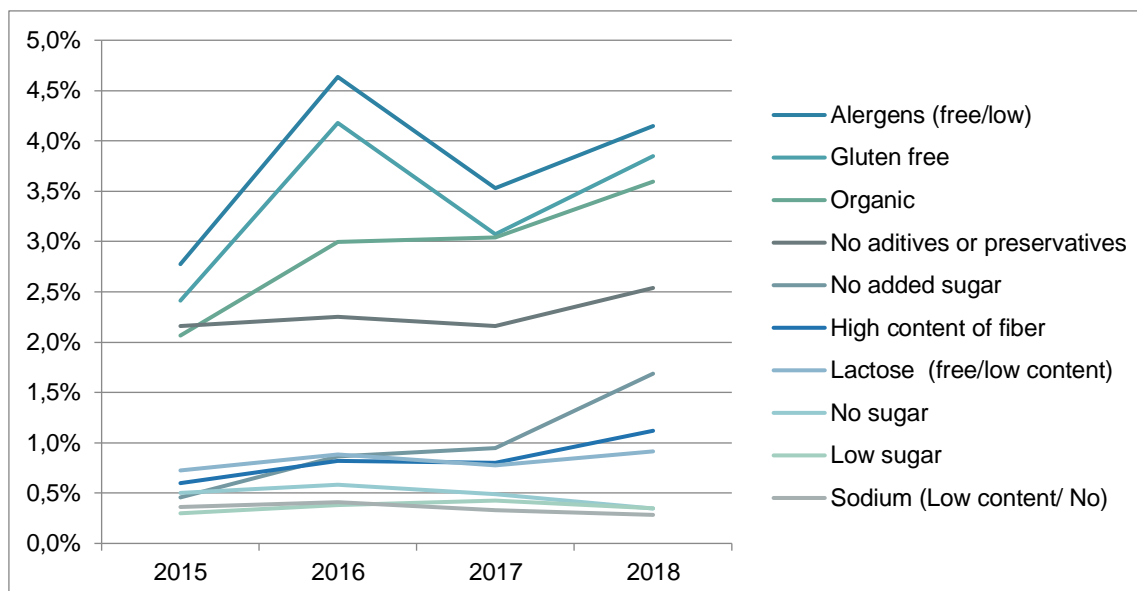


Figure 19. Evolution of the percentage of new products launched in the Portuguese market with health and wellbeing claims

In other side, in Spain and France based on the RIS3 Centro platform and R&D&I projects was accomplished several new products that are aligned with health and wellbeing.

- AHGAVES: project focused on fostering the Food-Health Interrelation for a healthy ageing through functional nutrition based on raw materials from the Galician garden.
- SENIORPLUS: project that emerging technologies and applied nanotechnology for the development of functional foods targeted to sectors of the population with special needs (elderly and people with food allergies and intolerances).
- TECFOOD: New healthy technological foods for new social needs. Development of new processes and food products of greater added value, as well as through the development of emerging sectors and high technological content such as the 3D food printer.
- BIOFUNCIOGAL: project that aims the elaboration of food products and beverages that incorporate the potentially functional richness inherent to the biomolecules that form an active part of three agri-food resources in the dairy, horticultural and wine/oil subsectors.
- ALimentation, LAIT maTernel, MEsure et Nouvelles Technologies: project that developed a measuring tool of the nutritional quality of breastfeeding mothers' milk, including its contribution in omegas 3, depending on the mother's diet.

3.2.4 Taxes

Faced the urgent public health problem, several countries have adopted the measure to introduce food taxes. These taxes have two main objectives. First, prices of taxed products increase, so decreasing purchase by the consumer of the respective products. Second, that companies develop processes in order to reformulate their products, in terms of sugar, salt and fat levels, so that they are not taxed and consequently do not have to increase prices. However, it should be

noted that the effectiveness of a tax on consumer choices depends on whether the company increases the prices of products and the purchasing capacity of each consumer. However, there are some difficulties to consumer's acceptance of the new flavour. So, it is crucial to understand how the industry can adapt these news policies with no loss in the consumer numbers. In general, it was found that the most common product to be taxed is soft drinks.

In 2011, France adopted the tax that covers all non-alcoholic beverages with added sugar or sweeteners. The tax was applied in 2012, which is levied on 7.16 euros per hectolitre. More recently, the government said it could implement a tax on salt in food products.

Portugal only introduced the tax in 2017, which includes sugar-sweetened beverages. This tax is applied when the drink contains more than 80g of sugar per litre. There has been an increase of Soft drinks price around 15 cents a bottle. Besides, the Portuguese government is considering the application of a new rate for products with high-fat content.

In the case of Ireland, the government established the sugar drinks tax in 2018, covering all water-based drinks and pre-packaged and ready-to-drink juice³⁰. The tax consists of the application of 2 rates, depending on the sugar content in the product:

- Beverages with a sugar content of 5 g or more, but less than 8 g per 100 ml are taxed at 0.2 euros per litre;
- Beverages with sugar content above 8 g per 100 ml are taxed at 0.3 euros per litre.

It should be noted that, in the case of Ireland, sugar drinks were already subject to a VAT rate of 23%, therefore with the addition of this new rate there was an increase in the prices of the products covered. Also, in the UK, the sugar tax was introduced in 2018. In this case, the levy rate for drinks with more than 5g / 100ml is set at 18p per litre, and those with 8g / 100mL or more is set at 24p litre³¹. It should be mentioned that recently Spain also introduced the measure of sugar taxes on food at the level of the local government of Spain.

3.2.5 Nutrition label

Labelling the nutritional content of food has become essential for the consumer to know that it exists in food products and at the same time to help make the most appropriate food choices. In this way, this system allows the consumer to follow a healthy and balanced diet.

In 2012, a new regulation was published that makes nutrition labelling mandatory. This regulation instructs food manufacturers to provide information on the energy value and 6 nutrients (saturated fats, sugars, salt, proteins, fats and carbohydrates). All of this information must be presented in a nutritional table in the same field of view. Besides, manufacturers may also voluntarily include other nutrients. It is important to note that the regulation only requires nutrition labelling in the same field of view (usually on the back of the packaging), and labelling in the main field of view, the so-called "Front-of-pack" (FOP), remains voluntary. The FOP system is recommended by WHO and can create healthier eating environments; however, to date, there is still no harmonized FOP system for all countries. This model can be divided into four groups (table 4). Of the countries analyzed, Ireland and the United Kingdom adopted the traffic light system, and in the case of France and Spain, they applied the NutriScore system. In Portugal, there is no regulation at the

³⁰<https://iegpolicy.agribusinessintelligence.informa.com/PL212903/Ireland-confirms-tax-on-sugary-beverages-from-April-2018>

³¹ <https://www.beveragedaily.com/Article/2017/12/20/Sugar-taxes-The-global-picture-in-2017>

level of the nutrition label, and both traffic light and NutriScore systems are applied depending on the companies.

The two systems provide different information, NutriScore is mainly aimed at consumers with a lower level of nutritional literacy, with this model rating based on the evaluation of how healthy a product is. In contrast, the traffic light system model interprets nutrition information with a colour scheme³².

Table 4. Types of front-of-pack nutrition

Nutrient-specific labels	Warning labels	Endorsement labels	Summary labels															
<p>Each grilled burger (94g) contains</p> <table><tr><td>Energy</td><td>Fat</td><td>Saturated</td><td>Sugars</td><td>Salt</td></tr><tr><td>924kJ 220 kcal</td><td>13g</td><td>5.9g</td><td>0.8g</td><td>0.7g</td></tr><tr><td>11%</td><td>19%</td><td>30%</td><td><1%</td><td>12%</td></tr></table> <p>of an adult's reference intake</p> <p>Typical values (as sold) per 100g: Energy 966kJ / 230kcal</p>	Energy	Fat	Saturated	Sugars	Salt	924kJ 220 kcal	13g	5.9g	0.8g	0.7g	11%	19%	30%	<1%	12%			
Energy	Fat	Saturated	Sugars	Salt														
924kJ 220 kcal	13g	5.9g	0.8g	0.7g														
11%	19%	30%	<1%	12%														

³² <https://www.eufic.org/en/healthy-living/article/global-update-on-nutrition-labelling>

4 Overall trends and conclusions

The rapid growth of industrialization and urbanization had a direct impact on the diet and lifestyles, and globally the health of human beings has been getting worse. Because of the increasing prevalence of chronic noncommunicable diseases, WHO developed global plans and goals related to the individual's health and well-being. However, health policies refer to decisions, plans and actions implemented to achieve goals for a specific society. In other words, there are health and well-being goals and plans at a European level. As risk factors are different among countries, they leading to different policies and strategies to achieve a reduction in NCDs in all countries to be global, as it depends on which or which risk factors are more prevalent in the society concerned. Countries of the Atlantic area had different starting point and different contexts and capacities, so each country is unique and their ways, means and approaches applied will be different.

AA countries increasing the policies and measures to be implemented in the area of health. It was found that although most countries have very similar national plans, their policies and levels of implementation vary between them. In general, the implemented measures and policies are organized into two groups: 1) health and lifestyles programmes and policies and 2) support structures and reforms. These two groups have high relevance in changing dietary patterns and lifestyles. Besides, in most countries, there was a consensus on the most important and priority age groups for a more effective outcome of measures and policies in the future. These two age groups were children, who are still open to new knowledge and knowledge in the area of food, and the elderly who corresponds to a group that requires the effects of NCD risk factors to be controlled.

The measures and policies applied to increase and encourage society to modify its diet and lifestyle were diverse and can be grouped into five groups: Nutrition and diet counselling, portion size control, regulation of marketing to children, reformulation and dietary guidelines. Of all the groups, Nutrition and diet counselling and dietary guidelines stood out, where the implementation of a higher number of actions was observed in all the countries under study.

Regarding the measures in the area of Nutrition and diet counselling, all countries have implemented measures at school and community level through sessions and projects in the field of healthy eating. On the other hand, it was verified the importance of having guidelines with food consumption recommendations to clarify and simplify what it consists of and what to “do” to acquire a healthy diet. In this study, all five countries have a model; however, each is characteristic and developed according to food and culture. It should be noted that only Spain has developed a model in which it covers both healthy eating and healthy lifestyles.

Regarding children, they correspond to one of the most influential groups, and according to studies carried out by the scientific community, advertising can shape children's food preferences. According to our data, all countries applied restrictions children marketing. However, the actions and measures differ between countries. It should be noted that, in general, restrictive measures were implemented in “traditional” marketing to children, in which France stands out. In which does not specify the restricted criteria to be applied but only implements the insertion of a health message during the advertising of products food. The UK and Ireland have also placed restrictions on online advertising. At the school level, food advertising was restricted, but Portugal applied an additional measure regarding food sale restriction in schools and within a perimeter of 100 meters of these.

In the reformulation of food products, all health plans in the countries include measures to reduce salt, sugar and trans fatty acids. Nonetheless, there are only agreements and projects between the government and companies at a voluntary contribution. About reformulating products, the UK stands out for achieving the highest rates of reduction of trans fatty acids and salt in all foods. On the other hand, in general, the sugar content is the one that obtained the highest rates of reduction for all countries. Spain achieved the highest reduction in 9 years (23% in soft drinks).

Concerning the applied rates, which aim to make companies use the reformulation of products instead of increasing their price, it was found that all countries implemented this measure but not at the same level. France was the first country to implement the salt tax. Spain, in turn, stood out for being one of the last countries to implement the tax. Finally, mandatory regulation of the application of nutrition labelling was applied in all countries. However, so far, there has been no implementation of a harmonized model between countries, France applying the NutriScore system and the others using the "traffic light system" model. In Portugal there are no regulation, so both system are used by different companies.

In conclusion, for the implementation of strategies and policies for food and healthy lifestyles to be successful, there must be cooperation between the 4 actors of the helix. Also, it is essential that policies are applied not only at a national level, but also regional and sometimes local when the differences regarding determinants, such as age, gender, among others, are considerable.

5 Annex: strategies & policies for innovation growth in healthy food and lifestyles for each AHFES country

5.1 Portugal (INSA)

5.1.1 Healthy food and lifestyles and innovation policies

Given all these risk factors and their increase in recent years, Portugal has been a pioneer in implementing measures to promote food. So, several programmes have been created at national level to promote the eating and living of healthy styles³³:

- *National Programme for the Promotion of Healthy Eating (PNPAS)*

Portugal implemented, in 2012, the first national food and nutrition policy - National Programme for the Promotion of Healthy Eating (PNPAS). This programme's mission was to improve the nutritional status of the population by promoting the physical and economic availability of healthy foods. However, during the implementation of PNPAS, a challenge emerged regarding food and nutrition policies, the difficulty of having a multisectoral approach remained, establishing alliances and partnerships between different sectors of government. So, it was Integrated Strategy for the Promotion of Healthy Eating (EIPAS). EIPAS's mission is to encourage adequate food consumption and consequent improvement of the nutritional status of population. This programme recognizes the partnerships established between ministries, the health sector, the local authority, international institutions, the food industry and distribution sectors, entities that regulate and supervise the food sector, consumer protection entities, media, civil society, and schools.

5.1.1.1 *National Programme for the Promotion of Healthy Eating & Integrated Strategy for the Promotion of Healthy Eating*

This programme recognizes the partnerships established between ministries, the health sector, the local authority, international institutions, the food industry and distribution sectors, entities that regulate and supervise the food sector, consumer protection entities, media, civil society, and schools. One of the measures of PNPAS was the reformulation of salt, sugar and trans fatty acids in food products. For this purpose, collaboration and monitoring protocols were carried out between Director General of Health (DGS), National Institute of Health Doctor Ricardo Jorge (INSA), Portuguese Association of Distribution Companies (APED), Federation of Portuguese Agro-Food Industries (FIPA), and Nielsen company to reformulate the levels of salt, sugar and trans-fatty acids in certain categories of food products. A protocol was also made with APED to reduce the weight of sugar packets to a maximum of 4 grams until December 31, 2019. To reformulate the salt content in bread, a protocol was established between the general health directorate, the National Health Institute Doctor Ricardo Jorge and the Bakery, Pastry and Similar Industry Associations, from which comes the Seal Bread project with "Less salt, same flavor". The Bread Seal intends to encourage bakeries and other commercial establishments to reduce the salt content in bread with less than 1g of salt per 100g of bread. Also, the PNPAS technically supported the approval of Law No. 42/2016, which concerns the creation of the excise tax for beverages added sugar or sweeteners. In 2018, the Ministry of Health launched, together with

³³ <https://www.dgs.pt/programas-de-saude-prioritarios.aspx>

the television stations in Portugal, the campaign "Sugar hidden in food" funded by the General Directorate of Health.

Children are a constant target of food marketing and advertising strategies. Since, April 2019, Portugal introduced a law that applies restrictions to food advertising directed at children under 16 years, Law No. 30/2019 of April 23. This law includes measures such as banning the advertising of food additives on television programme services and on-demand audiovisual media services and radio. One of the useful tools for implementing restrictions on the marketing of food for children is the nutrient profile model.

Given that social inequalities in access to adequate food are one of the main challenges of food and nutrition policy, PNPAS has been collaborating with the Social Security Operational Programme to Support the Poorest (POAPMC) by defining the composition of the food baskets to be distributed, ensured that they are nutritionally adequate. Another strategy of PNPAS is the promotion of healthy food in 41 Portuguese municipalities.

In Portugal more than 30% of hospital patients are at nutritional risk, and these are associated with increased mortality and morbidity, so was published Order No.6634 / 2018. This law requires the implementation of a systematic assessment of nutritional risk to all patients admitted to hospitals of the National Health Service for more than 24 hours and then re-evaluated every 7 days during the period of hospitalisation.

Based on the study "Portuguese consumers' attitudes towards food labelling", conducted by WHO, PNPAS & EIPAS recognised that Portuguese needed to reinforce their knowledge of food and nutrition labelling. Thus, the Front of Pack (FOP) labelling system emerges as a solution, such as Nutri-Score. Another strategy of PNPAS is the improvement of the food supply in public institutions. Therefore, in 2018 new guidelines were published on the school cafeteria menu of the general direction of education and in the institutions of the National Health Service. In terms of communication strategies, PNPAS has a blog and website named "Nutrimento", but are also present on Twitter, Instagram and YouTube.

- *Goals to integrate 2019-2020 in the PNPAS plan & EIPAS*
- Nutrition Labelling
- Food Wheel Review
- Implementation of the Integrated Care Process of Adult pre-obesity in primary health care
- Municipal implementation of EIPAS
- Promote the food and nutritional literacy of the Portuguese population
- Promotion of adequate nutrition in the first 1000 days of life
- Collaboration with the Ministry of Environment in the area of food sustainability and combating change climatic

5.1.2 Innovation tools

As the national funding agency for science and technology, the *Fundação para a Ciência e a Tecnologia* (FCT) is a key actor in the national Research and Innovation System (R&I). It is currently the main source of funding not only for the public research sector, but also for the most basic and strategic forms of R&I activities in the business sector.

5.1.2.1 Sintra Grows Healthy project

This project involves the community in promoting healthy lifestyles in elementary schools. This initiative is promoted by the Municipality of Sintra with the support of partners in health, academia and national organisations. The project empowers school communities in the area of health

promotion by combining educational strategies with changing sustainability and climate change practices, bringing together different dimensions in choosing healthier and more conscious lifestyles.

5.1.2.2 *IIES THINK +*

The project aims to “Improve the adoption of healthy lifestyle and contribute to an improvement in the quality of life of the population of Penela Municipality.” Its objectives are the reduction of the key risk factors by promoting healthy habits and active lifestyles and the reduction of health spending for the users and service providers by reducing healthy lifestyle-related illnesses. The project cover three policy areas, intervention diagnosis, value creation model and operations management and information technologies.

5.1.2.3 *COSI Portugal Study*

The COSI project is part of the European Child Nutrition Surveillance System, in which 43 countries from the WHO European Region participate. COSI aims to create a systematic network for collecting, analysing, interpreting and disseminating descriptive information on the characteristics of children's nutritional status in children aged 6 to 8 years.

5.1.2.4 *MUNSI Project*

The MUN-SI project, its main objective is to slow the progression of the prevalence of pre-obesity and childhood obesity in Portugal involving the community, through activities that mobilize the population for a healthy life. This project is coordinated by the Centre for Studies and Research on Social Dynamics and Health (CEIDSS) and has the participation of municipalities, INSA, the Ministry of Education and Science and the Ministry of Health.

5.1.2.5 *POZ Project*

The POZ project, with municipalities and their respective Health Centres, aims to promote healthy lifestyles in overweight children from 6 to 10 years old.

5.1.2.6 *Papa Well Project*

The project Papabem that aims to support families and other caregivers in promoting the healthy growth of their children from pregnancy to 5 years

5.1.3 Existing support structures and reforms

5.1.3.1 *Campaigns to promote healthy food and lifestyle*

- **“Make the best choice, go down the stairs” campaign**
- **“Less Salt More Taste of Life”**

5.1.3.2 *Site “Nutriments”*

This is a space for sharing information on nutrition, diet and healthy lifestyles. It is intended that the information contained in this blog can be freely used, shared and thus contribute to the increase of knowledge in the area of Nutrition Sciences.

5.1.4 Overall region/country trends

Over the last few years, there has been growing concern in both the European Union and Portugal about the population's healthy diet and lifestyles, and two priority age groups have been identified, children and young people. It is in these phases that eating habits and behaviours are adopted

that determine the health status for adulthood. In Portugal, there have been several measures applied to improve health, with the application of PNPAS.

Regarding the impact of the measures applied by PNPAS on the industry, several producers report that between 2011 and 2017, the nutritional reformulations of their products reduced 1,358 tons of sugar, 64 tons of salt and 126 tons of trans fats in products sold in Portugal. However, the entities have been seeing a decrease in the consumptions of the reformulated products by the consumers. Therefore, it is essential to define a gradual reduction in sugar and salt levels to achieve better consumer adjustment. However, the reformulation of products had supply-side effects, notably as regards the competitive ability of companies and the industry itself. Concerning the sugar content tax on beverages, there was a reduction in sales and the increase in costs resulting from the tax resulted in a decrease in the profitability of the companies. It should be noted, however, that while the impact on immediate profitability was evident, the tendency is for the tax impact to decrease, particularly for companies that are more capable of innovation and reformulation through the launch of new products. Besides, industry representatives were available to reduce the caloric content of their products by an additional 15% over the next 3 years if the Portuguese Government introduces a more progressive tax regime from January 2019, with the creation of new levels.

We can verify that with the application of PNPAS, over the past 11 years, Portugal has presented a decrease in the prevalence of overweight and childhood obesity. Between 2008 and 2019, there was a 22% reduction in both the prevalence of childhood overweight and childhood obesity from 15.3% to 12%. Overall, the health status of the Portuguese population has improved considerably over the last decade. Portuguese live longer and have a longer life expectancy than the European Union average.

5.2 Portugal (Inovcluster)

5.2.1 Healthy food and lifestyles and innovation policies

In the region of Centro – Portugal, the policy framework applied to the healthy food and lifestyles is aligned with ENEI 2014-2020, at the national level, and specifically, in the Centro region, the policies of RIS3 do Centro³⁴. One of the platforms from RIS3 Centro is territorial innovation that establishes several actions lines for the sustainable production of traditional and endogenous food products that are aligned with health and wellbeing purposes. There is one specific topic with this aim: Development of projects that promotes healthy food systems.

Within the CENTRO2020 programme, several calls can support the actions on Healthy food and lifestyles:

Axis 01 - Investigation, Development and Innovation:

Development - R&D Projects in Co-Promotion;

- No. 16 / SI / 2019 | SI ID&T: Industrial R&D Projects on a European Scale - Individual and Co-Promotion Projects;

- No. 05 / SI / 2019: Individual Demonstration Projects | Seals of Excellence;

- No. 02 / SI / 2019: Incentive System for Research and Technological Development | Internationalisation - Individual projects;

- No. 02 / SAICT / 2019: Support System for Scientific and Technological Research (SAICT) - PI 1.1 - Internationalisation - Individual projects;

- No. 01 / SAICT / 2019: Support System for Scientific and Technological Research - Intellectual Property - Individual Projects;

- No. 03 / SI / 2019: Incentive System for Research and Technological Development | Intellectual and Industrial Property - Individual Projects

- No.24 / SI / 2018 | SI ID&T: Vale Research Opportunities.

Axis 02: Competitiveness and Internationalisation of the regional economy:

- No. 17 / SI / 2018 - Registration of SI Qualified and Creative Entrepreneurship Aid;

- No.16 / SI / 2018 - Registration of SI Productive Innovation Aid

At a national level, we can also identify policies regarding healthy food and lifestyles in ENEI 2014-2020³⁵ (National Strategy for the Investigation and Innovation for an Intelligent Specialisation). This strategy is an orientation document that characterises the priorities of investment in I&DI in Portugal, and therefore, identify the projects that are worth to cofinantiation by the national support instruments.

The vision of Axis 4 - Agrofood, aims to turn Portugal a leader in the production of agro-food products with high quality at the nutritional level and the food security, taking in account the unique

³⁴ www.centro.portugal2020.pt/index.php/ris-3

³⁵ www.fct.pt/gabestudosestrategia/ENEI/docs/ENEI_Julho2014_apos%20consulta_VF_completa.pdf

characteristics of traditional national products, aiming health and well-being of the consumers. The innovation potential for the SMEs is aimed through fostering the differentiation of national products through R&D and innovation for the development of functional products, products for market niches with specific nutritional needs and the development of new concepts of healthier nutrition regarding its convenience. ENEL 2014-2020 reaffirms the support for SMEs that aim to Innovate in the area of agro-food production methods in terms of its preservation, like the use of best packaging practices that may improve the stability and conservation of food, without the use of less additives and that can reduce the food waste and minimise packaging impact in the environment. Also, it is privileged the projects that aim the genetic improvement of animal and vegetable species to improve the production technics and methods, with less use of fertilizers, pesticides, herbicides, antibiotics and growth hormones, to reduce the residues in food and their impact in the environment. The topics prioritized in this axis are the production of healthy food produced by sustainable agricultural systems, customized food products, and food products that are connected to health and wellbeing.

Also, in the Axis 5 – Health, it is prioritised the connection with a healthier agro-food production, healthier food products and those that aim the wellbeing and active ageing.

Several instruments are being used to address these concerns to the activities of companies and entities, through COMPETE2020 – PORTUGAL2020³⁶:

- 17 / SI / 2019: Incentive System for Research and Technological Development (SI ID&T) Business R&D - Projects in Co-Promotion;
- 16 / SI / 2019: Incentive System for Research and Technological Development (SI ID&T) Industrial R&D Projects on a European Scale - Individual and Co-Promotion Projects;
- 05 / SI / 2019: Incentive System for Research and Technological Development (SI ID&T) Individual Demonstration Projects | Seals of Excellence;
- 03 / SI / 2019: Incentive System for Research and Technological Development - Intellectual and Industrial Property - Individual Projects;
- 02 / SI / 2019: Incentive System for Research and Technological Development - Internationalisation - Individual projects;
- 28 / SI / 2018: Supplier Clubs Initiative;
- 24 / SI / 2018: Incentive System for Research and Technological Development (SI ID&T) | Vale Research Opportunities;
- 23 / SI / 2018: Incentive System “Qualified and Creative Entrepreneurship” | Valley Incubation;
- 21 / SI / 2018: Incentive System “Qualification of SMEs” | Trade Valley;
- 06 / SI / 2017: Incentive System for Productive Innovation | Contractual Investment Regime;
- 26 / SI / 2016: Incentive System for Research and Technological Development (SI I&DT) - Contractual Investment Regime (RCI) Projects of Special Interest and Strategic Interest of R&D - Projects in Co-promotion;
- 25 / SI / 2016: Incentive System for Research and Technological Development (SI I&DT) - Contractual Investment Scheme (RCI) Projects of Special Interest and Strategic Interest of R&D - Individual R&D Projects;
- 02 / SIAC / 2019: Support System for Collective Actions – Qualification.

At the European level, H2020 has societal challenge 2 - Food security, sustainable agriculture and forestry, marine and maritime and inland water research, and the Bioeconomy, that aims to address challenges like the supply of safe and high quality foods through the development of

³⁶ https://www.compete2020.gov.pt/Avisos/Avisos-Abertos_Resumo

productive and efficient ecosystems, so, there are several calls that promote actions on this issue. The Sustainable Food Security call is Horizon 2020's main contribution to research and innovation in relation to Food and Nutrition Security in Europe and beyond. Its commitment to sustainability implies that particular attention is given to the interfaces between the economic, environmental and social dimensions of food production. The call advocates for food system approaches to tackle the inherent links between ecosystems, food production, the food chain and consumer health and wellbeing.

The SFS call aims to:

- deliver diverse and healthy food from land and sea;
- increase resource efficiency and environmental performance of food systems from primary production to consumers;
- understand the impact of climate change on agriculture, resources, food quality and identify options to manage its effects;
- reduce greenhouse gas emissions and emissions of air pollutants from land use and food;
- production taking into account main drivers such as inputs and consumption patterns;

5.2.2 Existing support structures and reforms

At InovCluster – the Cluster for the Agroindustry in Centro region of Portugal, one priority is to foster the production of healthy foods in the region. The cluster is engaged in several actions to transfer knowledge related to the production of healthy food in order to foster the production of healthy food among our members with the technical support of CATAA – Agri-Food Technological Support Centre, where InovCluster is based. In addition, work is conducted with other partners like the Polytechnic Institute of Castelo Branco, University of Beira Interior, and the other Universities and Polytechnic Institutes of Centro region. The Cluster has great experience in other projects and platforms designed to assist SMEs to develop new healthy products.

InovCluster is currently finishing Project Reinova that is cofinanced by INTERREG POCTEP – a partnership between Portuguese and Spanish entities. Reinova's objective is "Innovate in traditional products towards internationalisation", and so, within this Project, the partnership helped 36 SME's to develop 37 new and innovative products, some of them with features that are aligned with the orientations for healthy products: Apple juice with no preservatives, and no added water or sugar, packed in a bag in box in vacuum; beef jerkey produced by dehydration with no preservatives; preserved grilled carp in extra virgin olive oil, through low temperatures, with no additives or preservatives; bee dehydrated pollen in unidosis. This Reinova Project is now finishing and the same partnership is starting a new one with the aim to help the SMEs develop products using circular economy concepts.

InovCluster is also developing a Project – COOP4PAM – also cofunded by INTERREG POCTEP with the aim of helping the development of aromatic and medicinal plants (PAM). Within this project, one of our tasks is to understand the value of PAM in the preservation of Food, for example through testing the effect of the inclusion of films of PAM extracts in the packaging of fresh meat to enlarge the shelf life of fresh meat.

Also, through the partnership agreement between InovCluster and CATAA (Agrifood Technological Center) we helped to develop a startup – Salys that is now producing seasonings made with herbs and salicornia to help the consumer to reduce salt when cooking. CATAA, is also testing dehydration at low temperature of fruits and vegetables with several of our members, helping them to add value to the products and preserve them in the healthiest way.

5.2.3 Overall region/country trends

Health claims for the food products are under a strict control by the European Union³⁷, nevertheless, we see an increase in the markets of the numbers of products with health claims. Since the creation of the National Programme for the Promotion of Healthy Eating (PNPAS) and Integrated Strategy for the Promotion of Healthy Eating (EIPAS), that we assist to an increase of products that claim lower salt, sugar and fat, and also the appearance of products that substitute these products. There are several projects ongoing, like the use of Salicornia instead of salt, or making bread with sea water to avoid the use of salt, the use of stevia and other products to avoid sugar, etc.

Regarding labelling of food products several actions were taken to foster the informed choice among the consumers. APN (Portuguese Nutritionists Association) Developed an eBook, that is disseminated through agroindustry by DGAV (General Direction of Agriculture and Veterinary) that contributes to the information of the correct labelling of the food products and the existent legislation.

Although the efforts from Health Ministry in Portugal, WHO recommendations, etc. most of the trends for healthier products are influenced by some misinformation, or disinformation, since we can see the impact in the market of products with claims for no gluten or no lactose products, that are being presented to the general market as being healthier and not just for the market niches of consumer that actually have intolerances or even allergies to this types of products. In fact, the impact of this type of information is much bigger than the campaigns for reducing sugar or salt in food products.

Based in figure 20, we can see that the number of products in shelves with health claims is raising.

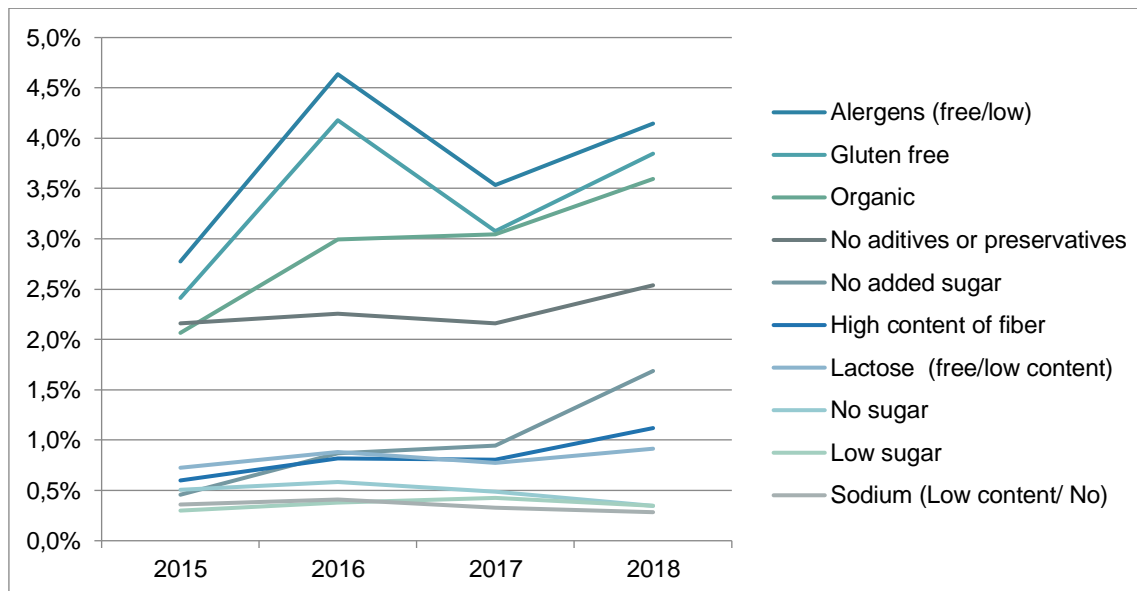


Figure 20. Evolution of the percentage of new products launched in the Portuguese market with health and wellbeing claims

Health and Wellness is a trend that has been the fundamental driver of change in food and beverages worldwide, and we not only expect this trend to continue, but also accelerate. Over the

³⁷ https://ec.europa.eu/food/safety/labelling_nutrition/claims/register/public/?event=register.home

past five years, we have seen this trend manifested in cleaner and clearer labels, the growth of organic and “better for you” offerings from major retailers, the growth in new entrants across categories. The three drivers of this trend include:

- 1) Consumers becoming more alert on the benefits of healthier choices – Also that most of the consumers believe they are more educated, some disinformation should be avoided and even contained by the authorities,
- 2) Retailers taking positions with new, smaller, more innovative companies out of a need to diversify and drive higher margins;
- 3) Companies changing products that have been established in the market and re-creating popular items with no sugar alternatives, saturated fats, artificial colouring, GMO free, and fewer preservatives.

5.3 Spain (Clusaga)

5.3.1 Healthy food & lifestyles and innovation policies in Galicia and Spain

Healthy food and lifestyle are a priority for Galicia and Spain, due to the high rates of overweight and obesity. Galicia is the second Spanish region with the highest rates of overweight and obesity³⁸. In the last decades, the Galician traditional diet has been replaced by a westernised diet (as is the case for Spain) with an excess of energy intake, total fat, saturated fat, simple sugars and salt, as well as with a deficit of w3, long chain fatty acids, fibre and functional components. These changes in the diet and lifestyle have contributed to increase pathologies related to obesity and cardiovascular risks at increasingly early ages. Thus, the authorities try to address this situation in different ways, including the inclusion of this topic in R&D&I policies, as shown in this chapter.

5.3.1.1 Healthy food & lifestyles in the RIS3 Galicia

Healthy food and lifestyles have been defined as a priority for the region. Actually, the Research and Innovation Smart Specialisation Strategy of Galicia³⁹ (RIS3 Galicia) defines three challenges, being the third one “*New healthy lifestyle model based on active ageing of population*”, which is based on active ageing, therapeutic application of fresh and marine water resources and functional nutrition.

Of course, considering the demographic trends in Galicia, this challenge is linked with ageing population. In fact, Galicia shows a higher trend towards an ageing population than other Spanish and European regions, as well as negative demographic growth. People above 64 years of age account for 24.9% of the total Galician population (2018). Such a high index of elderly citizens, especially as it is expected to increase, indicate that economic activities related to the quality of life and well-being of citizens become one of the niches with the highest growth potential in the Galician context².

On the other hand, nutrition and food security is a key prevention element in active ageing and healthy living. Food should be understood in its adaptation to the different phases (such as old age) and conditions (such as obesity, diabetes or hypertension). Thus, a transition towards healthy living habits linked to food should be fostered. In relation to this, the RIS3 Galicia sets two priorities for the challenge no. 3²:

- 1) Priority 1 - Active Ageing: Galicia becomes the leading region in Southern Europe in the implementation of new technologies in the field of active ageing and healthy living, and in the promotion of personal autonomy.
- 2) Priority 2 - Food & Nutrition: Diversification of the Galician food sector in order to position it as an international reference around innovation in nutrition as the key for healthy living.

³⁸ Aranceta-Bartrina J, Pérez-Rodrigo C, Alberdi-Aresti G, Ramos-Carrera N, Lázaro-Masedo S. Prevalence of General Obesity and Abdominal Obesity in the Spanish Adult Population (Aged 25-64 Years) 2014-2015: The ENPE Study. *Rev Espanola Cardiol Engl Ed.* 2016;69(6):579-587. doi:10.1016/j.rec.2016.02.009

³⁹ ESTRATEXIA DE ESPECIALIZACIÓN INTELIXENTE DE GALICIA. 2014. <http://www.ris3galicia.es/wp-content/uploads/2015/09/ESTRATEGIA-REXIONAL-RIS3-GALICIA.pdf>. Accessed September 24, 2019.

This second priority, highly linked to the AHFES project purposes, is further detailed in the RIS3 Galicia as follows:

- Support for generation of added value through consolidation of a production and research structure articulated around nutrition, functional food, nutraceutical food, food adapted to the different stages and conditions, such as old age or obesity, healthy food for specific pathologies, such as diabetes, hypertension and in general around healthy habits related to food consumption.
- Support for improvement of production processes, backed by the use of ICTs which allow integral follow-up of the extractive production chain (traceability) in order to guarantee products safety and quality as well as consumer trust.
- Support for development of private and public collaboration projects in Galicia, by fostering change in a traditional sector with an innovation potential that has not yet been exploited or used to the maximum and by taking advantage of the solid academic and institutional base.

5.3.1.2 Healthy food & lifestyles in Spanish R&DI programmes

Although not in such detail and relevance as in the RIS3 Galicia, the Spanish State Plan for Scientific and Technical Research and Innovation 2017-2020⁴⁰ also gives relevance to food quality and safety. In fact, the Plan defines a priority on food quality and safety, including the development of safe foods, functional, nutraceutical, etc., and conservation processes that increase the safety, nutritional quality and shelf life of food products, as well as nutritional quality and risk and fraud detection systems. Likewise, the investigation of the relationship between food and health and nutrigenetics constitutes an area of relevance according to the Plan.

The NAOS Strategy (Nutrition, Physical Activity and Obesity Prevention)⁴¹ is a health strategy that, in line with the policies set by international health agencies (World Health Organisation, European Union), sets as its fundamental goal to “promote a healthy diet and foster physical activity to invert the growing trend of the prevalence of obesity and thus to substantially reduce morbidity and mortality attributable to chronic diseases”.

Since its launch in 2005, the NAOS Strategy develops actions or interventions, based on scientific evidence and in all areas of society that promote and facilitate options for a varied and balanced diet, the most appropriate information to help consumers make healthier decisions and choices in environments that allow them to adopt healthier and more active lifestyles, as well as the practice of physical activity.

The initiatives developed within the framework of the NAOS Strategy, although they are addressed to the entire population, are mainly prioritised towards children, young people and the most disadvantaged population groups. In 2011, the NAOS Strategy was consolidated and promoted by Law 17/2011, of July 5, on food security and nutrition⁴².

⁴⁰ Ministerio de Economía, Industria y Competitividad. PLAN ESTATAL DE INVESTIGACIÓN CIENTÍFICA Y TÉCNICA Y DE INNOVACIÓN 2017-2020. www.ciencia.gob.es/stfls/MICINN/Prensa/FICHEROS/2018/PlanEstatallDI.pdf. Accessed September 24, 2019.

⁴¹ Ministerio de Sanidad y Consumo, Aecosan - Agencia Española de Consumo, Seguridad Alimentaria y Nutrición. Spanish strategy for nutrition, physical activity and prevention of obesity. 2005. http://www.aecosan.msssi.gob.es/en/AECOSAN/web/nutricion/seccion/estrategia_naos.htm. Accessed September 24, 2019.

⁴² Spanish Law 17/2011, of July 5, on food security and nutrition www.boe.es/diario_boe/txt.php?id=BOE-A-2011-11604

The NAOS strategy is structured in the following strategic action lines:

- 1) Health protection: actions and interventions to protect health more effectively based on scientific evidence, facilitating accessibility to a varied, balanced and more moderate diet both in caloric consumption, as in fat, sugar and salt, promoting food reformulation, and providing the most appropriate information that facilitates healthier decisions and choices in the consumer.
- 2) Prevention and health promotion: among the actions for the prevention of obesity and related diseases, awareness and awareness actions are carried out aimed at different population groups on the benefits of a healthy and varied diet and physical activity. The objective is to establish didactic, simple and appropriate communication and information strategies that facilitate lifestyle changes.
- 3) Monitoring and evaluation: The NAOS Strategy has the “Observatory of Nutrition and Study of Obesity”⁴³, as a monitoring and follow-up system in order to control the prevalence of obesity and overweight in the Spanish population and its determining factors, and to assess whether the actions carried out in this field of action they are being effective.

The NAOS strategy (2005) set specific measures and recommendations towards the food and drink industry such as the following:

- Nutritional information to be included in an accessible form on its sales units.
- Progressive reduction of the percentage of salt used in the making of bread.
- Gradual reduction of the calorie content of food products on the market and to investigate technological solutions enabling this.
- Study the use of portions, to discourage excessive calorie consumption.

5.3.2 Innovation Tools

In the previous section the priorities for healthy food and lifestyle defined by regional/national policies and strategies were presented. The current section focuses on the tools (programmes and calls) that foster the emergence of projects and innovations in the healthy food and lifestyle priority fields.

In terms of Galician support to R&D&I projects, the Conecta Peme programme should be mentioned. This programme supports, through periodic calls, collaborative R&D&I business projects in fields prioritised by the RIS3 Galicia. Thus, several projects related to new healthy food products have been implemented in the scope of this programme, such as:

- AHGAVES project, focused on fostering the Food-Health Interrelation for a healthy ageing through functional nutrition based on raw materials from the Galician garden.
- SENIORPLUS project, focused on emerging technologies and applied nanotechnology for the development of functional foods targeted to sectors of the population with special needs (elderly and people with food allergies and intolerances).

Similarly, Galician companies use national funded calls to foster R&D&I projects in the field of healthy food. Some examples of business R&D&I projects in this field are the following:

- TECFOOD (2017-2020) New healthy technological foods for new social needs, which aims to increase the innovative capacity of the agri-food industry through the development of new processes and food products of greater added value, as well as through the development of emerging sectors and high technological content such as the 3D food printer.

⁴³ Observatory of Nutrition and Study of Obesity,
www.aecosan.msssi.gob.es/en/AECOSAN/web/nutricion/seccion/observatorio.htm

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- BIOFUNCIOGAL” Potentiation of functional biomolecules in food products of Galician origin through agrobiotechnological research, which aims the elaboration of food products and beverages that incorporate the potentially functional richness inherent to the biomolecules that form an active part of three agri-food resources in the dairy, horticultural and wine/oil subsectors.

Furthermore, the development of new healthy food is fostered by different intermediary organisations, such as the Galicia Food Cluster (Clusaga), which implements projects aiming to assist their members (mainly SMEs) in the development of new foods and ingredients. Relevant examples of projects in this regard are:

- NUTRIAGE - Promotion of healthy ageing through nutrition and the Atlantic diet: <https://nutriage.eu/en/>
- Inclusilver - Innovation in personalised Nutrition through Cluster cooperation in the Silver economy: www.inclusilver.eu

The development of new healthy food products by companies faces some challenges:

- The link between science and research, industry and health is essential to develop new healthier foods that respond to current social challenges⁵. In this regard, the collaboration between such different type of actors, with different work cultures and missions, may be challenging for collaborative innovation processes;
- To be able to affirm that a food product is a "healthy food", the development and validation process must comply with strict legislative requirements (specially in terms of labelling and marketing)⁴⁴, that may be a challenge for companies in some cases;
- Although the words functional foods, nutraceuticals and healthy foods form part of the usual vocabulary of consumers and industry, there is currently no rule, within the scope of the European Union, that specifically regulates what could be classified as “healthy foods”¹. This lack of definition may cause confusion and pervert the characterisation of healthy food, what can drive to a lack of confidence in the consumers;
- Clinical studies are essential to be able to affirm a possible effect of health-related food on the human organism and indicate it in the labelling of the food product¹. The plan and implementation of this type of studies is complex and may be a barrier for companies to develop healthy food products which can be labelled as such;
- Finally, although collaboration between companies is convenient to reach more ambitious goals, collaboration between competitors in R&D&I projects is still a challenge, as it is difficult to find a distribution of activities and a way to cooperate that allows trust-building.

5.3.3 Existing support structures and reforms

There are several initiatives at national and regional level promoting healthy food and lifestyle. Some of them are presented below.

5.3.3.1 Initiatives for the improvement of food and drink composition

In the scope of the NAOS Strategy, it was developed in 2018 the “Plan 2020 for the collaboration in the improvement of food and drink composition”⁴⁵. This plan is based on the fact that the

⁴⁴ Viadel B. Innovación en alimentación saludable. ainia. November 2016. <https://www.ainia.es/tecnoalimentalia/formacion/innovacion-en-alimentacion-saludable-aspectos-clave-para-una-vision-integral/>. Accessed September 24, 2019

⁴⁵ Ministerio de Sanidad, Consumo y Bienestar Social; Agencia Española de Consumo, Seguridad Alimentaria y Nutrición (AECOSAN). Plan de colaboración para la mejora de la composición de los alimentos y bebidas y otras medidas 2020. 2018.

reformulation or improvement in the nutritional composition of food products is one of the more effective interventions to favour a better food environment and healthier options. The reformulation consists in improving the content of certain selected nutrients (saturated fats, trans fats, salt or sugars) of food and beverages, without this leading to an increase in the energy content of the food or other nutrients, and maintaining food security, taste and texture so that the product continues to be accepted by consumers. This can be done up to certain limits by technological, organoleptic, legislative, microbiological or economic aspects⁴⁶.

Specifically, for the production and distribution sectors, the Plan proposes the following actions:

- Reduce around 10% of the median of added sugars by 2020, in various groups and subcategories of foods and beverages commonly consumed in children and youth;
- Continue with the commitments to reduce salt and saturated and trans fats of industrial origin in various groups and subcategories of food and beverages;
- Ensure that reductions and substitutions do not increase caloric content;
- Reaffirm and strengthen the voluntary and consensual effort and collaboration of companies from various sectors of the food environment (small, medium and large companies);
- Support and encourage R&D of products that make up a diet with less added sugar, salt, saturated and trans fats of industrial origin and calories.

5.3.3.2 Campaigns to promote healthy food and lifestyle

Several campaigns to foster healthy food and lifestyle are organised at national level in the scope of the NAOS Strategy, managed by the Spanish Agency for Food Safety and Nutrition (AESAN). Many of these are media campaigns specifically addressed to children and youth, although some of them are addressed to the whole population. One example of campaign addressed to the population is the “*PLAN CUÍDATE +*”⁴⁷, which provides nutritional information (emphasising the reduction in the consumption of salt and fats), a personalised and downloadable 4-week plan to achieve healthier habits, and healthy recipes. A similar initiative is ongoing at the regional level (promoted by the Galician Health Service – Sergas), called “*Xente con Vida*”⁴⁸

http://www.aecosan.msssi.gob.es/AECOSAN/docs/documentos/nutricion/PLAN_COLABORACION_2020.pdf. Accessed September 24, 2019.

⁴⁶ Spiteri M, Soler L-G. Food reformulation and nutritional quality of food consumption: an analysis based on households panel data in France. *Eur J Clin Nutr.* 2018;72(2):228-235. doi:10.1038/s41430-017-0044-3

⁴⁷ www.plancuidatemas.aesan.msssi.gob.es/default.htm

⁴⁸ <https://xenteconvida.sergas.es>

5.3.3.3 Initiatives for consumer healthy food decisions

Besides the healthy food and lifestyle promotion campaigns, another relevant aspect that is being planned is the implementation of the NutriScore Code in Spain. This was announced by the Spanish Ministry of Health, Consumption and Social Welfare in the end of 2018. The NutriScore, already implemented in France, will provide citizens with more precise information on nutritional quality through a colour code (between green and red as a traffic light). This type of nutritional labelling aims to help the consumer to make better consumption decisions. So far, several studies have placed it as one of the most effective models in understanding by the consumer, although it would need to be adapted to Spanish diet and products, as products such as olive oil are poorly ranked with this system⁸.



Figure 21. NutriScore

5.3.4 Overall region/country trends

The prevalence of obesity (especially in childhood, where it reaches alarming figures) and its upward trend over the past two decades, has established the term "epidemic obesity" in Spain, as in other countries worldwide. In comparison with the rest of the countries in Europe, Spain is in an intermediate position in the percentage of obese adults. However, when it comes to child population, Spain has one of the highest figures, only comparable to other Mediterranean countries.

The concern about the prevalence of obesity is due to its association with the main chronic diseases of our time, such as cardiovascular diseases, diabetes mellitus type 2, arterial hypertension and certain types of cancer. Among the main causes of non-communicable diseases are the higher consumption of hyper-caloric foods (with high content of fats and sugars) and lower physical activity. Traditional diets have been quickly replaced by others with a higher energy density, which means more fat, mainly of animal origin, and more added sugar in foods, together with a decrease in the intake of complex carbohydrates and fiber. These food changes are combined with changes in behaviours that involve a reduction in physical activity at work and during leisure time⁴⁹.

Spanish public authorities are trying to fight the aforementioned situation through a series of measures, which include:

- Giving priority to healthy food and lifestyle in R&D&I policies and programmes, in order to foster that R&D organisations and companies devote their efforts towards tackling this challenge;
- Implementation, since 2005, of a health strategy promoting healthy diet and physical exercise to reverse the trend in obesity prevalence through the development of evidence-based actions and interventions in all areas and all sectors of society (NAOS Strategy). In 2011 this strategy became a national law. The strategy is implemented in a coordinated manner with the regional authorities with competencies in public health;

⁴⁹ Ministerio de Sanidad y Consumo, Aecosan - Agencia Española de Consumo, Seguridad Alimentaria y Nutrición. Spanish strategy for nutrition, physical activity and prevention of obesity. 2005. http://www.aecosan.msssi.gob.es/en/AECOSAN/web/nutricion/seccion/estrategia_naos.htm. Accessed September 24, 2019.

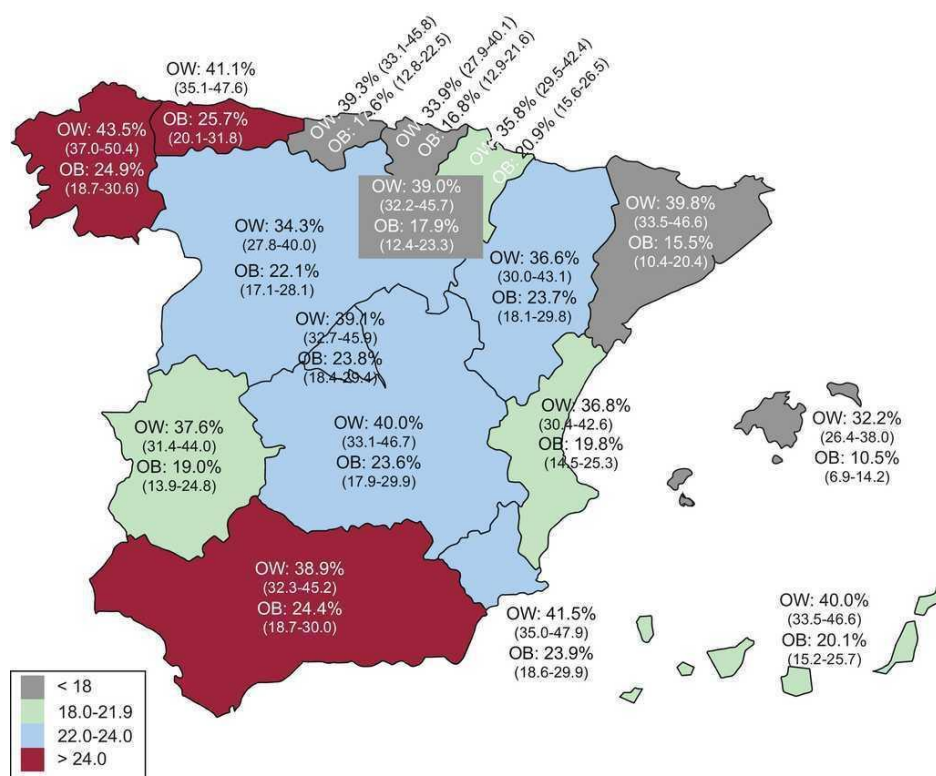
- The NAOS strategy does not only promote efforts to drive social behavioural change, but also tries to work closely with the food industry to incentive companies to improve food and drink composition;
- Furthermore, different campaigns and measures are being held to educate the population on having healthier behaviours, both at national and regional level. These campaigns cover a wide range of aspects related to health: nutrition, physical activity, consumption of alcohol and tobacco, maternal and child health, etc. Other initiatives related to make easier and better consumers' nutritional decisions are being studied, such as the implementation of the NutriScore.

5.4 Spain (EITFood)

5.4.1 Healthy food and lifestyles and innovation policies

Life expectancy in the Basque Country is among the best in Europe for both men and women (the highest for women)⁵⁰ and, even more importantly, disability-free life expectancy has been increasing in both sexes.

Basque Country is also the region with the lowest rate of overweight and obesity in Spain⁵¹ (Overweight: 33,9%. Obesity 16,8%). This percentage is significantly lower than the national average (Overweight: 39,3%; Obesity 21,6%) and the European average.



Rev Esp Cardiol. 2016;69:579-87

Figure 22. Overweight and obesity rates in Spanish regions

Source: Rev Esp Cardiol. 2016;69:579-87

However, although the general health data seems quite positive, there are some facts that are worrying to the Basque population.

⁵⁰ The Basque country in the EU-28.

http://en.eustat.eus/elementos/ele0015400/ti_The_life_expectancy_of_Basque_women_862_years_is_the_highest_in_the_EU-28/not0015471_i.html

⁵¹ Prevalence of General Obesity and Abdominal Obesity in the Spanish Adult Population (Aged 25–64 Years) 2014–2015: The ENPE Study. <https://www.revespcardiol.org/es-prevalencia-obesidad-general-obesidad-abdominal-articulo-S1885585716001225?redirect=true>

Regarding physical activity, over the last five years, the percentage of men considered sedentary has fallen by 17%. However, concerning obesity, in the Basque Country, the rate of people over 16 years of age who are obese is 25% higher than in 2002. The distribution of obesity by social class shows that rates increase with decreasing socioeconomic status. However, the growth in the percentage of people who are obese in the better-off has resulted in a decrease in social inequalities in obesity⁵².

The Basque healthcare system is already recognised as being of high quality. The Basque Country Government's priority now is to build on this by prioritising prevention of ill health based on the principles of universality, solidarity, equity, quality and civic engagement.

To this end, the 2013-2020 Health Plan was developed with the title: "Health: the People's Right, Everyone's Responsibility. Health Policies for the Basque Country"

5.4.1.1 Health Policies for Euskadi 2013 - 2020⁵³

The Health Plan has been designed to be a fundamental tool to improve the health of Basque citizens, continue increasing their quality of life, reduce inequalities and promote organisational improvements. The improvement of health is an objective shared by the different institutions, so that, through their political action, whatever the field may be, they can influence health and, ultimately, contribute to increasing the well-being of citizens. It is the concept of "Health in All Policies".

Within the Health Policies plan for Euskadi 2013 – 2020, there are two initiatives/strategies that are of explicit importance for AHFES project

Initiatives for Healthy Eating in Euskadi⁵⁴

The "Initiatives for Healthy Eating in Euskadi" seeks to promote health through promoting healthy eating, which is, in many cases, responsible for the rise of chronic diseases such as cardiovascular, diabetes and some types of cancer. It includes 18 initiatives to be developed by 2020, ranging from the reduction of salt and sugar consumption, to the promotion of seasonal fruits and vegetables, or the promotion of healthy eating in school canteens, among many others. In addition, the adhesion of different companies and entities to these initiatives is sought, to make visible the change in eating habits, which is being promoted in Basque society.

Childhood Obesity Prevention Strategy in Euskadi (SANO)⁵⁵

The Euskadi Childhood Obesity Prevention Strategy, with the motto SANO, is a tool that will allow addressing one of the main public health challenges of this century by adopting measures focused on all in boosting physical activity and healthy eating. The plan aims to improve the capacities of children and young people to live in a healthy way and minimize the risks of unhealthy behaviours with the collaboration of the different agents that interact in their environment. To this end, it proposes measures in five areas of action: family, school, health centres, private sector and

⁵² 2030 Agenda for Sustainability Goals in Euskadi. <https://www.euskadi.eus/agenda-2030-para-el-desarrollo-sostenible/web01-s1leheki/es/>

⁵³ Euskadi health plan 2013-2020. <https://www.euskadi.eus/informacion/politicas-de-salud-para-euskadi-2013-2020/web01-s2osa/es/>

⁵⁴ Healthy eating initiative Euskadi. <http://www.euskadi.eus/informacion/programa-iniciativas-para-una-alimentacion-saludable-en-euskadi/web01-a2segali/es/>

⁵⁵ Childhood Obesity prevention plan. <http://www.euskadi.eus/estrategia/prevencion-de-la-obesidad-infantil-en-euskadi/web01-a2osabiz/es/>

community environment. One completed action was to increase the number of hours of Physical Education at the school to 3 hours per week.

Additionally, as part of the **Research and Innovation Smart Specialisation Strategy (RIS3 Euskadi)** health is also one of the three strategic priorities for Basque Country. Healthy eating - personalized diet, has been identify as a work line for the region. The main objective is to contribute to healthy growth (psychological and biological) and to provide solutions for active aging⁵⁶. Some of the innovation in this area will come from the different research lines that are currently being explored:

- The biological and metabolic functionality of the components and the effect they have with risk factors (hypertension, hypoglycemic);
- New sources of healthy ingredients, as well as encapsulation technologies with an impact on health;
- New technologies that facilitate a healthier transformation of food and preserve its natural properties;
- Reformulation of complicated products for greater functionality from a health prevention point of view;
- New food production systems;
- New gastronomic developments for especially sensitive populations: Children and the elderly;
- Safe and quality food: New detection and conservation technologies;
- Integration of ICTs in production processes, logistics and protocols;
- Foods with new usability benefits appropriate to new consumer trends.

5.4.2 Existing support structures and reforms

Innovation in the agri-food sector falls under the umbrella of the **‘Regional Strategy for Innovation and Cooperation’ for the agri-food supply chain (EVIC)**⁵⁷. This strategy is designed to maximise complementarities between different funding opportunities available such as the RDP, RIS3 strategies and H2020 programme.

The deployment of the strategy is articulated around two main axes, in each of which different actions are developed:

Axis 1. Boosting the Culture of Innovation and Cooperation:

- Visualisation and socialisation of innovative and cooperative experiences in the value chain;
- Development of dynamics for the exchange of knowledge and experiences to enrich projects and initiatives;
- Facilitation of innovative projects in cooperation in the agri-food value chain and in rural and coastal areas.

Axis 2. Deployment of the “Food for a Healthy Euskadi” opportunity niche of RIS 3 (Euskadi Smart Specialisation Strategy) within the framework of the Science, Technology and Innovation

⁵⁶ 2020 Basque Plan for Science, Technology and Innovation. <https://www.euskadi.eus/gobierno-vasco/pcti-2020/>

⁵⁷ EVIC - Strategy for Innovation and Cooperation for the agri-food sector and the rural and coastal environment in Euskadi https://www.euskadi.eus/contenidos/informacion/evic_presentacion/es_def/

Plan 2020. To achieve these objectives, EVIC has equipped itself with a series of tools that can be basically grouped into two types:

- Financial tools: annual aid lines are organized, managed by the Quality and Food Industries Directorate of the Basque Government, to finance research and innovation projects aimed at fundamental research, industrial research, experimental development, innovation in organisation of services, process innovation, cooperation in different fields etc.

Likewise, within the EVIC, the qualification and specialisation of scientific personnel is considered essential to achieve the proposed objectives. To this end, grants are enabled through the granting of scholarships to young researchers and technologists who participate in R + D + i projects related to the Basque agri-food and fisheries sector, developed by Technology Centers, by the University or by the private sector.

- Deployment tools: the most relevant element in this section is the Katilu space.

Katilu⁵⁸, is a public-private partnership initiated in 2011 by the Basque government. It provides a platform to enabling exchange of ideas, learning, innovation and cooperation among agri-food businesses and public business/institutions linked to innovation. 'Katilu' brings together people and organisations dedicated to boosting innovation in the sector through cooperation. It focuses on three main interconnected thematic areas:

- Community: platforms for a transparent exchange and communication between the different stakeholders (e.g. online platforms);
- Learning: workshops and meetings to enable exchange of knowledge between people and organisations, mutual learning, shared concerns, generation of ideas and proposals for cooperation projects;
- Cooperation: enabling team work to add value to cooperation projects and trigger the development of new ones (with a strong link to Measure 16 of the RDP).

The RDP supports cooperation and, in this respect, Katilu acts as the 'innovation broker' to trigger cooperation projects in the agri-food supply chain through various sub measures.

1. Support for the establishment and operation of EIP Operational Groups (Support will be provided for the implementation of EIP OGs and the costs related to pilot projects)
2. Support for pilot projects and for the development of new products, practices, processes and technologies Support will be granted to cooperation projects involving small agri-food stakeholders to jointly organise their work and share infrastructure and resources The aim is to support small agri-food stakeholders seeking to achieve economies of scale which they cannot do by themselves
3. Support for horizontal and vertical cooperation among supply chain actors. Cooperation projects will be supported for the commercialisation and promotion of agri-food products through the development of short supply chains and local markets.

⁵⁸ Food Collaboration Space Euskadi. <http://www.katilu.net/>

4 collaboration spaces

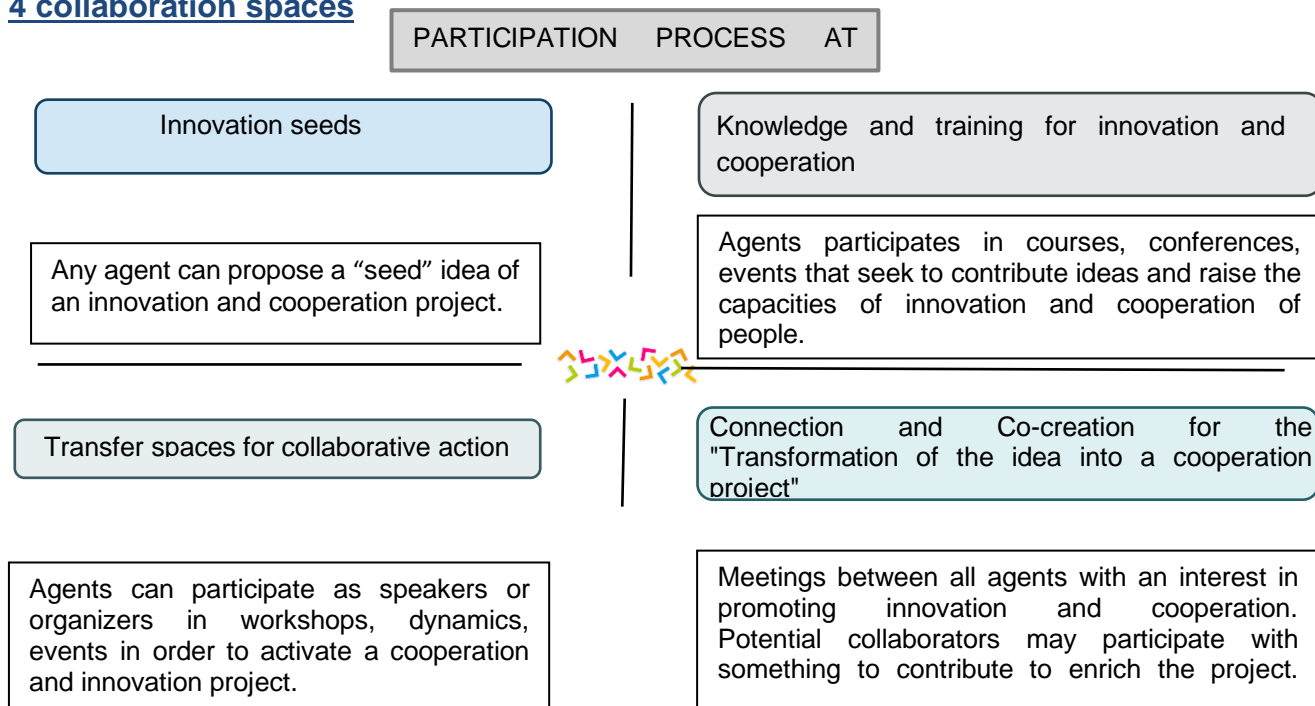


Figure 23. Participation process

Additionally, there are other structures or support tools to produce innovation growth in the healthy food and lifestyle field in Euskadi, that should be highlighted

Food BIND 4.0⁵⁹: Strategy for the development of the Entrepreneurship in the Food Value Chain. The Basque Government has implemented different instruments such as:

- Scholarship programme for entrepreneurs through open innovation initiatives;
- Incubation programme in collaboration with EIT Food, for entrepreneurs who want to settle in Euskadi;
- Acceleration programme, in collaboration with **EIT Food, EIT FAN Programme;**
- Open Innovation Forum between companies and Start-ups;
- Mentors;
- Individualized support (location search, relationship with partners and partners, contact with the Administration, etc.);
- Technology Infrastructure Network (SFC 4.0);
- Support measures for investment, financing, fiscal measures, etc.

Food BIND 4.0- Bind 4.0 is undoubtedly the most successful accelerator in Euskadi. An initiative that in 2020 will also have the participation of companies and startups in the food sector, forming the FOOD BIND 4.0.

EIT Food Accelerated Network based in Bilbao (one of the 5 EIT Food FAN locations in Europe), accelerates startups that are specifically looking to improve the food system, making it safer, healthier for people and environment and more sustainable.

⁵⁹ Food Bind 4.0. <https://www.euskadi.eus/proyecto/food-bind-4-0-estrategia-de-emprendimiento-en-la-cadena-de-valor-de-la-alimentacion-de-euskadi/web01-s2ekono/es/>

In 2019, 10 startups have successfully joined the programme that included training, mentoring, access to financing and networking.

5.4.3 Overall region/country trends

It is clear through the existing and new measures, policies and tools being deployed in Euskadi, that there is a settled background and a stable trend towards healthy food and lifestyles in the region.

In recent years, the food sector has occupied a space that is considered “opportunistic” in the strategy of Smart Specialisation RIS 3. It has been recognised as an area in which Euskadi could develop and innovate, but at this time, the agents that make up the food value chain have managed to structure and move in the same direction. Taking into account the potential and the capacities that the sector is showing, which already reaches a weight of 10% of GDP, and that has a great capacity to generate employment and propose new products, the Basque Government has worked so that it is a status closer to priority areas such as manufacturing, energy and health.

The reflection made by the Department of Economic Development and Infrastructure together with the agents of the sector has led the Basque Government to reinforce the existing entrepreneurship system with a greater focus on this area.

Some of the main trends observed has been

- Basque strong health promotion policies linked to national and European strategies that are providing a consolidated health support portfolio;
- Incorporation of the citizen in the health and nutrition sector in Euskadi, promoting 4 Helix collaboration, thanks to collaboration spaces as Katilu;
- Enhancement of Entrepreneurship, particularly in food and sustainability sector, thanks to initiatives as Food Bind 4.0 and EIT Food Accelerated Network.

5.5 France (Valorial)

5.5.1 Healthy food and lifestyles and innovation policies

5.5.1.1 At a Regional level

Healthy food is a major issue in Western France's regions, 9th European strength in terms of agriculture and agrofood sectors, and is widely present in the **Research and Innovation Strategies for smart specialisation (RIS3)**, Europe-region plan contract, and in the **Regional framework for the economic development, innovation and internationalisation (SRDEII)**, French state-region plan contract:

- “sustainable food chain for quality food” is one of the seven “strategic innovation areas” in Brittany⁶⁰
- “Safe, healthy and sustainable resources and food” is among the five “strategic innovation areas” declined in Normandy⁶¹
- The Loire Country has chosen to focus on “food and bio-resources: from consumer's expectations to the agricultural production system” as one of their 6 strategic areas.⁶²

The third Regional Health and Environment Plan (**PRSE3**), between 2017 and 2021 is the reference framework for action in health and environment in Brittany, Loire country and Normandy. This regional plan is declined from the National Health and Environment Plan (PNSE3), at regional levels, in a multi-disciplinary way to promote a healthy environment by acting on all aspects of the daily lives of citizens. Among the main eight priorities is **acting for a better water quality** with a field of actions aimed at reducing health risks due to water quality and informing and educating about water quality.

Healthy food and lifestyles and innovation policies in Brittany

In Brittany, where the region's ambition is to become the European leader of eating healthy, a regional action plan is being implemented to encourage agriculture actors:

- launching of a call of projects dedicated to the meat poultry sector to invest in new infrastructures (5 million euro) to help the sector to upscale and reclaim the French market
- producer's network “Bienvenue à la ferme Bretagne” receives a €40,000 grant/year to help the 20 members transforming and selling their own products
- local purchasing in collective catering, at the heart of the National Plan of Food (PNA), is also encouraged by the region, who manages to mobilise 150 public purchasers and food sector actors in “BreizhAlim”, an economically responsible and improving quality food regional purchasing policy.⁶³

Healthy food and lifestyles and innovation policies in Normandy

In Normandy, 6th agrofood region in France, “Safe, healthy and sustainable resources and food” is a real priority:

⁶⁰ RIS3 in Brittany: https://www.bretagne.bzh/upload/docs/application/pdf/2013-12/455_cp_srdeii.pdf

⁶¹ RIS3 in Normandy: https://www.europe-en-normandie.eu/sites/default/files/documents/bn_po_feder_ris3.pdf

⁶² RIS3 in Loire Country: https://www.paysdelaloire.fr/uploads/tx_oxcsnewsfiles/SRISI_Synthese_web.pdf

⁶³ Breizh Alim programme: <http://www.bretagne.synagri.com/synagri/breizh-alim>

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- An agri-food sector contract signed in 2016⁶⁴ between the main institutional partners and the agrofood actors in order to maintain the agri-food / agri-resource sector at the forefront of the regional economy and promote the quality products and processes.
- In 2017, signature of a framework agreement to implement a task force⁶⁵ near the European Union to have an even greater influence on policies promoting bioeconomy: healthy and affordable food, food security, sustainable agriculture and forestry, sustainable bio-industry.
- "I eat Norman products in high school" plan⁶⁶, set up in 2017, is a major challenge for young people taste education and health, but also an economic and environmental challenge for the region. With an objective of 80% of the products served in high school collective catering will then be Norman by 2021.
- Implementation of a living lab, "Silver Normandy Hub"⁶⁷, that covers several themes including Food and brings together actors and "Living Lab" initiatives in the regions.

Healthy food and lifestyles and innovation policies in Loire country

In Loire country, 2nd French region in terms of livestock production activities just behind Brittany, human health is a major issue:- Regional Committee for Food (CRALIM)⁶⁸, main tool of the National Plan for Food at a regional level, make the government services and the food local actors work together to implement appropriate measures in order to decline the national plan (biological and local products progressively introduced in regional school catering).

- Research-action programme "EducAlim"⁶⁹, financed by the National Food Programme (PNA) implemented to struggle against childhood obesity, thought to favorise the consumption of vegetables by children, using a pedagogy based on discovery and familiarisation (courses on fruit and vegetable knowledge, cooking workshops, gardening workshops and educational farm visits and markets).
- Regional health forum 2019⁷⁰, organised by the Regional Support and Expertise Structure (SRAE) for nutrition actors, focalised on preventive approaches to deal with obesity and undernutrition.
- Silvereconomy dedicated structure called "autonomy longevity gerontopole ". In addition to seminars and workshops on the themes of autonomy and longevity, the gerontopole held a Nutrition and Food exhibition to raise awareness among the general public and highlight the senior sector challenges.⁷¹

5.5.1.2 At a National level

The National Food Programme (PNA)

The National Food Programme (PNA)⁷² is the framework in which public policy framework is developed in France since 2010. It is managed by the General Direction for Food (DGAL) from

⁶⁴ Agri-food sector contract: <https://www.normandie.fr/signature-du-contrat-de-filiere-agroalimentaire-agro-ressource>

⁶⁵ Task force: <https://www.normandie.fr/creation-dune-task-force-de-la-normandie-aupres-de-lunion-europeenne-0>

⁶⁶ "I eat norman products in high school" Plan: <https://www.normandie.fr/presentation-du-nouveau-plan-je-mange-normand-dans-mon-lycee>

⁶⁷ Silvereconomy hub: <https://silver-normandie.fr/normandiehub/>

⁶⁸ CRALIM : <http://daaf.reunion.agriculture.gouv.fr/Comite-Regional-de-l-Alimentation>

⁶⁹ EducAlim programme: http://draaf.pays-de-la-loire.agriculture.gouv.fr/IMG/pdf/Annexe1_cle0961fe.pdf

⁷⁰ Regional health forum : <https://www.sraenutrition.fr/forum-regional-nutrition/>

⁷¹ Nutrition and Food exhibition for senior people: <https://www.gerontopole-paysdelaloire.fr/etudes-et-projets/exposition-nutrition-alimentation-la-maison-r-gionale-de-l-autonomie-et-de-la-long-vit->

⁷² PNA: <http://draaf.bretagne.agriculture.gouv.fr/Bien-manger-Programme-National>

the Agriculture and Food ministry, and together with other ministries such as health, consumption, ecology, justice and education ministries. The main goal of the PNA is to ensure a safe, diversified and sufficient food diet, as the objectives of public food policy, for French citizens:

- Programmes to promote seasonal and labelled products (notably biological products) in the collective catering and short or local circuits thanks to programmes involving awareness-raising, educational and even communication activities ("A fruit for recreation"⁷³, etc.)
- Possibility of validating interprofessional agreements aimed at improving the nutritional and gustatory quality of food produced by the agri-food industry (i.e. reducing the quantity of salt) with a view to combating overweight and obesity
- Label to be a partner of the National Food Programme (PNA) by giving the logo "Eating well is everyone's business" (i.e. "Bleu Blanc Coeur" brand committed to improving the nutritional content of Omega 3 in our diet).

The National Programme for Health and Nutrition (PNNS)

The National Programme for Health and Nutrition (PNNS)⁷⁴ was created in 2001 by the French Agency for food safety, now called National Food, Environment and Occupational Health and Safety Agency (ANSES). This programme has, for main objective, to improving the health status of the entire population by addressing one of its major determinants: nutrition. This programme operates at several levels: industry, consumers, research to achieve its objectives (e. g. reduction in salt consumption):

- Charters of voluntary commitments to nutritional progress signed by industries and based on specific objectives, encrypted, dated and verifiable (i.e Fleury Michon, specialised in sausage preparations, has signed a charter of voluntary commitments since 2010 and made significant efforts to reduce salt ("-25% salt") and saturated fatty acids levels, and to develop innovative products rich in fibre that were solicited by consumers⁷⁵).
- The PNNS issues nutritional recommendations through the mangerbouger.fr popular website and uses the concept of "nutritional benchmarks" to translate public health objectives into easily applicable concepts (eating at least five fruits and vegetables a day, healthy lifestyles advices like being physically active at least 30 minutes a day).

The National Strategy for Health

The National Strategy for Health (2018-2022) is the framework for healthy policies in France. Promoting healthy food and regular physical activity is within its scope of actions⁷⁶. It is defined by the French government and is based on the observed analysis of the High Council of public Health on the health status of the population, its main determinants, as well as possible strategies for action. With a priority focus on physical activity, nutrition and the fight against obesity, the 2019 edition of the CIS highlighted many actions taken, significant results (nearly 20% of the food supply is now covered by this nutritional quality indicator "nutri-score").

⁷³ "A fruit for recreation" programme: <http://draaf.bretagne.agriculture.gouv.fr/Fruits-et-legumes-a-l-ecole-et>

⁷⁴ PNNS general public website: <https://www.mangerbouger.fr/>

⁷⁵ Charter of voluntary commitments to nutritional progress Fleury Michon: <https://solidarites-sante.gouv.fr/IMG/pdf/fleury-michon2013-2015.pdf>

⁷⁶ National Strategy for Health: https://solidarites-sante.gouv.fr/IMG/pdf/dossier_sns_2017_vdef.pdf

The Egalim Act

The «Egalim» act⁷⁷ of October 30th 2018 was made to balance the trade relationships in the agricultural and food sector, and a healthy, sustainable and accessible food for everyone. It aims at coming back to fair trade relationships between producers and distribution and providing accessible, healthy and sustainable food for all consumers. This French law is resulting from the “General states of food”⁷⁸, commitment of the republic president, launched in 2017 and bringing together civil society - consumers, agri-food manufacturers, supermarkets and public authorities to share reflection and collective construction of new solutions.

The Investment Programme for Tomorrow (PIA)

The Government has committed to a €57 billion “2018-2022 Major Investment Plan” (GPI), to be implemented throughout the five-year period, to support structural reforms and respond to four major challenges facing France: carbon neutrality, access to employment, competitiveness through innovation and the digital state. Agricultural and Food sector transformation needs an important effort in terms of research and innovation, so as to accelerate the production upgrading, to respond to climatic and ecological transitions, to meet the societal needs for better food and feed, and to benefit from the digital transition. The call for proposals “Investment Programme for Tomorrow” (PIA)⁷⁹, operated by FranceAgrimer, is in progress to finance the best projects addressing these issues: “Agricultural and Food for Tomorrow”.

5.5.2 Existing support structures and reforms

5.5.2.1 *The competitiveness clusters*

The competitiveness clusters (pôles de compétitivité) were created in 2006 by the French government as a tool to support innovation. Managed by the French state (agricultural and food ministry) until today (it is been announced that regions would probably manage them from 2020), they are mainly financed at a regional level. Competitiveness clusters are able to label innovative and collaborative projects so that they could access to public grants or repayable advances. In western France, healthy food is a main topic that is part of each region's RIS3, and also one out of six strategic innovation areas that guides Valorial, first agrofood competitiveness cluster in western France, to give a label to collaborative projects. For instance, Valorial labelled projects that promote food and nutrition development:

- ALimentation, LAIT maTernel, MESure et Nouvelles Technologies: development of a measuring tool of the nutritional quality of breastfeeding mothers' milk, including its contribution in omegas 3, depending on the mother's diet.
- NUTRICHIC: Improving the food experience for residents in nursing homes in order to fight more effectively against undernutrition and increase, through eating pleasure, individual and collective well-being

Labelled projects in relation with functional ingredients also contribute to make advance health food issues:

⁷⁷ Egalim Act: file:///C:/Users/Propri%C3%A9taire/Downloads/egalim_dossierpresse_03.pdf

⁷⁸ General States for Food : file:///C:/Users/Propri%C3%A9taire/Downloads/egalim21dec_feuillerroutebd-3.pdf

⁷⁹ Investment Programme for Tomorrow (GPI): https://www.ecologique-solidaire.gouv.fr/sites/default/files/20181025_Investissements%20d%E2%80%99Avenir_Appel%20a%20projets%20Agriculture%20et%20Alimentation%20de%20demain.pdf

- Brainsbooster: Development, from marine coproducts, of innovative healthy ingredients for ageing well.
- B-inside: New analytical methods for the development of with a guaranteed content of B-group vitamins.

5.5.2.2 *Innovation territory laboratories (LIT)*

As part of the «Investment Programme for Tomorrow» (PIA), the French state has missioned the Deposit funds (CDC) to manage the action “Innovation territory for great ambition”, with a 450M€ budget for 10 years. In this context, the Commissariat Général à l'Investissement and the CDC have launched a call for proposal named “Innovation territory laboratories” (LIT) so as to select the most original projects in the fields of wood, tourism, agriculture and mobility, with the ambition to transform territories (for example digital/ecological/societal transformation...), by setting a long-term public-private partnership.

One successful project from this call was «Terres de Sources»: this project aims to protect water resources, to produce and to distribute drinking water and quality food products in the Rennes city watershed. The main actors of the project have found an innovative legal method for the farms located upstream of drinking water abstractions to win the public contracts; by their efforts to reduce the use of phytosanitary products, they respond to the consumers wish of healthier Food, quality, accessible and local food products.

5.5.2.3 *Territorial food projects (PAT)*

Initially planned in the « Loi d'avenir pour l'agriculture, l'alimentation et la forêt of 13 October 2014 (Art 39), the territorial food projects (PAT)⁸⁰ are based on a shared diagnosis that reports on the local agricultural and food production, the food needs of the living area and identifies the territory's socio-economic.

Elaborated in a concerted way by the territory actors, its objective is to provide a strategic and operational framework to partnership actions responding to social, environmental, economic and health issues. In this context, food becomes an integrating and structuring axis to bring coherence to sectorial policies on the territory. Among the 33 existing PAT in France, 8 are based in western France.

Since its launching in March 2017, the “PAT CD29”⁸¹, in Brittany, aims at gathering farmers, producers, suppliers, territorial collectives and consumers, to promote agriculture and food quality on the Finistère department territories. The first step was to elaborate a shared diagnosis on the local agriculture production and the expressed food needs in the Finistère department, both in terms of individual consumption and of collective catering. Five challenges have been identified (2nd challenge is to help consumers to make food choices, 4th challenge is to promote a local territory food) and a food project's action plan has been structured at a department level. From now on, every actor on the territory is able to integrate its project inside this “PAT CD29”. For instance, the association “Aux goûts du jour”⁸², based in Quimper city, takes part to the PAT CD29, organizing training sessions to raise awareness on issues linked to food: consumption,

⁸⁰ What is a PAT?: <https://www.dailymotion.com/video/x6fwgr4>

⁸¹ PAT CD29: <https://www.finistere.fr/Le-Conseil-departemental/Le-projet-de-partemental/Le-projet-alimentaire-de-territoire>

⁸² Aux goûts du jour : <http://association-alimentation.fr/>

jobs, taste, food waste, health. Their actions are labelled by the National Plan for Food since 2011.

5.5.3 Overall region/country trends

5.5.3.1 Trends in Normandy

Two main trends are emerging in Normandy in terms of healthy food:

- 1- The region is focusing on the **development of vegetable proteins**.⁸³ Normandy brings together many agricultural assets to respond to food consumption trends evolution. Workshops meetings with all agricultural stakeholders and companies concerned made it possible to draw up the regional plan to support the development of plant proteins.
- 2- Normandy continues to assert itself as **a reference on silver economy issues** throughout the organisation of the Silverday Normandy, annual matchmaking event which aims at informing and creating collaborations between companies, associations, public services and various actors working in connection with the ageing sector, such as personal services, food, e-health, housing, home support, mobility.

5.5.3.2 Trends in Brittany:

Loïg Chesnais Girard, President of the Brittany Region, is convinced that the future of Brittany depends on food, "the Brittany Region will be with those who dare to make the ecological transition, take risks and play together. My **ambition for Brittany is to become the leading European region for "eating well"**⁸⁴. "Through the Breizh Agri Food programme⁸⁵, there is a real desire on the part of Breton farms and agri-food companies to open up to the general public (consumers, schools) to highlight the quality of Breton food production and the progress made to meet their expectations ever better.

5.5.3.3 Trends in Loire Country

In the Loire country, there is a real regional desire to **deepen the subject of human health**, with the creation of various working groups:

- the innovation cell of the Western Cancer Institute is searching for European projects to intensify their studies
- in 2017, the new "next" university project obtains the university label of international dimension (50 M€)⁸⁶; it aims to become the driving force behind the economic development and innovation of the territory on the theme of "health and industry of the future" with the will to collaborate with industrials (200 member companies).

⁸³ Regional plan to support the development of plant proteins (Normandy): <https://www.normandie.fr/plan-regional-pour-le-developpement-des-proteines-vegetales-pour-l'alimentation-humaine>

⁸⁴ Brittany, leading European region for "eating well" : <https://www.ouest-france.fr/reflexion/point-de-vue/point-de-vue-la-bretagne-doit-etre-leader-du-bien-manger-5944020>

https://www.bretagne.bzh/jcms/prod_448372/fr/vitrine-de-la-bretagne-du-bien-manger

⁸⁵ Breizh Agri Food programme: <https://www.breizhagrifood.bzh/>

⁸⁶ New university in Nantes: <https://next-isite.fr/>

- The Loire country was also the pilot territory to welcome the “Projet Malin”⁸⁷, which goal is to promote the access, for families presenting social and/or economic fragilities, to a healthy food adapted to children between 0 and 3 years old.
- This ambitious societal innovation programme, based on the poverty plan and the PNNS 4th edition, and mobilising actors from the 4 helixes, is meant to be generalised at a national level to 1/3 of children from families experiencing poverty. It reflects the national willingness to make real effort to inculcate the value of healthy eating at all levels of the French population.

⁸⁷ Projet Malin : <http://programme-malin.com/professionnel/decouvrir-malin/>

5.6 United Kingdom – Wales (BIC Innovation)

5.6.1 Healthy food and lifestyles and innovation policies



Figure 24. Cascade from policy to healthy product consumption

The health and well-being of citizens is a key priority for both the UK Government and the devolved Welsh Government. Promotion of healthy eating and the management of diet to prevent poor health outcomes is a major component of their policies and actions in this arena, alongside initiatives, supported by campaigns and charities, promoting exercise, stopping smoking⁸⁸ and reducing alcohol consumption⁸⁹.

Innovation in healthy food products for consumers in Wales cascades down from these overarching public health agendas (figure 24).

The two governments set out strategic objectives in their policies which are then assigned to the relevant public bodies, who are tasked with developing and delivering action plans which address the issues and deliver the desired outcomes.

The need for policies which intervene to promote improved diets for citizens stems from the identification that poor diet is a major driver of poor health outcomes in the UK⁹⁰.

⁸⁸ Stoptober : <https://www.nhs.uk/oneyou/for-your-body/quit-smoking/stoptober/>

⁸⁹ Dry January : <https://alcoholchange.org.uk/get-involved/campaigns/dry-january/about-dry-january/what-is-dry-january>

⁹⁰ Dietary Risks Identified as a leading cause of disease in England : <https://www.gov.uk/government/publications/public-health-england-strategic-plan>

Percentage of risk factors attributable to total disease burden (DALYs) in England, 2013

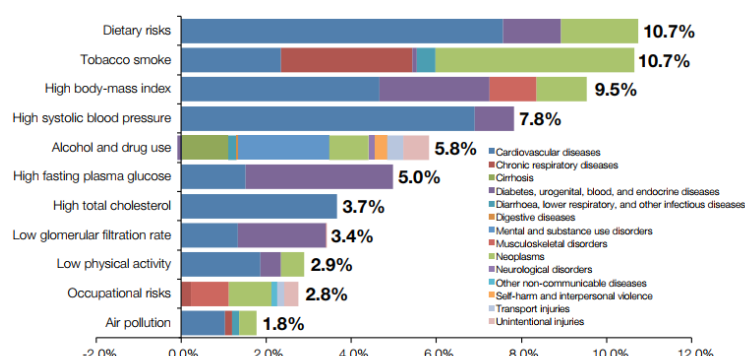


Figure 25. Dietary Risks Identified as a leading cause of disease in England (Public Health England).

With similar challenges identified by Public Health Wales for the Welsh population (detailed in Point 2 below), there are two significant Welsh Government policies, outlining their vision for the country, which relate directly to food and diet.



Figure 26. Welsh Government Well-being Goals

Taking Wales Forward⁹¹ outlines “four cross-cutting strategies” which set out how the Welsh Government intends to “deliver more & better jobs, through a stronger, fairer economy, improve and reform public services, and build a united, connected and sustainable Wales”

The **Well-being of Future Generations Act 2015**⁹² requires public bodies in Wales “to think about the long-term impact of their decisions, to work better with people, communities and each other, and to prevent persistent problems such as poverty, health inequalities and climate change”.

In some sectors the Government can further intervene to deliver positive outcomes, for example with the **Healthy Eating in Schools in Wales Statutory Guidance**⁹³ which sets out the types of food and meals which should be served to school children of various ages. This also presents opportunities for food & drink companies to innovate with healthy products which meet the stipulated guidelines.

Thus, whilst such policies address differing sectors, they attempt to be mutually supportive, for example policies promoting business development and innovation cross reference those of health and well-being.

The consultation launched by Welsh Government in January 2019, “**Healthy Weight : Healthy Wales Our National Ambitions to prevent and reduce obesity in Wales**”⁹⁴ illustrates the

⁹¹ Welsh Government Taking Wales Forward 2016-2021 : <https://gov.wales/taking-wales-forward>

⁹² Welsh Government Well Being of Future Generations Act 2015: <https://gov.wales/well-being-future-generations-act-essentials>

⁹³ Welsh Government : Healthy Eating in Schools in Wales Statutory Guidance <https://gov.wales/healthy-eating-maintained-schools-guidance-education-providers>

⁹⁴ Welsh Government Healthy Weight : Healthy Wales Our National Ambitions to prevent and reduce obesity in Wales https://gov.wales/sites/default/files/consultations/2019-01/consultation-document_0.pdf

types of measures which are applied to the healthy diet debate and reflects the human and financial costs of diet related ill-health.

The context for this consultation and the measures employed is summarised below:

- In Wales over a quarter of our four to five-year olds are **overweight or obese**, with more than one in every ten classified as obese⁹⁵, with six in ten adults overweight or obese and one in four obese⁹⁶. More men than women are overweight or obese and that those in Wales' most disadvantaged communities are more likely to be obese than those in the more affluent areas;
- Recent estimates by Cancer Research UK⁹⁷ show that obesity is the second greatest preventable cause of cancer, after smoking. It is projected that 25 years from now, obesity will become the main cause of cancer in women if we continue with our current lifestyles;
- Diabetes UK⁹⁸ reported that 6,836 people under the age of 25 **have Type 2 diabetes** in England and Wales, which includes around 1,500 people under the age of 19 being treated for the illness. Type 2 diabetes is commonly associated with obesity and poor lifestyle and can be more aggressive in young people;
- Having a high **Body Mass Index (BMI)** is the leading contributor in Wales for increased Years Lived with Disability⁹⁹;
- The **financial cost** to the economy is considerable. Illnesses associated with obesity projected to cost the Welsh NHS more than £465 million per year by 2050, with a cost to society and the economy of £2.4 billion¹⁰⁰.

5.6.2 Innovation Tools

Each devolved country has its own **Public Health Authority**, with these organisations also working closely together to achieve a consistent citizen message. Their stated aim is "to protect and improve the nation's health and well-being and reduce health inequalities."¹⁰¹

Similarly, **Food Standards Authorities (FSA's)** in each nation act to enforce a range of food related regulations covering food safety and composition.¹⁰²

The Public Health authorities work through strategic action plans which shape their activities. For example, the **PHE (Public Health England)** has a 4-year strategic plan to 2020.¹⁰³

⁹⁵ Public Health Wales (2018) Child Measurement Programme for Wales 2016/17: <http://www.wales.nhs.uk/sitesplus/documents/888/12743%20PHW%20CMP%20Report%20%28Eng%29.pdf>

⁹⁶ Welsh Government (2018). National Survey for Wales 2017-18: <https://gov.wales/statistics-andresearch/national-survey/?lang=en>

⁹⁷ Cancer Research UK : https://www.cancerresearchuk.org/sites/default/files/obesity_tobacco_cross_over_report_final.pdf

⁹⁸ Diabetes UK (2018). Type II Diabetes rates in children and young adults under 25. <https://www.diabetes.co.uk/news/2018/nov/more-than-7,000-under-25s-in-england-and-wales-havetype-2-diabetes,-report-shows-98360464.html>

⁹⁹ Public Health Wales (2018) Case for Change: Obesity Prevention and Reduction in Wales <http://www.wales.nhs.uk/sitesplus/888/page/97832>

¹⁰⁰ Public Health Wales (2016). Making a Difference. http://www.wales.nhs.uk/sitesplus/documents/888/PHW%20Making%20a%20difference%20ES%28Web_2%29.pdf

¹⁰¹ Public Health England : <https://www.gov.uk/government/organisations/public-health-england/about>

¹⁰² Food Standards Authorities : <https://www.food.gov.uk/about-us>

¹⁰³ Public Health England : <https://www.gov.uk/government/publications/public-health-england-strategic-plan>



Figure 27. Public Health Wales Strategy 2018-2030

Equally, **Public Health Wales** have established their new strategic priorities until 2030, which link back to the government's strategic vision for the nation. (Figure 2727).

They have stated that “By 2030 we want Wales to have an environment and society in Wales in which healthy choices are the easy choices” and that they “will work to create co-ordinated action across the whole system to support healthy food choices and promote a more active Wales”.¹⁰⁴

Typically, government aspirations and public health authority strategies will be delivered through various tools – these may include consultations, campaigns, mandatory guidelines/legislation or voluntary schemes with “name & shame” tactics used to prompt action from food & drink organisations.

Funding is also used as a tool to focus innovation into healthy food products, by Welsh Government and other publicly funded bodies such as Innovate UK, who ensure that funding calls include such objectives.

For example, in October 2015, Innovate UK launched a £10 million competitive funding call for collaborative R&D projects aimed at reducing sugar, salt and fat and increasing dietary fibre in food and drink¹⁰⁵. The aim of the call was to stimulate the availability of healthier food and drink choices for consumers and open up new market opportunities for the British food industry.

In order to meet the clear challenges associated with providing affordable nutritious meals in school and in support of obesity reduction measures, the Welsh Government, in collaboration with Innovate UK, set a competition challenge in March 2017 entitled:

“How can we improve the nutritional composition of food and drink for children whilst driving down cost?”

The competition was undertaken through **the Small Business and Research Initiative (SBRI)** via competitive tender. The SBRI is a scheme designed to stimulate innovative approaches to societal challenges through collaborative working across businesses, academia and third sector organisations, with significant input from Government. It acknowledges the risks inherently present within innovation and accepts that not all projects will reach successful outcomes. Its ethos is to be a catalyst at the start of an “innovation addressing societal challenge” project's lifecycle and anticipates that further routes will/may need to be deployed to bring innovation to final market.

¹⁰⁴ Public Health Wales : <https://phw.nhs.wales/about-us/our-priorities/promoting-healthy-behaviours/>

¹⁰⁵ UK Government : <https://www.gov.uk/government/news/innovate-uk-to-fund-the-development-of-healthier-food-and-drink>

Arloesi Bwyd
Cymru

Food Innovation
Wales



Bwyd a Diod Cymru
Clwstwr Maeth-Cymru
Food & Drink Wales
Nutri-Wales Cluster



Reformulation assistance is offered by 3 Food Industry Centres who, operating under the banner of **Food Innovation Wales**¹⁰⁶, provide a range of services supporting Welsh food and drink companies, of all sizes, in reformulating products to reduce sugar, salt, fat and increase fibre. They can assist with process development, nutritional analysis, consumer testing, food production and food safety accreditations and legislative compliance.

Proactive support is offered within Wales as an Innovation Partnership in Action Programme called the **Food & Drink Wales Cluster Network**, with funding support from Welsh Government. Under the auspices of this programme the **NutriWales Cluster** has been established to focus on collaborative R&D in the area of healthy food.¹⁰⁷

Future Foods is a Welsh initiative which drives collaboration on food science, technology and nutrition R&D to improve knowledge, competitiveness and achieve sustainability and growth through development of healthy, market creating products..
www.futurefoods.wales/¹⁰⁸

Figure 28. Innovation Support Organisations in Wales

Despite these structures and initiatives, **numerous challenges** remain in the innovation of healthy foods:

1. Innovation incurs a **major cost** to businesses, which grows, the more innovative & newer to market this is;
2. Resilience to bear the **risks** involved, especially in ground breaking innovation is also a key challenge;
3. The **technical challenges** are considerable when trying to create appealing and appetising new foods and drinks which consistently meet nutritional targets, food safety standards, shelf life needs and are commercially viable;
4. The **willingness of consumers to purchase new products** - either through resistance to changing their diets and an inherent conservatism in food selection, because of affordability issues, prejudice that healthy foods won't taste appealing, lack of awareness or scepticism over the products benefits or just apathy - all present significant challenges to successfully commercial sales;
5. In addition, the very **low level of approvals** given by the EFSA (European Food Safety Authority) for health claims along with the lengthy and costly burden of proof placed upon companies to substantiate and obtain approval, are all barriers to bring products to customer attention. Even when a claim gains approval, the wording permitted by legislation surrounding that claim can be very difficult to use as an effective marketing

¹⁰⁶ Food Innovation Wales : <http://foodinnovation.wales/>

¹⁰⁷ NutriWales Cluster : <https://www.facebook.com/NutriWales/>

¹⁰⁸ Future Foods : <https://www.futurefoods.wales/>

call to action. Permitted text is often convoluted, uses scientific wording and is thus not phased in language that consumers understand and are largely underwhelming as marketing statements as a result.

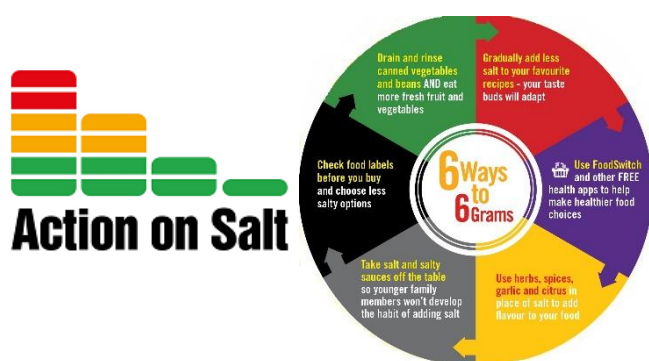
5.6.3 Existing support structures and reforms

Bodies such as **SACN (Scientific Advisory Committee on Nutrition)**¹⁰⁹ advises Public Health England (PHE) and other UK government organisations on nutrition and related health matters.

Their recommendations set the context for a wide range of food development because they have a very significant impact on the nutritional composition targets used for food innovation. These targets are frequently adopted by major retailers, food brands and food service businesses. Such companies in turn require suppliers of private label or menu items to develop products which meet the macronutrient criteria recommendations.

Effectiveness of measures to deliver the desired changes to the nation's diet and progress towards target metrics are monitored through measures such as the **National Diet & Nutrition survey**¹¹⁰ & the **Food and You survey**¹¹¹ tracks citizen's food safety awareness and issues in this sphere.

Initiatives and campaigns, targeted at both citizens and industry, are used to deliver the desired diet reform outcomes. Some recent key examples include:



The **Salt Reduction campaign**¹¹² was led by the FSA from the early 2000's and later moved to PHE, working alongside the Action on Salt (a campaign group based at Queen Mary University of London and supported by [24 expert scientific members](#)). They set a sequence of specific targets for salt contents in savoury food stuffs over these years, with the last targets being implemented in 2016.

Figure 29. Action on Salt

These salt targets have been widely adopted by the UK food industry and have resulted in the claim that "Salt reduction has been a real success here in the UK, with many food products now 20-40% lower in salt than they were 10 years ago".

¹⁰⁹ SACN : <https://www.gov.uk/government/groups/scientific-advisory-committee-on-nutrition>

¹¹⁰ UK Government : <https://www.gov.uk/government/collections/national-diet-and-nutrition-survey>

¹¹¹ UK Government <https://www.food.gov.uk/research/food-and-you/food-and-you-wave-five>

¹¹² Action on Salt : <http://www.actiononsalt.org.uk/uk-20salt-20reduction-20programme/145617.html/>



Figure 30. Know Your Numbers

In 2018, PHE launched their **Know Your Numbers campaign**¹¹³ – this outlined the target number of calories desirable to be consumed at each per meal.

This has had a significant effect on product innovation in the UK and so on sale in Wales, with ranges of both prepared meals designed to meet the various targets and healthier, calorie counted snacks which are promoted as less than 100 calories per portion.

These joined well established public information campaigns such as **5 A Day**¹¹⁴ – promoting the increased consumption of fruit & vegetables to meet World Health Organisation recommendations to eat 400g, and the **Eatwell Guide**¹¹⁵ which outlines the proportionate components of a healthy, balanced diet.

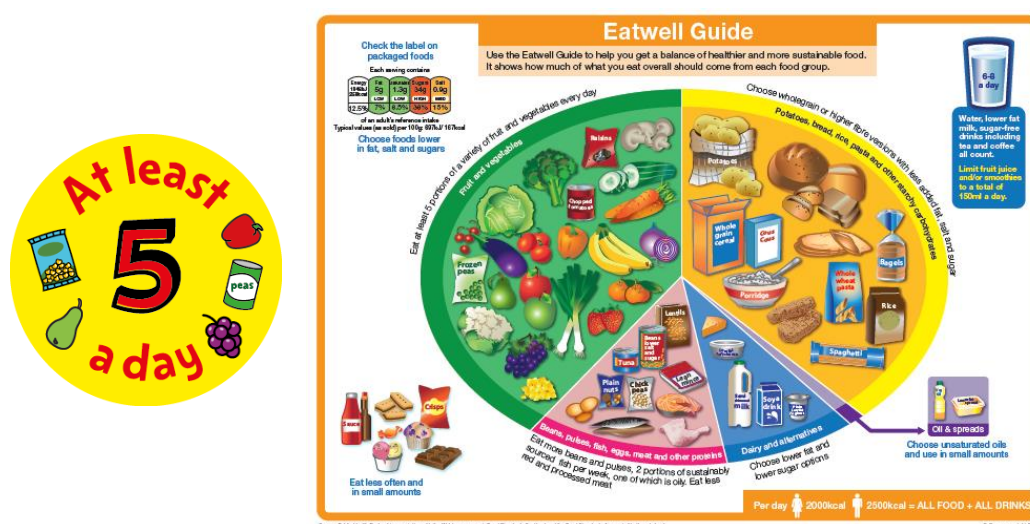


Figure 31. The “5 A Day” logo for use in marketing materials & on pack and the Eatwell Guide as updated in 2016.

On 6th April 2018, the **Soft Drinks Industry Levy**¹¹⁶ (also known as the Sugar Tax) was introduced, having been announced by the UK Government in March 2016, giving the industry two years to prepare for the levy. The levy was introduced as part of the plan to tackle childhood obesity. Even before the introduction of the levy, it was estimated that over 50% of soft drinks manufacturers had reformulated their drinks.

The industry body, British Soft Drinks Association, states that soft drinks is likely to be the only category to achieve Public Health England’s calorie reduction target of 20% by 2020¹¹⁷

¹¹³ Know Your Numbers : <https://www.nhs.uk/oneyou/for-your-body/eat-better/keep-track-of-calories-400-600-600/>

¹¹⁴ 5 A Day : NHS (National Health Service) : <https://www.nhs.uk/live-well/eat-well/why-5-a-day/>

¹¹⁵ Eatwell Guide : <https://www.nutrition.org.uk/healthyliving/healthydiet/eatwell.html>

¹¹⁶ UK Government : <https://www.gov.uk/government/news/soft-drinks-industry-levy-comes-into-effect>

¹¹⁷ British Soft Drinks Association : <https://www.britishsoftdrinks.com/Position-Statements/soft-drinks-tax>

A separate campaign was launched by the Public Health bodies to reduce sugar in 10 categories of products by 20% by 2020. This has had a significant effect on the product formulations from many manufacturers. Indeed, because a 20% reduction is insufficient under EU nutritional claims regulations to trigger a Reduced Sugar claim, several companies have taken reduction levels to 30% which is the claim trigger threshold.



In September of 2019, the effectiveness of this campaign was reported in the **Sugar Reduction Progress Report**¹¹⁸.

This showed continued progress in 8 of the 10 product categories involved as illustrated in Figure 32.

Figure 32. Sugar Reduction Progress Report 2019

Alongside the Know Your Numbers campaign, Eatwell Plate and Sugar Reduction initiative, the UK's leading confectionery companies have come together in an initiative "**Be Treatwise**"¹¹⁹ which aims to help families keep treats special. The companies will collaborate with family decision makers and a panel of independent experts to identify possible solutions that will help parents and grandparents when it comes to treating, with the aim to trial at least one new initiative in market.

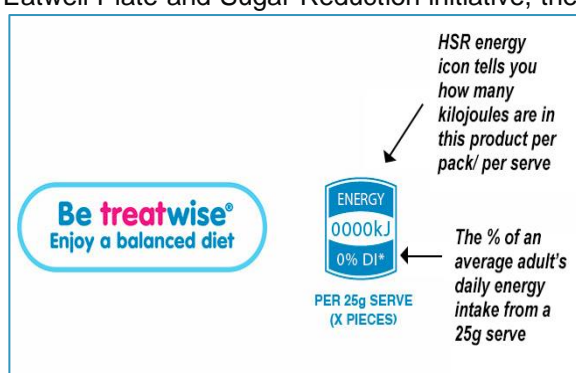


Figure 33. Be treatwise information campaign

5.6.4 Overall region/country trends

As well as aiming to reduce the intakes of substances which can be injurious to health, two new recommendations were made by the 2018 SACN report related to components of diet that should be increased - these were **Vitamin D & Dietary Fibre**.

It has been identified that certain groups within Britain are at risk of Vitamin D deficiency, especially in the winter months.¹²⁰

¹¹⁸ UK Government : <https://www.gov.uk/government/publications/sugar-reduction-progress-between-2015-and-2018>

¹¹⁹ Treat wise campaign: <https://betreatwise.net/>

¹²⁰ Vitamin D Guidance : <https://www.nhs.uk/news/food-and-diet/the-new-guidelines-on-vitamin-d-what-you-need-to-know/> and <https://gov.wales/vitamin-d-intake-revised-guidelines-whc2016043>



Figure 34. Vitamin D Mushroom (example of new healthy product innovation)

Whilst the advice speaks about dietary supplements as gaining sufficient levels of Vitamin D from food alone can be problematic.

There has been a response from the food industry in bringing foods with elevated Vitamin D levels to market – mushrooms being a key example, which were the result of an intensive research, breeding and growing project.

One key trend is the effort to get various stakeholders all engaged in the **education of citizens**, providing them with inspiration, motivation along with information and resources which will allow them to make well-informed lifestyle and diet choices which can be maintained in the long term.

Stakeholders range from the public bodies outlined above to charities, trade bodies, academic collaborations, the media and businesses.

So, for example, the main UK body representing food and drink manufacturing is the **FDF**¹²¹ (**Food & Drink Federation**). Health and well-being through diet choices is a key policy area for the FDF, which has established a Diet and Health Committee to work with Government, regulators, and others to find solutions to the diet and health challenge in the UK.

In 2018, FDF published its report “**Feeding Change**”¹²². The report highlights the steps which have been taken by food and drink manufacturers to reformulate products to reduce salt, sugar, fats. According to the report, soft drinks companies in the UK have reduced sugars in their products by 19% between 2013 and 2018.

There has been a major upsurge in **Plant Based Foods** brought to market in 2019, spurred on by activism from vegan associations and charities who promote plant-based diets and lifestyles.

Though activities such as **Veganuary**¹²³ which launched in 2014 and asks people to sign up to eat only vegan compatible foods for 31 days in January, with the aim of converting some to permanently eating vegan. By 2019 it had grown to 250,000 participants internationally, with the plan for 2020 launched.¹²⁴

¹²¹ Food and Drink Federation www.fdf.org.uk

¹²² Food and Drink Federation : Feeding Change : https://www.fdf.org.uk/corporate_pubs/feeding-change-report.pdf

¹²³ <https://veganuary.com/about/>

¹²⁴ <https://veganuary.com/blog/veganuary-2019-the-results-are-in/>

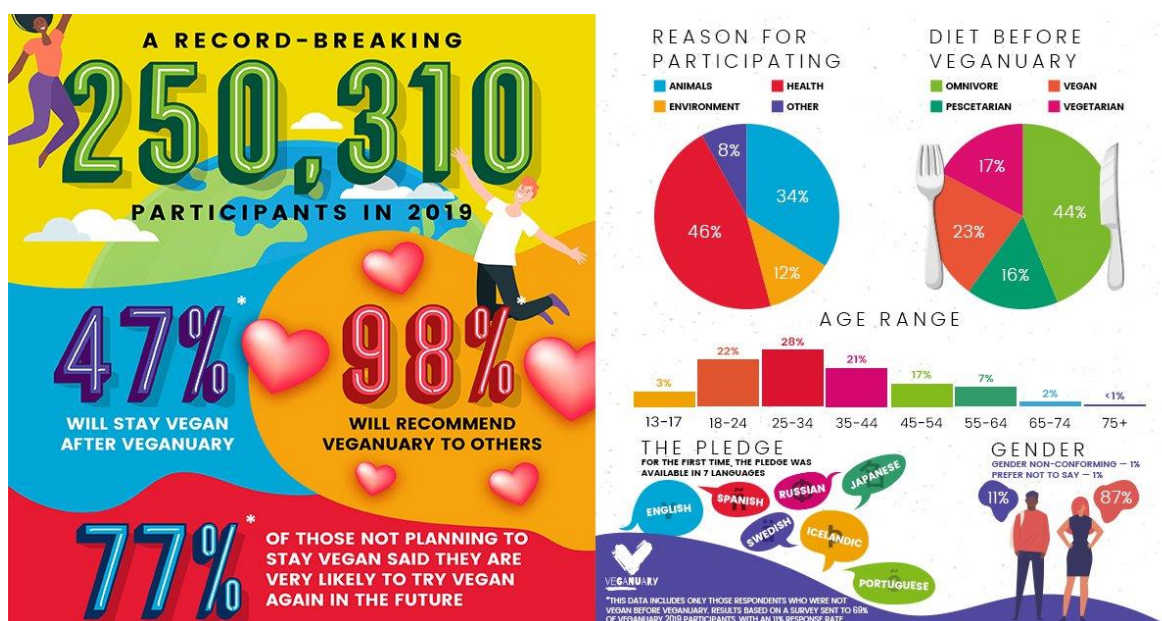


Figure 35. Veganuary statistics after their January 2019 campaign

Whilst this is still a relatively small number of people who took the challenge, the **vegan lifestyle** has captured the imagination of many and spawned a huge range of products to be launched by the major retailers (for example **Plant Kitchen from M&S**¹²⁵ and **Wicked from Tesco**¹²⁶), the creation of vegetarian only food to go outlets (**Veggie Pret**)¹²⁷, vegan restaurant along with numerous consumer facing magazine and has thus had a disproportionate effect in the market & cultural impact well beyond that suggested by the number of vegans in the UK.



¹²⁵ <https://www.marksandspencer.com/c/food-to-order/adventures-in-food/plant-kitchen>

¹²⁶ <https://www.tesco.com/groceries/en-GB/zone/wicked-kitchen>

¹²⁷ <https://www.pret.co.uk/en-gb/veggie-pret>



Figure 36. Recent initiatives in plant-based foods

A further trend is to ensure that healthy eating advice is delivered to citizens in the context of a number of actions that will contribute to their overall well-being and health.

This started as far back as 2009, with the **Change 4 Life**¹²⁸ campaign, where the healthy eating message was part of an overall campaign for an integrated approach to health and well being which also features more exercise.

More recently in 2019, PHE has launched their new initiative **A Whole Systems Approach to Obesity**¹²⁹ – in which they lay out a plan for different providers in the health sector to collaborated in a more joined up manner to maximise the benefits for well-being of citizens.



Figure 37. Integrated action plans & campaigns for health promotion in the UK

¹²⁸ NHS : Change 4 Life : <https://www.nhs.uk/change4life/about-change4life>

¹²⁹ PHE : <https://publichealthmatters.blog.gov.uk/2019/07/25/health-matters-whole-systems-approach-to-obesity/>

Sadly, all the activities and initiatives remain extremely relevant as **obesity levels remain stubbornly high** in Wales and across the rest of the UK and may well need more radical interventions.

In her October 2019 report, the departing **Chief Medical Officer**, Prof. Dame Sally Davies outlined a number of that measures that she recommends must be actively considered. These included bans on allowing food & drink to be consumed on public transport and advertising of unhealthy foods, along with prohibiting companies promoting such foods by sponsoring events, sports teams or cultural activities in schools and the wider community.¹³⁰ Whilst welcomed by interested parties such as nutritionists and dietitians, the proposals were met with accusations of the “Nanny State” and very negative comments from some sectors of the media and public.¹³¹

This example eloquently illustrates the **ongoing dilemma** of an overweight population, many of whom may wish to weigh less, but who equally do not wish to have to make any diet or lifestyle changes to achieve this.

This in itself may present **opportunities** for the ongoing development of tasty and enjoyable healthy food products which are palatable both literally, culturally and emotionally.

¹³⁰ UK Government :

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/837907/cmo-special-report-childhood-obesity-october-2019.pdf

¹³¹ Daily Mail : October 10th 2019 <https://www.dailymail.co.uk/health/article-7557743/Nanny-chief-Dame-Sally-Davies-says-Prime-Minister-Boris-Johnson-WRONG.html>

5.7 North Ireland (NIFDA)

5.7.1 Healthy food and lifestyles and innovation policies

5.7.1.1 Policy of Northern Ireland Agencies

In Northern Ireland, the food standards association is responsible for nutrition policy in Northern Ireland. The most important policies regarding healthy food, are those that concern children. The Department of Education (DE) and the Department of Health, Social Services and Public Safety (DHSSPS) have, therefore been working with schools, key partner organisations and agencies over the last number of years to improve the nutritional standard of the food that is provided in schools and to encourage, promote and support children and young people to make healthy food choices¹³².

In 2009, the Departments drafted an overarching Food in Schools Policy advocating a 'whole-school approach' to all food provided in a school, promoting healthy eating among children and young people at school and developing skills and knowledge to encourage and support healthy eating outside of school. The draft policy was subject to a three-month public consultation. There was a good response to the consultation with a wide range of stakeholders indicating strong support for the draft policy. It is incredibly important that Northern Ireland tackles the issue of its children being unhealthy, the policies put forward by the DE and the DHSSPS are aiding this recovery, as they work to improve the standards of the healthy eating in our schools.

Unfortunately, it is evident that Obesity in this country continues to be one of the most important public health challenges that we face. To help reduce the harm related to overweight and obesity, the Department of Health has developed the 'Fitter Future for All' framework which was launched on the 9th of March 2012¹³³.

The main aim of this framework is to empower and inspire the people of Northern Ireland to make healthy choices, with their physical activity and more importantly their diets.

5.7.1.2 The Role of agencies

A number of measures have been taken by the Department of Health to quantify/ensure that healthy lifestyles are being taken seriously in Northern Ireland.

Health Survey Northern Ireland is a department of health survey that runs every year on a continuous basis. The survey covers a range of health topics that are important to the lives of people in Northern Ireland today. It has been running from April 2010, if you were to look at the trends of the survey for the years 2017/2018, you will see that the percentage of fruit and vegetables consumed in a day are recorded at as high a percentage as 74% for fruit and 81% for vegetables.

At the beginning I referenced the Food Standards Agency (FSA), this agency has been developing a research project to enable us to focus on our food future. This research was commissioned to add to a growing evidence base on UK consumers' views of the world we live in, where we are headed, and what we want to see from Our Food Future¹³⁴.

¹³²<https://www.education-ni.gov.uk/sites/default/files/publications/de/healthy-%20food-for-healthy-outcomes---food-in-schools-policy---english-version.pdf>

¹³³ <https://www.health-ni.gov.uk/articles/obesity-prevention>

¹³⁴ <https://www.food.gov.uk/research/research-projects/our-food-future>

5.7.2 Measuring a healthy lifestyle

The research was developed in an iterative fashion across:

- a scoping exercise, consisting of an online quantitative survey of 1,383 UK participants, and online qualitative forum research with 22 participants
- a deliberative dialogue involving a total of 63 participants across London, Cardiff, Edinburgh and Belfast – with participants engaging in two in-person workshops in each location

A range of stimuli and perspective-taking exercises were used to help encourage and inspire debate. This included the use of 'scenario' exercises in which participants were asked to imagine living in four very different projections of Our Food Future – in order to help challenge assumptions, identify priorities, and encourage participants to consider the implications of differing trade-offs within and between the scenarios.

5.7.3 Innovation Tools

In regard to innovation, a £3Million food innovation centre has been opened in Northern Ireland, designed to help especially small businesses and artisans develop new products for consumers. Innovative kitchens are provided to help participating companies to convert ideas to product concepts¹³⁵.

The Local government agency Invest NI is working to facilitate more activity in this area by introducing financial support for collaborative programmes and knowledge transfer activity. Funding is the single most important element in the Innovation equation. Local government address this by providing mentoring and knowledge transfer for business. Supported either through direct financial provision or delivered via a third-party specialist support provider

Through the Invest NI agency the local food manufactures are being encouraged to adopt strategies that recognise key drivers such as new regulations, and the growing consumer demand for healthy foods.

These issues can be subdivided into, Consumer preference drivers based on the perceived health benefit return economic drivers of creating new jobs and better-quality jobs. In addition, the UK government is embracing tax benefits as a tool to stimulate more investment for early adopters of new technologies.

5.7.4 Existing support structures and reforms

The most interesting and promising support structures for healthy eating and healthy lifestyles can be seen in Northern Ireland's schools. The nutritional standards ensure there are more fruit and vegetables available, that free fresh drinking water is accessible and that many high fats and deep-fried foods are restricted. In addition, schools are not now permitted to serve high fat, sugar

¹³⁵<https://www.foodmanufacture.co.uk/Article/2015/05/27/Northern-Ireland-gains-3M-food-innovation-centre>

and salted snacks such as crisps, sweets, chocolate and sugary drinks. These have been replaced with healthier choices such as fruit, bread-based snacks, milk and water.

The eating habits of primary school children are being changed. A recent Northern Ireland survey in primary schools found an increase in the numbers of children meeting the 5 a day target (28%), and a decrease in the number of children not having any fruit or vegetables on a regular basis (7%). Similarly, there was a small decrease in the number of children eating biscuits, sweets, chocolates, crisps and fizzy drinks.

Another survey looking at the behaviour and attitudes of 11-16 year olds in Northern Ireland found that over 80% were being taught about healthy eating at school and that they felt there was a good choice of healthy food available in schools.

Support structures are also available for adults, depicting a healthy support network for all ages. Nidirect government services provides a detailed 'Eatwell guide'. The Eatwell Guide is used to show the different types of foods commonly eaten and the proportions that are recommended to achieve a healthy, balanced diet. No single food provides all the nutrients we need, so it is important to include a wide variety of foods in the diet. This website has an enormous amount of helpful, detailed information about healthy eating and how to improve your life, and certainly improve your diet by following this advice. There are also some amazing health food brands based in Northern Ireland, including: 'Heavenly Tasty Organics', 'Forest Feast', 'Suki Tea' and many more¹³⁶¹³⁷¹³⁸.

5.7.5 Overall region/country trends

From this report, it is evident that this country is in trouble with how its people handle their diets and lifestyles. However, there is support available and there are undergoing changes which are working to help the people of Northern Ireland to achieve healthy diets and healthy lifestyles.

A clear trend is the focus on school children, the focus on teaching the parents of tomorrow how to feed their own children and how to ensure that they lead a healthy lifestyle. We can see from the statistics that this focus on the children, is working. It is evident that the introduction of healthier policies is proving beneficial.

The above overview shows that there is still a lot to overcome in making Northern Ireland truly healthy. However, in as little time as a few years, if these methods continue to prosper, we could be looking at a big decrease in obesity and diet triggered diseases.

The Department of Health try to help us see a trend in not only healthy eating but a healthy lifestyle through physical activity. It is widely recognised that staying active offers huge health benefits. It protects against many of the biggest health risks like heart disease, stroke, and type 2 diabetes. It makes you feel better and can promote wellbeing and good mental health.

¹³⁶ <https://www.nidirect.gov.uk/articles/healthy-eating-adults>

¹³⁷ <https://www.investni.com/collaborative-growth-programme.html>

¹³⁸ <https://www.investni.com/support-for-business/discover-the-knowledge-transfer-partnership.html>

5.8 Ireland (NUI Galway)

5.8.1 Healthy food and lifestyles and innovation policies

Healthy food and lifestyle policies enable coordinated action across upstream areas that affect health such as legislation, taxation and organisational change. Policy changes ensure healthier and safer goods, services and public spaces and consequently contribute to healthier populations¹³⁹.

5.8.1.1 'Healthy Ireland: A Framework for Improved Health and Wellbeing 2013 – 2025

In Ireland, the Department of Health responded to Ireland's changing health and wellbeing profile by launching the Healthy Ireland Framework 2013-2025. This national framework for action aims to "increase the proportion of people who are healthy at all stages of life, reduce health inequalities, protect the public from threats to health and wellbeing and create an environment where every individual and sector of society can play their part in achieving a healthy Ireland"¹⁴⁰. Healthy Ireland policies and initiatives span across many areas of health including obesity, physical activity, sexual health, smoking, alcohol and skin cancer¹⁴¹.

The most recent of these health and lifestyle policies is the Public Alcohol Act which came into effect in 2018, under the Public Alcohol Bill 2015. This Act includes provisions for minimum price per gram of alcohol, the labelling of health warnings, energy and alcohol content on alcohol products and restrictions in relation to advertising of alcohol and sponsorship of sporting and recreational activities¹⁴². Other lifestyle policies in Ireland include 'Get Ireland Active! National Physical Activity Plan for Ireland.' This policy aims to increase physical activity levels in Ireland, decrease time spent being sedentary, encourage supportive environments for physical activity, remove barriers to being physically active and encourage cross-sectoral cooperation in order to facilitate physical activity within communities and nationwide¹⁴³. This policy is also accompanied by a national implementation plan, which was launched in 2018. This sixty point action plan outlines the work to be conducted across eight areas including public awareness, education and communications, children and young people and research, monitoring and evaluation¹⁴⁴.

In relation to nutrition, the key Irish policy document is 'A Healthy Weight for Ireland - Obesity Policy and Action Plan.' This policy takes a whole of government, whole of society approach to tackling the obesity epidemic and includes a life course approach with a focus on preventative

¹³⁹ WHO. (1986). OTTAWA CHARTER FOR HEALTH PROMOTION. *Health Promotion International*, 1(4), 405-405.

¹⁴⁰ DoH, & HI. (2013). Healthy Ireland: A Framework for Improved Health and Wellbeing 2013 – 2025. Dublin, Ireland: Department of Health. Retrieved 16th September 2019 from.

<https://health.gov.ie/wp-content/uploads/2014/03/HealthyIrelandBrochureWA2.pdf>

¹⁴¹ DoH, & HI. (2019). Healthy Ireland Policies. Retrieved 17th September 2019 from <https://www.gov.ie/en/policy-information/706608-healthy-ireland-policies/>

¹⁴² Oireachtas na hÉireann. (2018b). Public Health (Alcohol) Act 2018. Government of Ireland. Retrieved 18th September 2019 from <https://www.oireachtas.ie/en/bills/bill/2015/120/>

¹⁴³ HI. (2016a). *Get Ireland Active! National Physical Activity Plan for Ireland*. Dublin, Ireland: Department of Health. Retrieved 17th September 2019 from <https://assets.gov.ie/7563/23f51643fd1d4ad7abf529e58c8d8041.pdf>

¹⁴⁴ DoH, & HI. (2018). *National Physical Activity Plan Implementation Summary 2018*. Dublin, Ireland: Department of Health. Retrieved 18th September 2019 from <https://assets.gov.ie/27550/b4ea8775244e42289596c132feebe175.pdf>

measures against obesity¹⁴⁵. Some of the actions undertaken in relation to this policy include a code of practice for the sponsorship, promotion and advertising of food and drink, treatment guidelines for overweight and obesity, a media campaign for parents in order to provide advice on tackling dietary habits that are related to childhood obesity, a revision of national Healthy Eating guidelines for the general population and for 1-5 year old children and calorie posting on restaurant menus¹⁴⁶.

5.8.1.2 Implementation of 'A Healthy Weight for Ireland - Obesity Policy and Action Plan'

The rationale for this policy is the rising levels of overweight and obesity in Irish society, with the World Health Organisation estimating that Ireland is set to top the European league tables in relation to overweight and obesity^{147,148}. Rates of overweight and obesity have doubled in Ireland in the last twenty years¹⁴⁹. At the point of policy introduction, six in ten adults and one in four children were overweight and obese^{150 151 152}. Trends in overweight and obesity in Ireland will be discussed later.

As mentioned earlier, this policy has resulted in a number of changes to improve nutritional status in the general population. The Healthy Ireland Food Pyramid was introduced in 2016 in order to update healthy eating guidelines and provide advice for people aged five and above to protect against cardiovascular disease and cancer^{153 154}. This guide highlights foods that are essential to specific population groups such as teenagers and older adults, as well as differences in dietary needs by gender and level of activity. Practical information on portion control and guidance in relation to alcohol was also added².

¹⁴⁵ DoH, & HI. (2016). *A Healthy Weight for Ireland - Obesity Policy and Action Plan*. Dublin, Ireland: Department of Health. Retrieved 18th September 2019 from <https://assets.gov.ie/7559/2d91a3564d7e487f86a8d3fa86de67da.pdf>

¹⁴⁶ Oireachtas na hÉireann. (2019). *Combatting Obesity*. Government of Ireland. Retrieved 19th September 2019 from <https://www.gov.ie/en/policy-information/98c139-combatting-obesity/>

¹⁴⁷ DoH, & HI. (2016). *A Healthy Weight for Ireland - Obesity Policy and Action Plan*. Dublin, Ireland: Department of Health. Retrieved 18th September 2019 from <https://assets.gov.ie/7559/2d91a3564d7e487f86a8d3fa86de67da.pdf>

¹⁴⁸ WHO. (2015b). *Global Status Report on noncommunicable diseases 2014*. Geneva, Switzerland: World Health Organisation. Retrieved 19th September 2019 from https://apps.who.int/iris/bitstream/handle/10665/148114/9789241564854_eng.pdf?sequence=1

¹⁴⁹ Morgan, K., McGee, H., Watson, D., Perry, I., & Barry, M. (2008). *SLAN 2007: Survey of Lifestyle, Attitudes & Nutrition in Ireland: Main Report*. Dublin, Ireland: Royal College of Surgeons. Retrieved 18th September 2019 from <https://epubs.rcsi.ie/cgi/viewcontent.cgi?referer=&httpsredir=1&article=1002&context=psycholrep>

¹⁵⁰ DoH, & HI. (2013). *Healthy Ireland: A Framework for Improved Health and Wellbeing 2013 – 2025*. Dublin, Ireland: Department of Health. Retrieved 16th September 2019 from <https://health.gov.ie/wp-content/uploads/2014/03/HealthyIrelandBrochureWA2.pdf>

¹⁵¹ Layte, R., & McCrory, C. (2009). *Growing Up in Ireland – Overweight and Obesity among 9-year-olds. Report 2*. Dublin, Ireland: Economic & Social Institute. Retrieved 18th September 2019 from <https://www.esri.ie/system/files?file=media/file-uploads/2015-07/BKMNEXT211.pdf>

¹⁵² Layte, R., & McCrory, C. (2011). *Growing Up in Ireland – Key Findings: Infant Cohort (at 3 years)*. Dublin, Ireland: Economic & Social Institute. Retrieved 18th September 2019 from <https://www.growingup.ie/pubs/OPEA122.pdf>

¹⁵³ FSAI, & HI. (2019). *Healthy eating, food safety and food legislation; A guide supporting the Healthy Ireland Food Pyramid*. Dublin, Ireland: Food Safety Authority of Ireland. Retrieved 18th September 2019 from https://www.fsai.ie/news_centre/press_releases/healthy_eating_guidelines_28012019.html

¹⁵⁴ HI. (2016b). *Healthy Food for Life; The Food Pyramid guide to every day food choices for adults, teenagers and children aged five and over*. Dublin, Ireland: Department of Health. Retrieved 17th September 2019 from <https://assets.gov.ie/7649/3049964a47cb405fa20ea8d96bf50c91.pdf>

Healthy Ireland also operates within the Health Service Executive (HSE: national health service) in Ireland with multi-disciplinary national teams responsible for co-ordinating a coherent and comprehensive health service response to reducing the burden of chronic diseases. One of the national priority programmes established to improve the health and wellbeing of the population is the Healthy Eating and Active Living Programme (HEAL). This was established for the purpose of improving health and wellbeing among service users, staff and the general population, specifically by mobilising the health services to improve diet, physical activity levels and rates of healthy weight among its service users and visitors. The HEAL also developed the HSE Vending Policy, which governs all vending machines on HSE premises, and all premises funded by the HSE. Regulations under this policy include a 200 kilocalorie limit on snack foods (with the exception of dried fruit, nuts and seeds), the prohibition of all sugar sweetened beverages and calorie labelling per product¹⁵⁵.

In response to the call for calorie posting on menus, the HSE implemented a policy whereby all food and beverage outlets on their premises must include calorie posting on menus. The HSE is one of the largest buyers of food products in the country and employs over 100,000 staff. Therefore, such changes have the potential to affect population health. This policy was implemented with the purpose of meeting the fourth goal of the Healthy Ireland framework which aims to create supportive environments for the Irish population to be healthy. The roll-out of mandatory calorie posting in food outlets nationally is also in the pipeline with the Irish Minister for Health planning to introduce relevant legislation later this year¹⁵⁶. An evaluation of the implementation of *voluntary* calorie posting in food service businesses showed uptake to be poor across the country. Compliance in fast food restaurants was highest and qualitative data suggested that this may be due to the standardised nature of menus in these outlets. If mandatory calorie posting were to be adopted into legislation for all food outlets, the need for financial support, detailed nutritional information, training from professionals and simple methods for calculating calories must be addressed¹⁵⁷.

The life-course approach within Healthy Ireland and the recognition of establishing healthy habits early in life has led to the development of The National Healthy Childhood Programme by Healthy Ireland and the HSE. Within this strategy is the Nurture Programme which aims to promote health in children by developing new resources and revising current resources, including those related to breastfeeding, bottle-feeding, weaning and healthy weight management¹⁵⁸.

In relation to schools, Healthy Ireland have also produced 'Nutrition Standards for School Meals,' in response to the Healthy Ireland obesity action plan. These guidelines apply to the School Meals (Local Projects) Scheme which aims to provide regular, nutritious meals for children who may be

¹⁵⁵ HSE (2019). *HSE Vending Policy*. Dublin, Ireland: Health Service Executive. Retrieved 24th September 2019 from <https://www.hse.ie/eng/about/who/healthwellbeing/our-priority-programmes/heal/healthier-vending/hse-vending-policy-2019.pdf>

¹⁵⁶ Digby, M. C. (2019). Restaurant menus must display calorie counts under new proposals. Retrieved 16th September 2019 from <https://www.irishtimes.com/life-and-style/food-and-drink/restaurant-menus-must-display-calorie-counts-under-new-proposals-1.3808080>

¹⁵⁷ Geaney, F., Kelly, C., Scotto Di Marrazzo, J., Gilgan, L. M., M., & Perry, I. J. (2015). *Evaluation of the uptake of voluntary calorie posting on menus in Ireland. A report for the Department of Health, October 2015*. Cork, Ireland: University College Cork, Ireland. Retrieved 17th September 2019 from <https://health.gov.ie/wp-content/uploads/2016/02/Evaluation-of-the-uptake-of-voluntary-calorie-posting-on-menus-in-Ireland.pdf>

¹⁵⁸ DCYA, HI, & HSE. (2016). *The Nurture Programme; Infant Health and Wellbeing*. Retrieved 17th September 2019 from <https://www.hse.ie/eng/health/child/nurture/nurturebrochure.pdf>

unable to access good quality food. These standards are based on the Healthy Food Pyramid and since January 2018, all food provided under this scheme must comply with these standards¹⁵⁹.

5.8.1.3 Food for Health Action Plan

This action plan was developed by the Irish Department of Jobs, Enterprise and Innovation with the vision of contributing to the Department of Agriculture, Food and the Marine's Food Harvest 2020, a strategy that was developed in collaboration with the food industry. One of the main visions of this policy is to increase awareness of nutrition amongst the public and to subsequently improve population health. It focuses on strategic investment in research in order to drive innovation within the food sector and enable it to achieve its full potential¹⁶⁰.

5.8.2 Innovation Tools

Innovation in the food industry is driven by a number of tools and policies. Enterprise Ireland run an Innovation Partnership Programme that enables companies to access financial aid as well as the expertise and resources that higher institutions in Ireland can offer in terms of product development and services¹⁶¹. Horizon 2020, an EU Research and Innovation support programme, is another tool that provides funding to Irish organisations. One of their key themes is 'Food & Healthy Diet'¹⁶².

From a governmental perspective, the Department of Farming, Agriculture and the Marine (DAFM) have developed the Food Wise 2025 strategy. This is a ten-year plan for the Irish Agri-food sector. It recommends that coordination between research institutions, industry and state agencies needs to be improved to aid the delivery of research that will in turn help to deliver commercial outputs and products. It also recommends that there is a need for Agri-Food companies to improve their capacity to absorb research and innovation outputs from research bodies¹⁶³.

Currently, Ireland has an established network of supports for innovation in the food sector including state bodies such as Teagasc, regional food hubs and Bord Bia. Teagasc is the national body responsible for providing integrated food and agricultural research, advisory and training services to the agriculture and food industry. Teagasc which is responsible for delivering on a large part of the Food Wise 2025, aids innovation through the provision of research programmes and fellowships and the development of the Bridge Network. This is a technology transfer

¹⁵⁹ HI. (2017). *Healthy Ireland Survey 2017; Summary of Findings*. Dublin, Ireland: Department of Health. Retrieved 17th September 2019 from <https://health.gov.ie/wp-content/uploads/2017/10/16-048825-Healthy-Ireland-Survey-18-October-for-printing.pdf>

¹⁶⁰ DJEI. (2013). *Food for Health Action Plan*. Dublin, Ireland: Department of Justice, Enterprise and Innovation. Retrieved 17th September 2019 from <https://www.agriculture.gov.ie/media/migration/research/researchprioritactionplans/ActionPlanFoodforHealth.pdf>

¹⁶¹ EI. (2018). The Food Research & Innovation Landscape in Ireland. Retrieved 16th September 2019 from <https://www.enterprise-ireland.com/en/start-a-business-in-ireland/food-investment-from-outside-ireland/why-ireland/food-research-and-innovation/food-research-innovation.html>

¹⁶² EI. (n.d.). Horizon 2020 Ireland. Retrieved 17th September 2019 from <https://www.horizon2020.ie/>

¹⁶³ DAFM. (2015). *Local Roots Global Reach; FoodWise2025; A 10-year vision for the agri-food industry*. Dublin, Ireland: Department of Agriculture, Farming and the Marine. Retrieved 16th September 2019 from <https://www.agriculture.gov.ie/media/migration/foodindustrydevelopmenttrademarkets/agri-foodandtheeconomy/foodwise2025/report/FoodWise2025.pdf>

consortium that aims to support innovation by promoting collaboration and by providing a means by which knowledge can be shared¹⁶⁴.

Regional food clusters such as The Food Hub in Co. Leitrim has also been instrumental in helping start-up and medium sized food business to collaborate in designed food production units or support each other through working as a cluster of companies¹⁶⁵.

Bord Bia, the government-established Irish Food Board aids innovation through 'The Food Academy' which provides workshop style training through Supervalu, a supermarket retail chain. This initiative enables food business operators, particularly Irish Artisan food business to be guided by state agencies, local enterprise offices, food producers and retailers through the start-up process and an opportunity to trial their products in a Supervalu store, with over 300 small food producers currently selling their products in store¹⁶⁶.

5.8.3 Existing support structures and reforms

Support structures in place to improve nutrition awareness and knowledge among consumers, include guidance in relation to food labelling. In Ireland, food labelling policy is governed by Regulation (EU) No 1169/2011¹⁶⁷. The Food Safety Authority (FSAI) of Ireland have developed a comprehensive guide to aid consumers in understanding information on prepacked food¹⁶⁸. Resources on food labelling have also been developed by *safe food* in order to teach post-primary school students food labelling requirements, voluntary labelling and health and nutrition claims. These resources include an activity sheet, classroom slides and teacher's notes which were developed in conjunction with the FSAI, the Irish Institute for Nutrition and Dietetics and input from a teacher¹⁶⁹.

In response to the obesity epidemic and policy changes, industry set about reformulating food and drink products. The Irish Business and Employers Confederation (IBEC) reported food reformulation in 15 major Food Drink Ireland member companies, including Coca Cola, Kellogg's and Nestlé. It states that average reductions in energy (1.6%), total fat (0.3%), saturated fat (10%), sodium (28%) and sugar (8%) have been made between the years 2005 and 2017¹⁷⁰. A 2016 survey conducted by the FSAI showed that overall levels of trans fatty acids in food are low (i.e. ≤2% of total fat in the product) and are continuing to drop, indicating that public health

¹⁶⁴ Teagasc. (2017). Research & Innovation. Retrieved 19th September 2019 from <https://www.teagasc.ie/about/research--innovation/>

¹⁶⁵ LCC, & LEO. (2017). *Leitrim Food Strategy 2017-2021; Plotting ambitious & sustainable growth towards a strong & vibrant food economy*. Leitrim, Ireland: Leitrim County Council. Retrieved 19th September 2019 from <https://www.localenterprise.ie/Leitrim/News/Press-Releases/Food%20Strategy%20Doc.pdf>

¹⁶⁶ Bord Bia. (n.d.). Food Academy – Bord Bia Vantage. Retrieved 17th September 2019 from <http://www.bordbiavantage.ie/business-development/irish-retail-programme-2/food-academy/>

¹⁶⁷ EU. (2011). Regulation (EU) No 1169/2011 of the European Parliament and of the Council. Retrieved 16th September 2019 from https://www.fsai.ie/uploadedFiles/Reg1169_2011.pdf

¹⁶⁸ FSAI. (2014). *Food Information on Prepacked Foods*. Dublin, Ireland: Food Safety Authority of Ireland. Retrieved 17th September 2019 from https://www.fsai.ie/legislation/food_legislation/food_information_fic/general_FIC_provisions.html#Prepacked_Foods

¹⁶⁹ safe food. (2015b). What's on a label? Retrieved 18th September 2019 from [https://www.safe food.eu/Education/Post-primary-\(ROI\)-What-s-on-a-label.aspx](https://www.safe food.eu/Education/Post-primary-(ROI)-What-s-on-a-label.aspx)

¹⁷⁰ FDI. (2019). *The evolution of food and drink in Ireland 2005-2017*. Dublin, Ireland: Food Drink Ireland, Enterprise Ireland. Retrieved 16th September 2019 from <http://www.fooddrinkireland.ie/Sectors/FDI/FDI.nsf/vPages/Publications~the-evolution-of-foodand-drink-in-ireland-2005-2017-20-02-2019!OpenDocument>

concerns in relation to trans fatty acids have been impacting on food product composition¹⁷¹. This is also reflected in the amendments to Regulation (EC) No 1925/2006 that will limit the amount of trans fat in processed and fast food from 2021¹⁷².

In relation to policy reform, Irish government have legislated a sugar tax on sugar sweetened beverages. This tax applies to sugar sweetened beverages with added sugar content between five and eight grams per 100ml, at a rate of 20 cent per litre. A second rate also applies for drinks with a sugar content of eight grams or above, at a rate of 30c per litre¹⁷³. The underlying rationale for this policy which came into effect in 2017, is related to recommendations from the WHO to limit consumption of sugar sweetened beverages and Healthy Ireland's recommendation to introduce a sugar sweetened beverage tax to reduce growing obesity rates in Ireland^{174 175}.

In response to the childhood obesity problem, the HSE and Healthy Ireland also developed the 'Eat Smart Move More' booklet with the aim of providing practical advice for parents including how to increase family physical activity, meal plans and a list of healthy alternatives for commonly consumed less healthy foods¹⁷⁶. Another nationwide initiative that aims to improve nutrition knowledge and food skills in children, is the 'Healthy Food Made Easy' initiative, which was developed for families in disadvantaged communities. Other regional initiatives that are focused on improving nutrition knowledge, cookery skills and learning to grow produce, include 'Cool Dudes,' 'Cook It, 'Incredible Edibles' and 'Food Dudes'¹⁷⁷.

Food marketing and its role in obesity has received significant attention in Ireland with a *safe food* report describing that foods marketed to pre-school children are typically high in salt, sugar and fat¹⁷⁸. *Safe food* is an all-island body, set up under the British-Irish Agreement with the aim of promoting food safety and nutrition issues across the island^{5 179}. The 'WHO Commission on Ending Childhood Obesity' calls for a reduction in the exposure of children to foods and non-

¹⁷¹ FSAI. (2016). *Survey of the trans fatty acid content in processed food products in Ireland*. Dublin, Ireland: Food Safety Authority of Ireland. Retrieved 17th September 2019 from <https://www.fsai.ie/search-results.html?searchString=Trans%20Fatty%20Acid%20Survey>

¹⁷² EU. (2019). COMMISSION REGULATION (EU) 2019/ 649 - of 24 April 2019 - amending Annex III to Regulation (EC) No 1925 / 2006 of the European Parliament and of the Council. Retrieved 16th September 2019 from <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019R0649&from=EN>

¹⁷³ Oireachtas na hÉireann. (2018a). Note on Sugar Tax. Government of Ireland. Retrieved 18th September 2019 from https://data.oireachtas.ie/ie/oireachtas/parliamentaryBudgetOffice/2018/2018-04-30_note-on-sugar-tax_en.pdf

¹⁷⁴ DoH, & HI. (2016). *A Healthy Weight for Ireland - Obesity Policy and Action Plan*. Dublin, Ireland: Department of Health. Retrieved 18th September 2019 from <https://assets.gov.ie/7559/2d91a3564d7e487f86a8d3fa86de67da.pdf>

¹⁷⁵ WHO. (2015a). *Fiscal Policies for Diet and Prevention of Noncommunicable Diseases*. Geneva, Switzerland: World Health Organisation. Retrieved 19th September 2019 from <https://apps.who.int/iris/bitstream/handle/10665/250131/9789241511247-eng.pdf?sequence=1>

¹⁷⁶ HI & HSE. (2017). *Eat Smart Move More; A Guide for Healthy Eating and Getting Active for Children*. Dublin, Ireland: Health Service Executive. Retrieved 18th September 2019 from <https://www.healthpromotion.ie/hp-files/docs/HPM00835.pdf> HSE. (2015). *HSE Policy on Calorie Posting*. Dublin, Ireland: Health Service Executive. Retrieved 17th September 2019 from <https://www.hse.ie/eng/health/hl/calorieposting/caloriepostingpolicy.pdf>

¹⁷⁷ HSE. (2018). Programmes for healthy weight and activity. Health Service Executive. Retrieved 17th September 2019 from <https://www.hse.ie/eng/health/child/healthyeating/programmes.html>

¹⁷⁸ safe food. (2015a). *Food marketing to preschool children - summary report*. Cork, Ireland: Safe food. Retrieved 18th September 2019 from <https://www.safe food.eu/Publications/Research-reports/Food-marketing-to-preschool-children.aspx>

¹⁷⁹ safe food. (n.d.). safe food | About us. Retrieved 19th September 2019 from <https://www.safe food.eu/Utility/About-Us.aspx>

alcoholic beverages that are high in salt, sugar and fat¹⁸⁰. Restrictions have been put in place through the Children's Communication Code which ensures that children directed programming does not promote an unhealthy lifestyle¹⁸¹. However, this policy does not address all media platforms and there are loopholes through which marketing still occurs. Non-governmental organisations such as the Irish Heart Foundation have responded with a nationwide 'Stop Targeting Kids' campaign, which aims to prevent various forms of marketing of unhealthy food and drink brands to children^{182 183}.

5.8.4 Overall region/country trends

Despite the initiatives, campaigns and policy reform that has been implemented in relation to food and nutrition in Ireland, *Healthy Ireland* reports that overweight and obesity among adults has risen from 60% to 62% between 2015 and 2017^{184 185 186}. However, some positive findings are evident with decreases from 15% to 9% in daily sugar sweetened beverage intake and daily consumption of five portions of fruit and vegetables increased by 11% between 2015 and 2018 among adults^{4 187}. This suggests that policies related to healthy eating such as the provision of information on healthy eating and food labelling and a tax on sugar-sweetened beverages may have had an impact. However, health inequities in relation to weight remain. Obesity rates in those from lower social class groups were 11% greater than their higher social class counterparts and those from higher social class groups were also more likely to eat five portions of fruit and vegetables per day. This pattern continues in relation to sugar-sweetened beverages, with 28% of people from lower social class groups consuming these products on a daily basis compared with 11% of higher social class groups⁴

In relation to childhood obesity, the Childhood Obesity Surveillance Initiative (COSI) demonstrates that rates of childhood obesity (2008-2015), appear to be stabilising in children aged 7 and 8 years, although they remain at a high level. However, this stabilisation of weight is not evident in children from disadvantaged schools where overweight and obesity continues to

¹⁸⁰ WHO. (2016a). *Report of the Commission on Ending Childhood Obesity*. Geneva, Switzerland: World Health Organisation. Retrieved 19th September 2019 from https://apps.who.int/iris/bitstream/handle/10665/204176/9789241510066_eng.pdf?sequence=1

¹⁸¹ BAI. (2011). *Children's Commercial Communications Code; Consultation Document*. Dublin, Ireland: Broadcasting Authority of Ireland. Retrieved September 19th 2019 from https://www.childrensrights.ie/sites/default/files/submissions_reports/files/BAI-ChildrenCommercialCommunicationsCodeConsultationDocument0811_0.pdf

¹⁸² IHF. (2017). *Stop Targeting Kids*. Irish Heart Foundation. Retrieved 18th September 2019 from <https://irishheart.ie/campaigns/stop-targeting-kids/manifesto/>

¹⁸³ WHO. (2016b). *Tackling food marketing to children in a digital world: trans-disciplinary perspectives*. Geneva, Switzerland: World Health Organisation. Retrieved 19th September 2019 from http://www.euro.who.int/__data/assets/pdf_file/0017/322226/Tackling-food-marketing-children-digital-world-trans-disciplinary-perspectives-en.pdf

¹⁸⁴ CSO. (2019). *The Wellbeing of the Nation 2017*. Retrieved 18th September 2019 from <https://www.cso.ie/en/releasesandpublications/ep/p-wbn/thewellbeingofthenation2017/hlt/>

¹⁸⁵ HI. (2015). *Healthy Ireland Survey 2015; Summary of Findings*. Dublin, Ireland: Department of Health. Retrieved 17th September from <https://www.hse.ie/eng/health/hi/hi/survey15.pdf>

¹⁸⁶ HI. (2017). *Healthy Ireland Survey 2017; Summary of Findings*. Dublin, Ireland: Department of Health. Retrieved 17th September 2019 from <https://health.gov.ie/wp-content/uploads/2017/10/16-048825-Healthy-Ireland-Survey-18-October-for-printing.pdf>

¹⁸⁷ HI. (2018). *Healthy Ireland Survey 2018; Summary of Findings*. Dublin, Ireland: Department of Health. Retrieved 17th September 2019 from <https://health.gov.ie/wp-content/uploads/2018/10/Healthy-Ireland-Survey-2018.pdf>

rise and obesity among older children (>8 years) is increasing with age¹⁸⁸. Recent data from the second wave of the National Children's Food Survey 2017/2018 (NCFS II) indicated that overweight and obesity had decreased from 25% to 22% from the first wave of this survey in 2003/2004¹⁸⁹. Other positive findings according to the WHO report on the Health Behaviours in School-Aged Children study, is that Ireland has shown some of the greatest decreases in sugar sweetened beverage and sweet consumption in Europe between the years 2002 and 2014¹⁹⁰. However, from the NCFS II survey, fruit and vegetable consumption is still well below the recommended daily amount, at an average of 3 portions per day. Food eaten outside of the home, which tends to be energy-dense, accounts for 13% of the energy content in children's diets¹.

It is difficult to determine the effect of support structures and policy reforms that have been implemented since the development of *Healthy Ireland*¹⁹¹. Evidence indicates some improvements in dietary quality among children and adults^{192 193 194}. Overweight and obesity appears to have stabilised or decreased slightly in children¹⁹⁵. In contrast, rates continue to rise in adults^{4 196}. The issue of health inequities continues to be a concern in both adults and children. This type of disparity in health equity is related to the social gradient that determines health outcomes, subsequently leaving the poorest people in the worst health¹⁹⁷. This social gradient that influences weight status and dietary quality needs to be addressed in order to ensure that all the goals of this policy can be met and an environment where all members of society can contribute towards a healthy Ireland.

¹⁸⁸ COSI. (2017). *The Childhood Obesity Surveillance Initiative (COSI) in the Republic of Ireland; Findings from 2008, 2010, 2012 and 2015*. Dublin, Ireland: The Childhood Obesity Surveillance Initiative. Retrieved September 17th 2019 from <https://www.hse.ie/eng/about/who/healthwellbeing/our-priority-programmes/health/docs/cosi-in-the-republic-of-ireland-findings-from-2008-2010-2012-and-2015.pdf>

¹⁸⁹ IUNA. (2019). *The National Children's Food Survey II*. Irish Universities Nutrition Alliance. Retrieved 17th September 2019 from <https://irp-cdn.multiscreensite.com/46a7ad27/files/uploaded/The%20National%20Children%27s%20Food%20Survey%20II%20Summary%20Report%20September%202019.pdf>

¹⁹⁰ WHO. (2017). *Adolescent obesity and related behaviours: trends and inequalities in the WHO European Region, 2002–2014*. Retrieved 19th September 2019 from http://www.euro.who.int/__data/assets/pdf_file/0019/339211/WHO_ObesityReport_2017_v3.pdf?ua=1

¹⁹¹ DoH, & HI. (2013). *Healthy Ireland: A Framework for Improved Health and Wellbeing 2013 – 2025*. Dublin, Ireland: Department of Health. Retrieved 16th September 2019 from <https://health.gov.ie/wp-content/uploads/2014/03/HealthyIrelandBrochureWA2.pdf>

¹⁹² HI. (2015). *Healthy Ireland Survey 2015; Summary of Findings*. Dublin, Ireland: Department of Health. Retrieved 17th September from <https://www.hse.ie/eng/health/hl/hi/hisurvey15.pdf>

¹⁹³ HI. (2018). *Healthy Ireland Survey 2018; Summary of Findings*. Dublin, Ireland: Department of Health. Retrieved 17th September 2019 from <https://health.gov.ie/wp-content/uploads/2018/10/Healthy-Ireland-Survey-2018.pdf>

¹⁹⁴ WHO. (2017). *Adolescent obesity and related behaviours: trends and inequalities in the WHO European Region, 2002–2014*. Retrieved 19th September 2019 from http://www.euro.who.int/__data/assets/pdf_file/0019/339211/WHO_ObesityReport_2017_v3.pdf?ua=1

¹⁹⁵ COSI. (2017). *The Childhood Obesity Surveillance Initiative (COSI) in the Republic of Ireland; Findings from 2008, 2010, 2012 and 2015*. Dublin, Ireland: The Childhood Obesity Surveillance Initiative. Retrieved September 17th 2019 from <https://www.hse.ie/eng/about/who/healthwellbeing/our-priority-programmes/health/docs/cosi-in-the-republic-of-ireland-findings-from-2008-2010-2012-and-2015.pdf>

¹⁹⁶ HI. (2017). *Healthy Ireland Survey 2017; Summary of Findings*. Dublin, Ireland: Department of Health. Retrieved 17th September 2019 from <https://health.gov.ie/wp-content/uploads/2017/10/16-048825-Healthy-Ireland-Survey-18-October-for-printing.pdf>

¹⁹⁷ Marmot, M., Friel, S., Bell, R., Houweling, T. A., & Taylor, S. (2008). Closing the gap in a generation: health equity through action on the social determinants of health. *Lancet*, 372(9650), 1661-1669.