



# POLICIES FOR HEALTHY AND SUSTAINABLE DIETS

A REVIEW OF INTERNATIONAL, EUROPEAN, AND NATIONAL DOCUMENTATION



# POLICIES FOR HEALTHY AND SUSTAINABLE DIETS

A review of International, European,  
and National documentation

onfoods

 **crea**  
Consiglio per la ricerca in agricoltura  
e l'analisi dell'economia agraria

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# ACRONYMS

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ASviS	Alliance for Sustainable Development
CIPE	Interministerial Committee for Economic Planning
CAP	Common Agricultural Policy
DPSA	Global Strategy on Diet, Physical Activity and Health
DRVs	Dietary Reference Values
EUPHA	European Public Health Association
FAO	Food and Agriculture Organization of the United Nations
FBDGs	Food-Based Dietary Guidelines
FEs	Food Environments
FoPL	Front-of-pack labels
FSN	Food Security and Nutrition
HIC	High-income Countries
HSDs	Healthy and Sustainable Diets
ICN2	Second International Conference on Nutrition
INN	National Institute for Nutrition
NCDs	Obesity/noncommunicable diseases
OHHLEP	One Health High-Level Expert Panel
OH-JPA	Quadripartite One Health Joint Plan of Action
PHN	Public Health Nutrition
SDGs	Sustainable Development Goals
SNSvS	National Strategy for Sustainable Development
UNEP	United Nations Environment Programme
WHO	World Health Organization
WOAH	World Organisation for Animal Health





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# 1. INTRODUCTION

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Achieving healthy, sustainable, and equitable diets is one of the challenges for 21st-century food systems. The definition of Healthy and Sustainable Diets (HSDs) was presented for the first time in a plenary session of the Symposium “Biodiversity and Sustainable Diets: United Against Hunger” organized, jointly by FAO and Bioversity International, in Rome in November 2010 as follows: “Sustainable Diets are those diets with low environmental impacts which contribute to food and nutrition security and to healthy life for present and future generations. Sustainable diets are protective and respectful of biodiversity and ecosystems, culturally acceptable, accessible, economically fair and affordable; nutritionally adequate, safe and healthy, while optimizing natural and human resources.” (FAO, 2012). Then, the landmark EAT - Lancet report (2019), that represents a very impactful paper on the scientific community and policy-making system, set global scientific targets for healthy diets and sustainable food production, and integrated these universal scientific targets into a common framework. However, this report did not focus on how to bring about this shift.

Dating back, the first step of studies on HSDs refers to Pedro Escudero (1934) who presented a healthy diet as one that is qualitatively complete, quantitatively sufficient, harmonious in its composition and adequate for its purpose and the individual. Gussow and Clancy (1986) described for the first time the term sustainable diet or sustainable nutrition as a diet made up of foods that are not only healthy, but that also contribute to the sustainability of the entire nutrition system. World Health Organization (WHO) in 2004 in the Global Strategy on Diet, Physical Activity and Health (DPAS) adds to the nutritional quality of food consumed the requirements related to food production and processing. More recently, HSDs have been conceived as dietary patterns that promote all dimensions of individuals’ health and wellbeing but at the same time have low environmental pressure and impact, are accessible, affordable, safe and equitable, and are culturally acceptable (FAO and WHO 2019).

*The first reference to HSDs was in 1934*

A definition of HSDs has to be based on the principle that a food can

only be considered healthy if it is also economically viable, environmentally sustainable and socially fair, going beyond the nutritional perspective. The sustainability and healthiness of diets is quite challenging since nutritionally adequate food produced with sustainable agricultural and processing techniques may not necessarily be affordable due to higher production costs. Thus, HSDs encompass several trade-offs that need to be analysed in light of the conceptual frameworks that define them. In this context, public policy, as well as community and industry actions are required to achieve HSDs (Lawrence et al., 2015). The narrative review conducted by Martinelli & Cavalli (2017) emphasises the importance of state intervention in food policies to consolidate a sustainable diet: a diet is therefore healthy and sustainable if the population has access to all stages of the system, i.e. also production, processing, marketing and consumption.

Although the importance of incorporating environmental sustainability themes into Public Health Nutrition (PHN) policy reference standards was recognised at least as far back as 1986 (Gussow and Clancy, 1986), it is relatively recently that calls for policy responses to redesign food systems to promote HSDs have gained traction and become a focus for food policy (IPCC, 2014; Lang and Barling, 2013; Lawrence et al., 2015; FAO, 2016a). The conceptual framework proposed in Figure 1 comprises four integrated dimensions, the first of which is taken from Lawrence et al., 2015, while the fourth is our own stylisation based on the Nuffield Intervention Ladder (Have et al., 2010):

1. a structure built around a bidirectional relationship mediated via the food system;
2. internal mechanisms that operate through system dynamics;
3. external interactions that influence the nature and scope of the framework within ecological parameters;
4. policy influence on the different components.

Environment and PHN coexist sharing a dynamic bidirectional relationship with the food system. In one direction (blue arrows), the environment provides the resource supply, in the form of water, energy, soil, nutrients and biodiversity, as well as the climate that influence the quantity, quality, composition, variety and safety of the food supply. The food supply and its consumption impact on PHN, as measured in terms of the population's nutritional status. In the other direction (yellow arrows), PHN has a modest influence (thinner arrow) on food demand, particularly the type and amount of food selected. Food demand, in turn, has an influence on resource demand in the form of water, energy, soil, nutrients and biodiversity. In both directions, the relationship is mediated via the food system. The food system incorporates food production, processing and packaging,

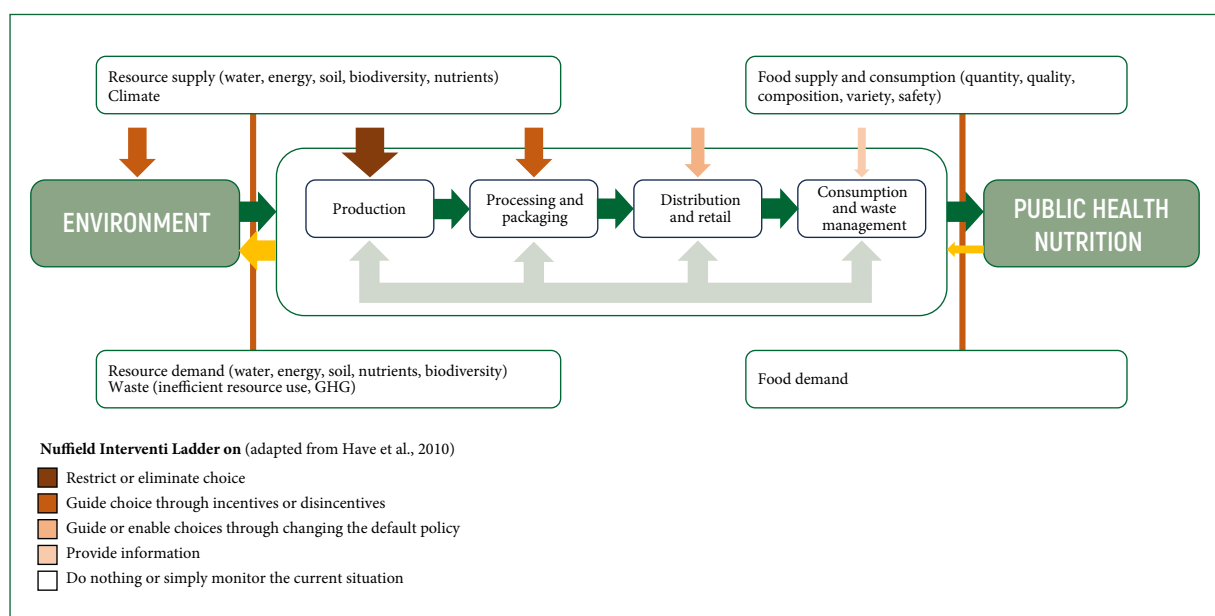
*The environmental issues are incorporated in the HSDs*

*The conceptualisation of the sustainable food system*

distribution and retail, and consumption. The application of food systems thinking to strategically plan, develop, and evaluate food and nutrition policy consists of four interlinked subcomponents. More specifically, a Sustainable Food System “is a food system that ensures food security and nutrition (FSN) for all in such a way that the economic, social and environmental bases to generate FSN of future generations are not compromised” (HLPE, 2014), thus encompassing (1) activities related to the production, processing, distribution, preparation and consumption of food and (2) the outcomes of these activities contribution to food security (food availability, access to food, food utilization, and food stability) (Ingram and Brklacich, 2006). The outcomes of food system contribute to food security, but that not all food-secure diets are sustainable. Yet, all sustainable diets should be food-secure (Berry EM, 2019). In this context, policies (orange arrows) act largely on food production in form of (dis)incentives, less on processing and packaging and distribution in form of traceability and labelling, even less on consumption in form of education and information. In the family of production policies, (agro)environmental policies are more and more relevant.

Actions to improve healthy diets show strong evidence on pricing strategies and school public food procurement policies (Martinelli and Cavalli, 2017). On the other hand, mass media campaigns do not show strong evidence on the effectiveness and changing food environment in terms of food availability or accessibility inconclusive evidence. While prevention

FIGURE 1.1 - **CONCEPTUAL FRAMEWORK OF THE ENVIRONMENT - PUBLIC HEALTH NUTRITION RELATIONSHIP.** Adapted from Lawrence et al., 2015



and management of conflicts of interest in food policies and programs within countries are necessary, making use of a social marketing approach could enhance mass media campaigns for the adoption of HSDs.

This paper aims to analyse the most relevant institutional documents or guidelines produced at the International, European, and National (Italy) level on the topic of HSDs. In particular, the international documentation, i.e. produced by international agencies or bodies, presents numerous reports and guiding principles, which do not entail binding commitments for States but provide indications for implementation at different institutional levels. The International section provides mainly a general framework of definitions, aims and technical settings of the issue of HSDs, but not really facing the social and economic issues related to them. The European section is mainly built on institutional and professional reports, and a few scientific papers that give some recommendations on how to reach healthy and sustainable diets, with more attention than the international level on the trade-offs often occurring between healthy diets and socio-economic aspects of food and nutrition. The Italian level analyses the national guides that underline how HSDs are intrinsically linked to sustainable food systems via their relationships to health, environment, culture, and economy.

TABLE 1.1 - **CONSULTED DOCUMENTS FOR THE REVIEW OF POLICIES IMPACTING HSDS**

Document	Level
2012 - FAO - Sustainable diets and biodiversity	International
2016 - FAO - Influencing food environments for healthy diets	International
2016 - FAO & FCNR - Plates, pyramids, planet	International
2016 - FAO - Voluntary guidelines for mainstreaming biodiversity	International
2019 - EAT Lancet - Food in the Anthropocene the EAT	International
2019 - FAO - The state of world's biodiversity for food and agriculture	International
2019 - FAO & WHO - Sustainable Healthy Diets, guiding principles	International
2021 - BCFN - OneHealth, un nuovo approccio al cibo	International
2021 - BCFN - Un'alimentazione che rispetta la salute del pianeta e delle persone	International
2017 - Danish University Colleges - Healthy and Sustainable Diets for European Countries	European
2019 - IPES Food - Towards a common food policy for the EU	European
2020 - European Commission - From farm to Fork	European
2021 - JPI-HDHL Policy Evaluation Network - The Healthy Food Environment Policy Index: Food EPI	European
2023 - SAPEA - Towards sustainable food consumption	European
2015 - MIUR - Linee Guida per l'educazione alimentare	National (IT)
2018 - CREA - Linee Guida per una Sana Alimentazione (dossier scientifico)	National (IT)
2018 - CREA - Linee Guida per una Sana Alimentazione - Revisione 2018	National (IT)
2019 - MDS - Modelli di diete sane e sostenibili a partire dalle diete tradizionali	National (IT)

We have selected institutional documentation that explicitly refers to HSDs, aware that this selection excludes the enormous amount of knowledge and practices produced and disseminated by civic and NGO groups, local governments, action groups and movements. The choice is motivated by the fact that this document is a preliminary step compared to more detailed research that will be carried out on national legislation impacting on HSDs, for which it was necessary to identify the policy domains through which they are articulated. Indeed, the final section provides an analysis of the policy domains that have been discussed and organised around the implementation of HSDs. Having chosen to deal with policies for HSDs, it was indeed necessary to analyse the documents produced by those bodies that steer and orient policy decisions or implement them. The list of documents consulted is contained in Table 1.1.



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## 2. INTERNATIONAL LEVEL

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Within the scope of international documentation, i.e., produced by international agencies or bodies, there are numerous reports and guiding principles which do not imply binding commitments on States. In some cases, these are publications in which institutional bodies of different countries have been involved, for example in the provision of data, or which have received political acceptance at the diplomatic level. However, many of the findings set forth are derived from comparative studies between different countries. In other cases, they are global in nature, providing guidance and direction based on a wide range of knowledge about the state of nutrition in the world and the environmental impacts of food systems. Only to a lesser extent, social and economic aspects that intersect with HSDs are considered.

The main targets of this body of documents are in most cases national governments. To a minor extent, the reports target the private sector and food companies, or academia. In very few cases they are designed to be read by citizens and consumers.

### 2.1 HEALTHY & SUSTAINABLE DIETS: AN ACKNOWLEDGED DEFINITION

The International Scientific Symposium “Biodiversity and Sustainable Diets: United Against Hunger” organized jointly by Food and Agriculture Organization of the United Nations (FAO) and Bioversity International was held at FAO, in Rome, from 3 to 5 November 2010. The definition of HSDs was presented in a plenary session of the Symposium and accepted by the participants, as follows: *‘Sustainable Diets are those diets with low environmental impacts which contribute to food and nutrition security and to healthy life for present and future generations. Sustainable diets are protective and respectful of biodiversity and ecosystems, culturally acceptable, accessible, economically fair and affordable; nutritionally adequate, safe and*

*FAO defines HSDs*

healthy; while optimizing natural and human resources.’ This definition is reported in the document ‘**Sustainable diets and biodiversity – Directions and solutions for policy, research and action**’ (2012).

## 2.2 STRATEGIES FOR A GREAT FOOD TRANSFORMATION

Internationally, the most impactful paper on the scientific community and policy-making system is **Food in the Anthropocene: the EAT–Lancet Commission on healthy diets from sustainable food systems**, published by Willett et al. in 2019. By assessing the existing scientific evidence, the EAT-Lancet Commission (37 leading scientists from 16 countries) developed global scientific targets for healthy diets and sustainable food production and integrated these universal scientific targets into a common framework, the *safe operating space for food systems*, so that planetary health diets (both healthy and environmentally sustainable) could be identified. This safe operating space is defined by scientific targets for intakes of specific food groups to optimize human health and scientific targets for sustainable food production to ensure a stable Earth system. The Commission proposes that this framework is universal for all food cultures and production systems in the world, with a high potential of local adaptation and scalability. Application of this framework to future projections of world development indicates that food systems can provide healthy diets (i.e., reference diet) for an estimated global population of about 10 billion people by 2050 and remain within a safe operating space. The report focuses mainly on environmental sustainability of food production and health consequences of final consumption.

*EAT-Lancet  
Commission defines  
HSDs common  
framework*

The Commission identifies five strategies for a Great Food Transformation:

1. **Seek international and national commitment to shift toward healthy diets:** The scientific targets set out by this Commission provide guidance for the necessary shift, recommending increased consumption of plant-based foods – including fruits, vegetables, nuts, seeds, and whole grains – while in many settings substantially limiting animal source foods. This concerted commitment can be achieved by making healthy foods more available, accessible, and affordable in place of unhealthier alternatives, improving information and food marketing, investing in public health information and sustainability education, implementing food-based dietary guidelines, and using health care services to deliver dietary advice and interventions.
2. **Reorient agricultural priorities from producing high quantities of**



**food to producing healthy food:** Agriculture and fisheries must not only produce enough calories to feed a growing global population but must also produce a diversity of foods that nurture human health and support environmental sustainability. Alongside dietary shifts, agricultural and marine policies must be reoriented toward a variety of nutritious foods that enhance biodiversity rather than aiming for increased volume of a few crops, much of which is now used for animal feed. Livestock production needs to be considered in specific contexts.

- 3. Sustainably intensify food production to increase high-quality output:** The current global food system requires a new agricultural revolution that is based on sustainable intensification and driven by sustainability and system innovation. This would entail at least a 75% reduction of yield gaps on current cropland, radical improvements in fertilizer and water use efficiency, recycling of phosphorus, redistribution of global use of nitrogen and phosphorus, implementing climate mitigation options including changes in crop and feed management, and enhancing biodiversity within agricultural systems. In addition, to achieve negative emissions globally according to the Paris Agreement (2015), the global food system must become a net carbon sink from 2040 onward.
- 4. Strong and coordinated governance of land and oceans:** This implies feeding humanity on existing agricultural land i.e. by implementing a zero-expansion policy of new agricultural land into natural ecosystems and species-rich forests, aiming management policies at restoring and reforesting degraded land, establishing international land use governance mechanisms, and adopting a “Half Earth” strategy for biodiversity conservation (i.e. conserve at least 80% of preindustrial species richness by protecting the remaining 50% of Earth as intact ecosystems). Moreover, there is a need to improve the management of the oceans to ensure that fisheries do not negatively impact ecosystems, fish stocks are utilized responsibly, and global aquaculture production is expanded sustainably.
- 5. At least halve food losses and waste, in line with UN Sustainable Development Goals:** Substantially reducing food losses at the production side and food waste at the consumption side is essential for the global food system to stay within a safe operating space. Both technological solutions applied along the food supply chain and implementation of public policies are required in order to achieve an overall 50% reduction in global food loss and waste as per the targets of the SDGs. Actions include improving post-harvest infrastructure,

food transport, processing, and packing, increasing collaboration along the supply chain, training and equipping producers, and educating consumers.

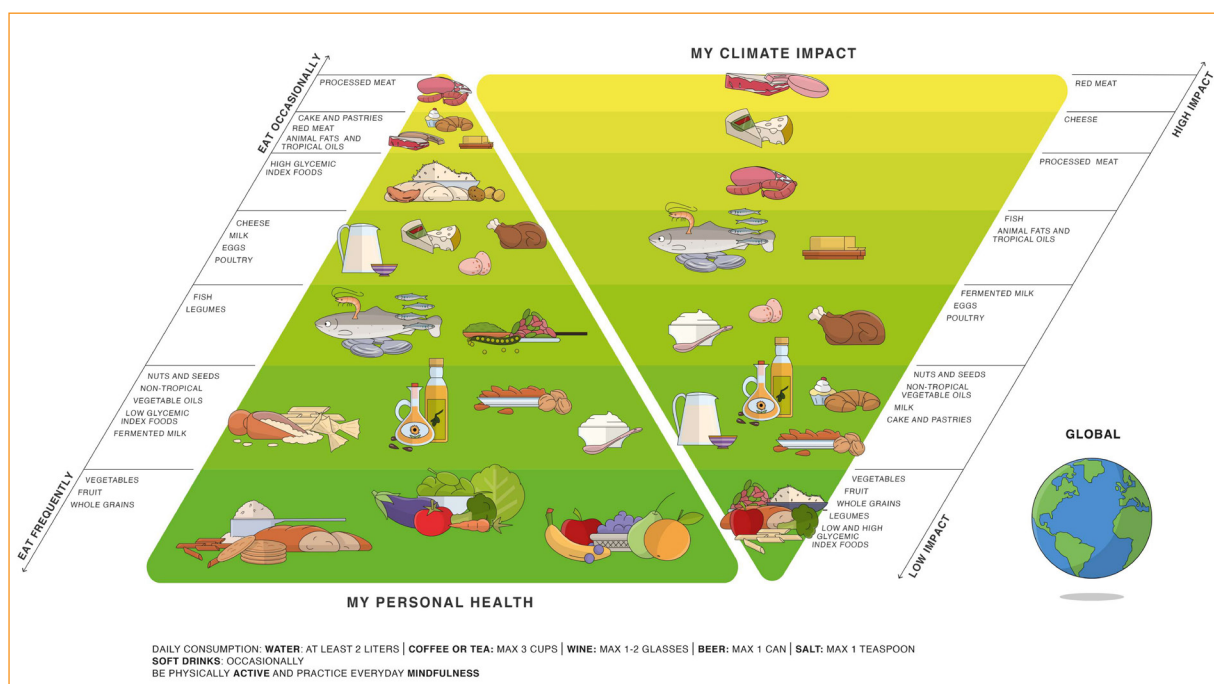
### 2.3 PYRAMIDS OF SUSTAINABILITY

The **Double Health and Climate Pyramid**, introduced by Barilla Foundation in 2016, illustrates the relationship between the impact of food on people’s health, well-being and longevity and the pressure of the food system on the environment, and more specifically on the climate. The Double Health and Climate Pyramid has been developed as a guideline for daily food choices that are healthy for humans and more sustainable for the planet. The key message is that all foods can be part of a food pattern adequate to promote human health and contribute to climate mitigation, provided that their frequency of consumption and serving sizes are appropriate. The resulting Double Pyramid of Health and Climate is proposed as a tool to inform daily food choices and encourage food patterns that are healthy for humans and sustainable for the planet.

*The relationship between the impact of food on people’s health, well-being and longevity and the pressure of the food system on the environment and climate*

In the pyramid, foods are grouped according to common nutritional characteristics and placed in one of the layers into which the pyramid is divided in ascending order, according to the recommended consumption

FIGURE 2.1 - THE DOUBLE PYRAMID. Source: Barilla Foundation, 2016



appropriate to their impact on health. All foods were categorized according to their relationship to cardiovascular disease risk.

The publication contains a globally valid Double Pyramid (Figure 2.1), plus seven Cultural Double Pyramids to account for the food specificities of different areas of the planet (Nordic countries and Canada, the United States, Latin America, the Mediterranean (see Section 4.3), East Asia, South Asia, and Africa).

In addition, the 2021 Climate Pyramid sheds light on the carbon footprint of food. It shows how products of animal origin contribute the most to climate change, compared to plant-based products and their lower impact on the environment. The Climate Pyramid is based on the Su-Eatable Life project database<sup>1</sup> and its classification of various foods based on their carbon footprint. Foods that should be consumed more often to keep us healthy generally also have a lower impact on the climate.

Furthermore, the Double Pyramid encourages changes in eating habits that are in accordance with the characteristics of the traditional Mediterranean diet, one of the recognized models of sustainable diets.

Another Barilla Foundation publication (**A diet that respects people's health and that of the Planet, 2021**) provides a definition of healthy and sustainable diets geared toward defining a basket of products recommended for their positive impact on human health and reduced contribution in terms of carbon footprint. The report states that “*diets for healthy adults include, regardless of the target culture, a large number of plant-based foods, such as fruits, vegetables, and whole grains. They include a variety of protein sources, which come mainly from nuts and legumes, but also from dairy products, fish, poultry, and eggs, and include moderate and modest consumption of red meat and foods with a high glycaemic index, such as potatoes, rice, or white bread. Other tricks can be added to these basic elements, such as, for example, preferring fresh, seasonal, and local food; avoiding overconsumption of food; reducing, reusing, and recycle food packaging*”.

*The positive impact on human health and the reduction of carbon footprint of a basket of products*

### 2.4 THE ONE HEALTH APPROACH

Promoting sustainable nutrition through the new Double Pyramid has been inspired by the concept of **One Health** by the World Health Organisation (WHO). One Health is an integrated, unifying approach to balance and optimize the health of people, animals, and the environment. It is par-

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1. <https://www.sueatablelife.eu/en.html>

ticularly important to prevent, predict, detect, and respond to global health threats. The approach mobilizes multiple sectors, disciplines, and communities at different levels of society to work together.

WHO is also working with the FAO, the United Nations Environment Programme (UNEP) and the World Organisation for Animal Health (WOAH) as a One Health Quadripartite. The Quadripartite is promoting multi-sectoral approaches to reduce health threats at the human-animal-ecosystem interface. The transformations required to prevent and mitigate the impact of current and future health challenges at global, regional, and country levels is outlined in the Quadripartite One Health Joint Plan of Action (OH-JPA) for the period 2022-2026.

*Multi-sectoral  
approaches of WHO*

The One Health High-Level Expert Panel (OHHLEP) was formed in May 2021 to advise FAO, UNEP, WHO and WOAH on One Health issues. The panel also has a role in investigating the impact of human activity on the environment and wildlife habitats, and how this drives disease threats. Critical areas include food production and distribution, urbanization and infrastructure development, international travel and trade, activities that lead to biodiversity loss and climate change, and those that put increased pressure on the natural resource base – all of which can lead to the emergence of zoonotic diseases.

The document **The One Health Definition and Principles** developed by OHHLEP (2023) provides the definition of One Health intended as an integrated and unifying approach that aims to sustainably balance and optimize the health of people, animals, and ecosystems. It recognizes the health of humans, domestic and wild animals, plants, and the wider environment (including ecosystems) are closely interlinked. Key underlying principles include: (1) equity between sectors and disciplines; (2) socio-political and multicultural parity and inclusion and engagement of communities and marginalized voices; (3) socioecological equilibrium that seeks a harmonious balance between human-animal-environment interactions, acknowledging the importance of biodiversity, access to sufficient natural space and resources, and the intrinsic value of all living things within the ecosystem; (4) stewardship and the responsibility of humans to change behaviour and adopt sustainable solutions that recognize the importance of animal welfare and the integrity of the whole ecosystem, thus securing the well-being of current and future generations; (5) transdisciplinary and multisectoral collaboration, which includes all relevant disciplines, both modern and traditional forms of knowledge and a broad representative array of perspectives.

## 2.5 FOOD ENVIRONMENTS TO PROMOTE HSDDS

Many publications, especially those published after 2016, focus on Food Environments (FEs). FEs mediate between broader food systems and individual diets, as a “interface” or “link” between food systems and diets (FAO, 2016a). Several definitions of FEs have developed over the last decade (Brug et al., 2008; Rao et al., 2007; Glanz et al., 2007; Swinburn et al., 2013; Herforth and Ahmed, 2015), reflecting not only the diversity of food environments globally but also the wide array of academic disciplines undertaking research. Nevertheless, a key commonality amongst these existing definitions is the conceptualization of the food environment in terms of the spaces within which food acquisition occurs, and the series of market-based opportunities and constraints that influence people’s food acquisition and consumption (Turner et al., 2018).

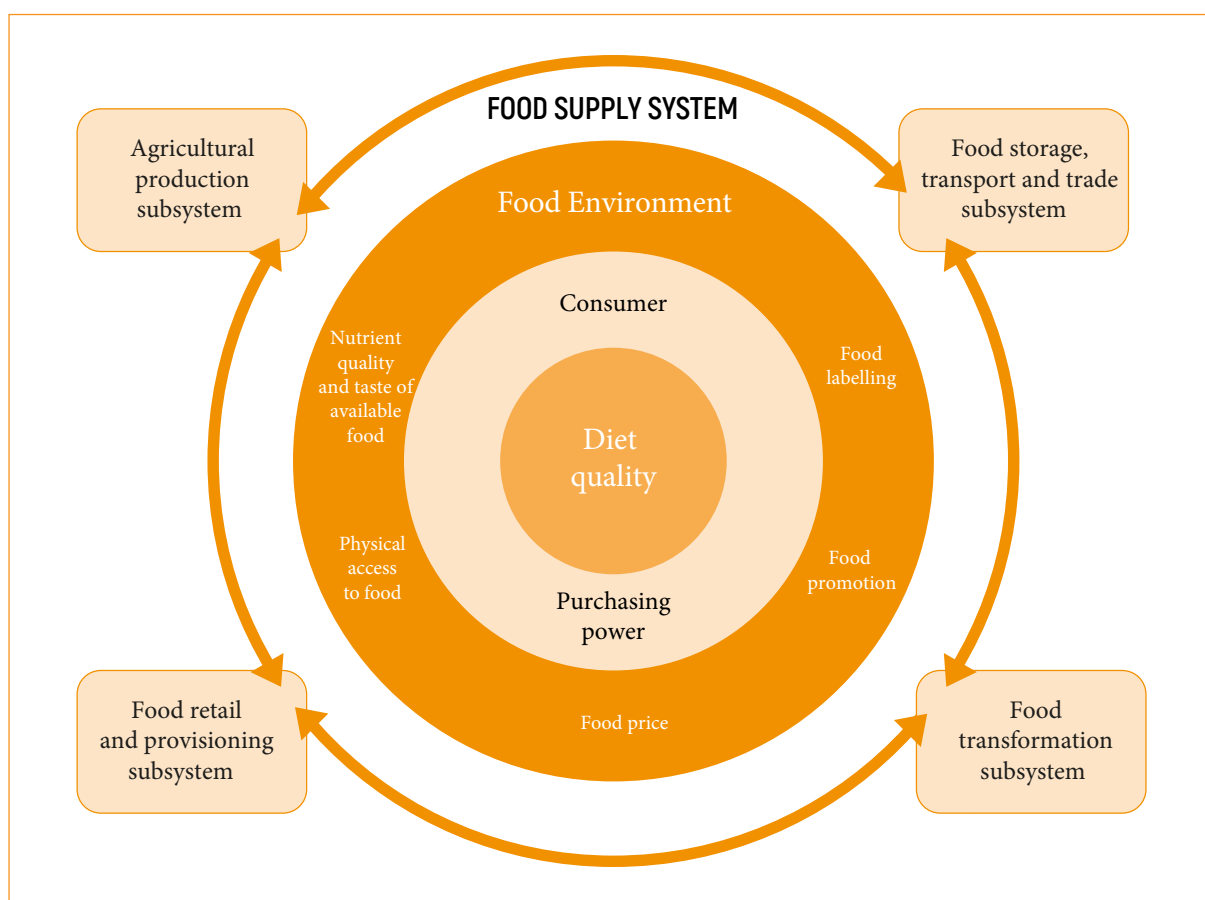
*Link between food systems and diets*

Food environments play an important role in shaping diets because they provide the choices people have when they make decisions about what to eat. A healthy food environment is one that creates the conditions that enable and encourage people to access and choose healthy diets. Practically, FEs is the range of foods in supermarkets, small retail outlets, wet markets, street food stalls, coffee shops, tea houses, school canteens, restaurants, and all the other venues where people procure and eat food. The book **Influencing food environments for Healthy Diets** (FAO, 2016a) acknowledges the connection between FEs and HSDs. At the same time, it is stated that FEs are influenced by food systems, i.e. the entire range of activities, peoples and institutions involved in the production, processing, marketing, consumption, and disposal of food. The book recalls the Second International Conference on Nutrition (ICN2), held at FAO in 2014, that called for countries to adopt a common vision for global action to eradicate hunger and end all forms of malnutrition worldwide. The ensuing ICN2 Framework for Action (FAO and WHO, 2014) includes a set of 60 recommendations, nine of which are aimed at promoting sustainable food systems and healthy diets. ICN2 stressed the importance of a food system approach – from production to processing, storage, transportation, marketing, retailing and consumption – as key to promoting healthy diets and improving nutrition, given that isolated interventions have limited impact.

*The conditions that enable and encourage people to access and choose healthy diets*

The Figure 2.2 provides a conceptual framework for explaining these and related links between food systems, food environments, consumer choices and diet (GLOPAN, 2016). FEs mitigate the impact of these sub-systems on individual diet choice and diet quality via a variety of factors, including food labelling, food promotion, food prices, physical access and nutrient quality and taste.

FIGURE 2.2 - CONCEPTUAL FRAMEWORK FOR THE LINKS BETWEEN FOOD SYSTEMS, FOOD ENVIRONMENTS AND DIET QUALITY. Adapted from GLOPAN, 2016



FEs are at the core of the report **Sustainable Healthy Diets – Guiding principles** (FAO and WHO, 2019). The guiding principles follow a holistic approach to diets. They consider international nutrition recommendations, the environmental cost of food production and consumption, and the adaptability to local social, cultural, and economic contexts. Indeed, the principles contemplate nutritional, environmental, social, cultural, and economic issues, and are instrumental in drafting guidelines (mostly, at national level) toward HSDs. Among the recommended actions, the first one is to create an enabling environment through government mechanisms, incentives and disincentives, legal framework, and regulatory instruments to promote the production, processing, distribution, labelling and marketing, and consumption of a variety of foods that contribute to HSDs. Other actions for the implementation of HSDs comprehend policy coherence, establishing a representative baseline of current diets, identifying mismatches in food supply and demand, analyzing food systems to identify potential changes, quantifying and balance potential trade-offs when considering HSDs,

*The holistic approach to diets*

making HSDs available and accessible for the most vulnerable, developing national food-based dietary guidelines, and promote capacity development strategies for behaviour change. The document recalls that in recent years two platforms have emerged to assist policy makers with comprehensive assessments and decision-making for nutrition (World Food Programme - Fill the Nutrient Gap, in 2015) and FEs (International Network for Food and Obesity/noncommunicable diseases Research, Monitoring and Action Support – INFORMAS, in 2013). The first deploys a nutrition situation analysis to identify and prioritize strategies to increase availability, affordability, and choice of nutritious foods. The INFORMAS approach assesses the implementation of food environment policies compared to international best practice to derive concrete priority actions to strengthen implementation.

### 2.6 FOOD-BASED DIETARY GUIDELINES

Food-Based Dietary Guidelines (FBDG) are a key component of a coherent food policy. They provide a clear, context-appropriate steer on how people should be eating to maintain good nutritional health and provide the basis for the development of policies intended to shift consumption patterns in healthier directions. According to FAO, National FBDG “provide context-specific advice and principles on healthy diets and lifestyles, which are rooted on sound evidence, and respond to a country’s public health and nutrition priorities, food production and consumption patterns, sociocultural influences, food composition data, and accessibility, among other factors”<sup>2</sup>. FAO states that more than 100 countries worldwide have developed food-based dietary guidelines that are adapted to their nutrition situation, food availability, culinary cultures and eating habits. In addition, countries publish food guides, often in the form of food pyramids and food plates, which are used for consumer education.

The report **Plates, pyramids and planets** (FAO & FCRN, 2019) explores whether and how countries incorporate sustainability in their FBDG. The report states that there is increasingly robust evidence to suggest that dietary patterns with low environmental impacts can also be consistent with good health. They comprise diversity, energy balance, vegetable and legumes consumption, moderation in dairy products, unsalted seeds and nuts, moderation in fish consumption, very limited consumption of food high in fat, sugar or salt, recommendation of oils and fats with Omega 3:6

*A good nutritional health to shift consumption patterns in healthier directions*

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2. <https://www.fao.org/nutrition/education/food-dietary-guidelines/background/en/>

ratio (rapeseed and olive oil), preference to tap water. The documents affirm that one important step that governments can take to signal their commitment to a more sustainable and healthy future, is to develop and disseminate food based dietary guidelines that embed health and sustainability objectives. These can then form the basis of policies seeking to foster such patterns. The synthesis of the internationally reviewed FBDGs provides some insights. All the countries that do provide FBDGs say broadly similar things despite differences in emphasis and level of detail provided. All highlight that a largely plant-based diet has advantages for health and for the environment. Most guidelines that include sustainability talk about the high environmental impact of meat, but the advice often lacks specificity, and, where maximum levels are given, these are in line with recommendations of solely health-oriented guidelines. Fish is presented as the main area where health-environment trade-offs arise, but advice is nevertheless given to continue to consume in quantities consistent with health recommendations. Advice on food waste and energy efficient cooking is patchy and represents an area with scope for easy 'win wins.' In terms of multidisciplinary, the report finds that the development of FBDG is usually led by the Ministry of Health (or its equivalent). Other Ministries are involved only in so far as guidelines impact upon their policies. Furthermore, most of the external experts involved tend to be drawn from the fields of nutrition and public health, even when the guidelines do incorporate sustainability concerns. As a consequence, the book provides some recommendations: (1) A far wider range of expertise needs to be drawn upon, spanning for example environmental life cycle assessment, the agricultural and environmental sciences, economics, sociology and animal welfare; (2) While coordination by a single Ministry – in this case health – is needed, others also need to be included in developing and implementing the guidelines. In conclusion, the document affirms that urgent more research focusing on the broader social and economic dimensions of sustainable diets and on developing countries is needed.

*FBDGs promote a plant-based diet for health and environmental benefits, addressing the environmental impacts of the production and consumption of meat and fish*

## 2.7 NEGLECTED AND UNDERUTILIZED FOOD

The analysis of the documentation shows the need to direct dietary patterns toward the enhancement of neglected and underutilized foods, also in function of their ability to be reservoirs of biodiversity in agriculture. This emerges from the **Voluntary Guidelines for Mainstreaming Biodiversity into Policies, Programmes and National and Regional Plans of Action on Nutrition** (FAO, 2016b), published by the Commission on Ge-

*FBDG support the development of nutrition-sensitive agriculture and diversify diets*



netic Resources for Food and Agriculture (see Box 1). The guidelines support the development of nutrition-sensitive agriculture that considers the nutrient composition of biodiversity for food and agriculture (in particular the varieties, cultivars and breeds of plants and animals used as food, as well as wild, neglected and underutilized species) to address malnutrition in all its forms. Coherently, the report **The state of the world's biodiversity for food and agriculture** (FAO, 2019) stresses the need to diversify diets – using multiple species, integrating the use of crop, livestock, forest and aquatic resources, and conserving and managing habitat diversity at landscape or seascape scale – promoting resilience, improving livelihoods, and supporting food security and nutrition. The report affirms that the lack of dietary quality, particularly the intake of micronutrients, is exacerbated by a decline in dietary diversity and the replacement of micronutrient-rich local or traditional foods with more mainstream globally traded alternatives. Furthermore, the significance of non-mainstream crops – and wild foods – in the diets of (in particular) poor rural people has tended to be overlooked.

Nevertheless, evidence from various production systems in various parts of the world indicates that wild and underutilized species make important contributions to local diets. Against this backdrop, relevant measures could include increasing levels of public and private sector investment in transport, storage and market development for diverse non-staple foods and taking steps to reduce the transaction costs of smallholder integration into these markets.

### THE COMMISSION ON GENETIC RESOURCES FOR FOOD AND AGRICULTURE

With 178 countries and the European Union as its members, the Commission on Genetic Resources for Food and Agriculture provides a unique intergovernmental forum that specifically addresses biological diversity for food and agriculture. The main objective of the Commission is to ensure the sustainable use and conservation of biodiversity for food and agriculture and the fair and equitable sharing of benefits derived from its use, for present and future generations. The Commission guides the preparation of periodic global assessments of the status and trends of genetic resources and biological diversity for food and agriculture. In response to these assessments, the Commission develops global plans of action, codes of conduct or other policy instruments and monitors their implementation. The Commission raises awareness of the need to conserve and sustainably use biological diversity for food and agriculture and fosters collaboration among countries and other relevant stakeholders to address threats to this biodiversity and promote its sustainable use and conservation.



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## 3. EUROPEAN LEVEL

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The focus of this section is also mainly on institutional and professional reports, and to a lesser extent on scientific papers. It embraces a quite vast literature investigating mostly technical aspects of food policy and healthy diets. However, contrary to what has been found in the international documents, whose main goal is that of setting a framework of technical principles, most of them give some recommendations on how to reach healthy and sustainable diets, ranging from consumer information and education to guidelines and all the way up to regulation policies. With regards to this specific issue the parameter utilised is the Nuffield intervention ladder (Have et al., 2010, Figure 1.1): on one extreme of the ladder we find the “soft policies” (“doing nothing” or merely monitoring the situation); on the other extreme, we find the “heavy regulation” up to the elimination of choices. A wide range of possibilities is offered in between. The EU, for example, tends to heavily regulate the upward components of the system with “hard policies” (farms and farmers), while the strategy for the downward components of the system lay mostly on “soft policies” such as information and transparency (especially addressing consumers).

Most reports basically identify sustainable food policies with healthy food and the spread of healthy diets. The food system is mostly seen as in a constant state of change and evolution tied to consumer preferences and production systems (WHO, 2021). Changes need to address the rising health issue (NCDs) but also to promote the shift towards environmentally sustainable diets.

### 3.1 AN UPWARD-STREAM APPROACH STARTING FROM CHANGING DIETARY PATTERNS

Most of the non-EU reports focus mainly on the downward part of the food system, counting on a sort of upward-stream dynamic: by working in favour of healthy diets, at one end of the system, the whole system will ad-

just accordingly. So, sustainability is, in the end, the result of a whole process originating from the switch to healthy diets. The paper **Healthy and Sustainable Diets for European Countries** by EUPHA - European Public Health Association (Birt et al, 2017) is a good example of this holistic approach: “Poor health outcomes create a burden on society as a whole, for example by increasing health care costs, as well as by affecting work productivity. Meanwhile, current food consumption patterns are also linked to deleterious environmental consequences, such as climate disruption and GHGEs, excessive use of water, food waste, and ecosystem exploitation. In turn, these environmental factors may have repercussions on human health and on human economic activities: food production and food security for healthy nutrition being only one of many examples”.

The report by Birt et al. (2017) focuses on two interesting examples of traditional healthy diets: Mediterranean and Nordic (see Figures 3.1 and 3.2). They are considered (more) sustainable not only for the balance of nutrients but also for the lesser impact on environment, reduction in transports, less processed food; however, the report acknowledges the higher cost of these diets compared to more global diets. Organic agriculture, on the other side, is considered sustainable not specifically for its disciplined productive process, but because organic consumers eat “better” and are more committed to environmental issues.

*Two examples  
of traditional  
healthy diets*

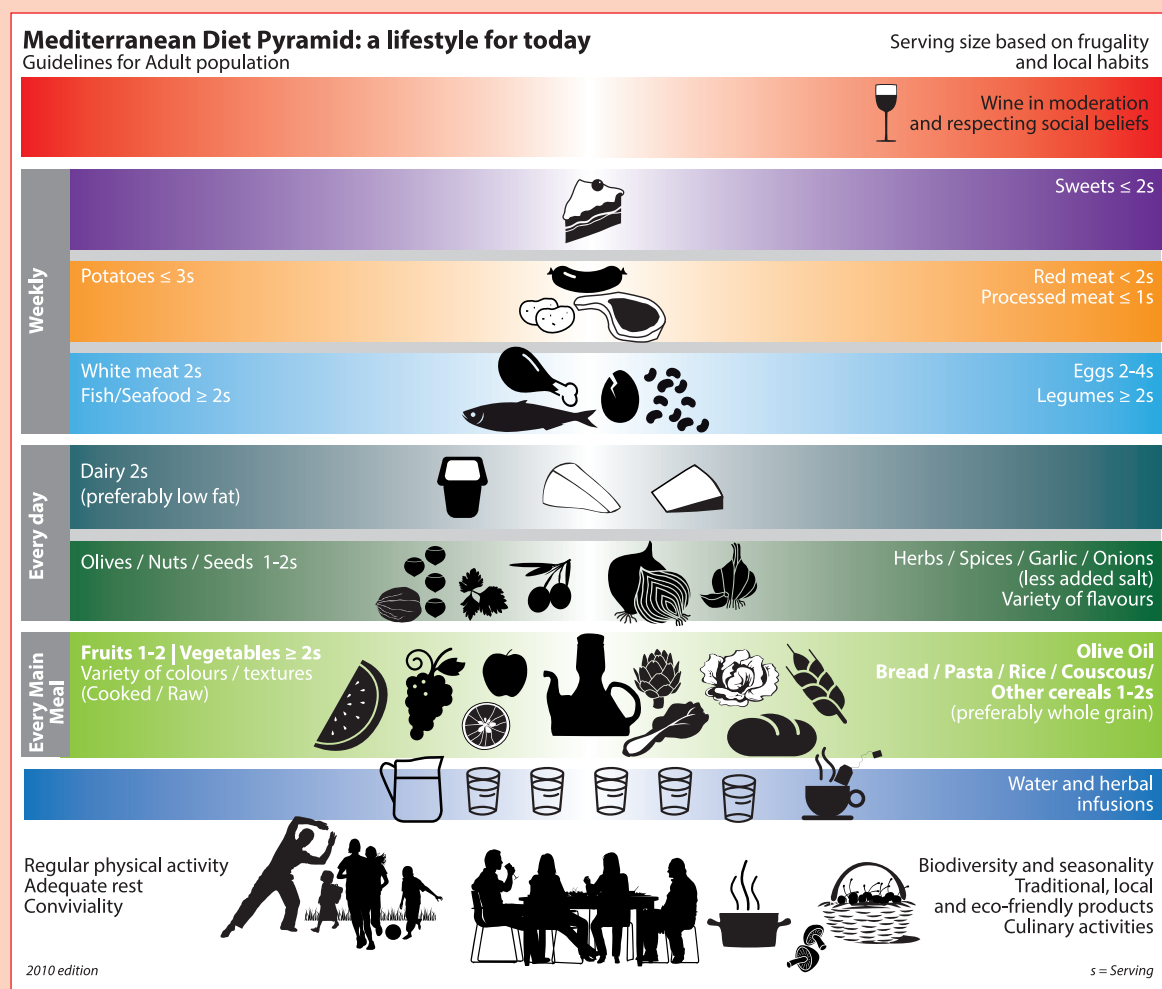
#### MEDITERRANEAN AND NORDIC DIETS

In 2010, **the pyramid scheme of the modern Mediterranean diet** for all Mediterranean populations was published by the FDM (Fundación Dieta Mediterránea) and the CIISCAM (International Inter-University Centre for the Study of Mediterranean Food Cultures) and shared with the research institutes of the countries involved. The Mediterranean diet promotes social interaction, as communal eating is the basis of social customs and holidays shared by a certain community, and has given rise to a remarkable body of knowledge. The diet is based on respect for the land and biodiversity and ensures the preservation and development of traditional activities and crafts related to agriculture and fishing in Mediterranean communities.

The Mediterranean Diet, since 2010 recognized by UNESCO as an Intangible Cultural Heritage of Humanity, is considered a sustainable food model. The favourable effects that the Mediterranean Diet brings in terms of health are not only linked to the type of food characterizing this food model, but also to their frequency of consumption, criteria of choice and practices of preparation and storage of food. In particular, the Italian model of the Mediter-

anean diet does not exclude any food, but indicates the recommended amounts to allow for a varied and enjoyable, yet nutritionally balanced diet.

FIGURE 3.1 - **PYRAMID OF THE MODERN MEDITERRANEAN DIET FOR ALL MEDITERRANEAN POPULATIONS**. Source: Fundación Dieta Mediterránea, 2010



In 2016, the Nordic Council of Ministers took the initiative to update the scientific foundation for national nutrient recommendations and dietary guidelines in Denmark, Estonia, Finland, Iceland, Latvia, Lithuania, Norway, and Sweden. **The Nordic Nutrition Recommendations 2023 – NNR2023 report** (Blomhoff et al., 2023) has developed science advice based on the health effects of foods and response to the country-specific public health challenges and burden of diseases, food consumption patterns, as well as the country-specific environmental impacts of food consumption.

The NNR2023 report has not formulated advice on country-specific priorities such as food production and accessibility (e.g., agricultural methods, import and export, self-sufficiency, food security) and sociocultural aspects (e.g., animal welfare) of food consumption.

In fact, such topics are briefly discussed in background papers and in relevant sections of NNR2023 but it is suggested they must be dealt with nationally. The report offers solutions and guidance for national authorities when they develop and formulate their own food and health policies.

FIGURE 3.2 - **PYRAMID OF THE NORDIC DIET.** Source: Jafar and Behrouz, 2023



### 3.2 INCLUDING ALL SUSTAINABILITY DIMENSIONS IN EU AND NATIONAL DIETARY GUIDELINES

In the wake of the urgent need of a consumption shift to HSDs originating from a sustainable food system, requiring a significant change in dietary patterns, the report of EC-JRC **Concepts for a sustainable EU food system-Reflections from a participatory process** (Bock et al., 2022) calls for a regular evaluation and update of national dietary guidelines based on independent expertise, progressively including all sustainability dimen-

sions. Consequently, it might be useful to harmonise the basic features of such guidelines at the EU level, while considering relevant national and regional aspects.

A good example is given by an initiative involving EU and non-EU Northern European countries, the Council engaging Ministers of Finland, Iceland, Denmark, Norway, and Sweden, which have recently approved and published the **Nordic Nutrition Recommendations** (2023), as an outcome of joint efforts of different countries in Europe sharing similar cultures. The document provides science-based advice on the health effects of foods and response to the country specific public health challenges and burden of diseases, food consumption patterns, as well as the country-specific environmental impacts of food consumption.

*An example of an harmonised FBDG between different countries*

### 3.3 ADDRESSING THE CRITICAL SUSTAINABILITY TRADE-OFFS: INTEGRATING THE APPROACH BETWEEN SOCIAL, HEALTH, AND PHYSICAL SCIENCES

Many papers dealing with the issue of food policies and sustainable and healthy diets, covered by this review, agree on the fact that food should be seen more as a *common good* rather than a *consumer good*. This changes the perspective of the approach to healthy sustainable food quite substantially. As such, food should receive more attention in socio-economic terms. Paradoxically, sustainable food system is approached less effectively from the point of view of the social sciences than the physical sciences (as many of the reports here analysed show). There is scope for research and for policy recommendations on this matter. The report **Towards a Sustainable Food System** (EU-SAM, 2020) highlights how a traditional “business as usual” approach will not make the system more sustainable: an integrated stepwise approach is needed. A proper integrated approach aims at not overlapping policies and, also, at avoiding that goals of different policies are in contrast.

*Food as a common good*

Most papers also stress the strong connection between health issues and environmental aspects of food. WHO in its **Factsheet** (2021) remarks its support to this relationship through the definition and support of sustainable food and diets. Four main fields of action are highlighted: dietary shifts, food reformulation, digital food environments and public procurement (WHO, 2021).

*Environmental aspects of diets*

Generally speaking, the European institutions shift the focus more on the upward part of the system, reversing the approach seen earlier by following a downward-stream oriented approach. Moreover, they enlarge the

*Socio-economic aspects of diets*

view opening also to socio-economic aspects in a more convinced and explicit way compared to what the technical panels do.

The recent Common agricultural Policy (CAP) reform has introduced a specific objective meeting society's expectation in terms of food and health, including quality products, sustainably produced agricultural goods, waist reduction and the use of antibiotics in livestock (RRN, 2022). Somehow, this is the first CAP's attempt to target food consumers and health issues. At the same time, since sustainability of the whole food system is at the stake of the new CAP, this objective is linked to many other specific objectives, following a win-win logic. For example, it links to the organic production and to the animal welfare, as well as to the sustainable agricultural practices. The EU Commission – SAM report (2020) keeps a focus on the problems and needs of the primary sector and small food producers, highlighting relevant trade-offs in the matter, for example by keeping productive systems efficient but at the same time reducing loss of biodiversity and environmental impact.

Sustainability is the result of physical requirements (which are often given as “facts” by scientists) and socio-economic requirements which result from the local context and from cultural aspects connected to food and social habits and constructions. A relevant example is the dependency from imports: Sweden imports a lot of its food needs, which implies the country externalizes most of its carbon footprint abroad, while the Netherlands are almost self-sufficient, which turns into a substantial reduction of the global footprint, although Dutch carbon footprint is largely unsustainable (Biesbroeck et al., 2023). Sustainable food is different from sustainable diets, for cultural and local factors, also because foods come in “clusters” and so food does not automatically convert in diets and in diet indications. The same kind of issue arises when one looks at the whole supply chain: nutrient substitutes can affect environmental impacts but not necessarily health; in the same way, improving logistics or transports may reduce the carbon footprint but not necessarily have an impact on nutritional aspects (Biesbroeck et al., 2023).

*Sustainable food  
is different from  
sustainable diets*

### **3.4 THE RELEVANCE OF THE POLICY DEVELOPMENT AT DIFFERENT TERRITORIAL LEVEL**

The EU underlines the relevance of the territorial scale in favour of an integrated approach for health diets and sustainable food: all the institutional levels of governance should contribute to the construction of a sustainable strategy.



This has been stressed in a recent participatory process as well (Bock et al., 2022): to enable consumers to play an active role in making the food system sustainable (e.g. through participatory governance in (local) food systems, consumer supported agriculture schemes) and to choose a healthy diet (e.g. through improving the food environment) calls for a strong engagement of public authorities at all governance levels.

*The engagement of public authorities in the construction of a sustainable strategy*

The **Farm to Fork Strategy** (EU, 2020) previewed to build up a legislative proposal for a framework for a sustainable food system to promote policy coherence at EU and national level, mainstream sustainability in all food-related policies and strengthen the resilience of food systems. Combined with certification and labelling on the sustainability performance of food products and with targeted incentives, the framework will allow operators to benefit from sustainable practices and progressively raise sustainability standards to become the norm for all food products placed on the EU market.

## 3.5 PARADIGM SHIFT

The IPES Report **Towards a common food policy for the European Union** (2019) highlights how food has been treated as a commodity, rather than as a social-ecological system which requires democratic governance in the collective interest. Changes are therefore necessary to the extent that they encourage to set new priorities, and policies are designed and implemented accordingly. The innovations that are most urgently required are social, organizational, and governance-based – and without them, much-needed technological innovations will not reach their full potential.

A slightly different approach comes from the non-EU scholars. In their paper **Toward healthy and sustainable diets for the 21st century: Importance of sociocultural and economic considerations (2023)** Biesbroeck et al. offer a point of view not necessarily in line with the European institutions, rather mainly referring to the EAT Lancet Landmark report (2019). Their paper talks of a change of paradigm: from price, convenience, taste to health, sustainability, equity: “To achieve ... food transformation, a new “social contract”, led by governments, is needed to redefine the economic and regulatory power balance between consumers and (inter) national food system actors” (Biesbroeck et al., 2023). Sustainability, affordability, adequacy are three keywords to keep in mind when facing the issue of change in diets. They highlight some apparent contradictions (trade-offs) in these terms: sustainability of diets is associated to the local (national) context and not always a healthier diet is environmentally more friendly.

*Sustainability, affordability, adequacy are three keywords when facing the issue of change in diets*

GHGs sometimes improve with the improvement of diets (as it is happening in China). That can be generally true in developing countries compared to Western countries. Some healthy diets are indicated as benchmarks, but indeed healthy and sustainable diets depend on the individual preferences, budgets, local food availability and cuisine. One example is the different impact of an increase of meat consumption in developing and developed countries.

### 3.6 A CRUCIAL COMPONENT SHAPING HSDs: MORE ON FOOD ENVIRONMENTS

Of the reports analysed here, only two focus on FEs and faces the issue of producing an empirical tool to assess them: the report by PEN (2021) **The Healthy Food Environment Policy Index (Food-EPI): European Union** and the work by SAPEA (2023) **Towards sustainable food consumption**. FEs are defined as “the physical (food availability, quality, marketing), economic (food prices), policy (rules and food policies) and sociocultural (norms and beliefs) surroundings, opportunities and conditions that influence people’s food choices and nutritional status” (PEN, 2021). The report suggests how little is known and investigated about the impact of EU level policies on National food systems and also how EU could change its policies in order to create healthy food environments in the EU.

SAPEA (2023) also refers to FEs as the consumers’ primary interface with the food system. It is defined as “the context in which food is accessed and eaten, and entails both an external domain (physical availability, the infrastructural environment, the price of food, the information environment and labelling, the social environment) and an individual domain (affordability, accessibility, convenience and desirability) which relates to the conditions for individual daily routines and practices”. This report analyses FEs as a favourable context in which consumers learn to prioritise healthy and sustainable diets, working on the social norms that affect choices in food.

Trade-offs between health concerns and economic goals are very relevant, so FEs should aim at overcoming these trade-offs. On the health side of the trade-off, there have been information and indications for consumers rather than regulation. On the other side, structural regulative approaches for producers are never really pursued. In terms of results, the SAPEA recommended policy actions (10) have to do with food labelling; food process; food composition; food promotion. 5 of these actions are considered also relevant in reducing inequalities (social aspects). 5 of the 10 top infrastructure support actions are in the Leadership domain. Ex-

*FEs are key to overcoming trade-offs between health concerns and economic goals*

perts also see an important role for the EU in monitoring FEs (in terms of policies) as three of the top 10 priority actions are in the Monitoring and Intelligence domain. The EU policy action should be based on the 5 with relevant social implications and the top 5 infrastructure support actions. So, basically, this work identifies a clear path and structure of intervention.

Along the same stream of thoughts, the report EC-JRC **Concepts for a sustainable EU food system** (Bock et al., 2022) recognises that consumers need support through FEs. An enabling FEs, ensuring easy access to healthy diets from sustainable sources, is thus an essential element of a sustainable food system and recognises the limits of consumer autonomy.

A crucial consideration of the Farm to Fork Strategy (EU, 2020) is that European diets are not in line with national dietary recommendations, and FEs does not ensure that the healthy option is always the easiest one. Moving to a more plant-based diet with less red and processed meat and with more fruits and vegetables will reduce not only risks of life-threatening diseases, but also the environmental impact of the food system.

In this framework, consumers should be empowered to choose sustainable food and all actors in the food chain should see this as their responsibility and opportunity.

Accordingly, promoting sustainable food consumption and facilitating the shift to healthy, sustainable diets emerged as one of five pathways in the EU Strategy. Specific actions have been considered, such as:

1. *providing a clear Information* that makes it easier to choose healthy and sustainable diets (for instance, a proposal of harmonised mandatory front-of-pack nutrition labelling, the extension of mandatory origin or provenance indications to certain products, to examine ways to harmonise voluntary green claims, to create a sustainable labelling framework that covers, in synergy with other relevant initiatives, the nutritional, climate, environmental and social aspects of food products);
2. *increasing sustainable food procurement*: The Commission will determine the best way of setting minimum mandatory criteria for sustainable food procurement to improve the availability and price of sustainable food and to promote healthy and sustainable diets in institutional catering. This will help cities, regions and public authorities to play their part by sourcing sustainable food for schools, hospitals, and public institutions and it will also boost sustainable farming systems, such as organic farming; the Commission will lead by example and reinforce sustainability standards in the catering contract for its canteens;
3. *introducing new tax incentives*: to support organic fruit and vegeta-

*Information, food procurement, and tax incentives are the EU Strategy's actions to promote HSDs*

bles and also to ensure that the price of different foods reflects their real costs in terms of use of finite natural resources, pollution, GHG emissions, and other environmental externalities.

SAPEA (2023) also mentions the relevance of removing barriers that are an obstacle for consumers to adopt healthy and sustainable diets. This approach slightly shifts the approach from the behaviours of consumers to the causes that modify this behaviour. The report acknowledges the role of personal factors (such as the cognitive processes underlying choices) influencing consumer behaviour and the barriers to healthy and sustainable diets that consumers need to overcome. In economic terms, this is relevant since it highlights the altruistic nature of consumers who worry about environment and health and whose rational behaviour is not to fulfil their own personal preferences but to reach a larger level of social, economic and environmental welfare.

*Recognition of personal factors like cognitive processes and barriers to healthy, sustainable diets*

### 3.7 TOWARDS POLICY INTEGRATION

In terms of policies, two relevant actions are advocated by many of the institutional reports: i) to mainstream the sustainable food approach into EU sectoral policies and ii) to develop an integrated food strategy and a following governance of the food strategy.

Many of the reports analysed here have been realized before the EU Green Deal and Farm to Fork, so it is important to keep in mind that some of issues raised then have been at least partially addressed by the EU strategic documents. According to EUPHA, the Common Agricultural Policy (CAP) is a policy that needs to be fully reformed and switch the attention from production to consumption. Such vision is functional to their focus on the downstream component of the system, although the CAP is clearly focused (following the strategic objectives of the Common Policy) on producers rather than consumers. Most of the other papers follow the same underlying path, focusing more on the downstream actors of the system and advocating more technical support in favour of healthy diets and sustainable food.

*A new possible vision of CAP that switches the attention from production to consumption*

The EU, on the other side, is more cautious on this aspect of policy targeting (EU-SAM, 2020), focusing also on the shift from binding measures to information and education (“soft policies”). Policies designed to achieve food sustainability – both at the EU level and other levels of governance – should use the complete policy mix, including all the available ‘soft’ instruments, with binding measures as the main drivers – and with emphasis on the flexible, context-adapted, and responsive approaches.

*Soft policies to achieve food sustainability*

Seeds of policy integration are underlined in the new CAP (2019); the goal would be a Common food policy and the creation of a ‘European Food Policy Council’. Paradigm shifts are advocated for that to step forward: access to land, water, and healthy soils; healthy agro-eco-systems; healthy and sustainable diets; shorter and cleaner supply chains; trade on track of SD; reconnection of land, water, and soil policies.

The Healthy Food Environment Policy Index (Food-EPI) proposed in the EU-SAM report is fully focused on identifying common policy actions and, in that sense, it is rather different from all the other documents, offering a sort of action plan to classify and support specific food policies for the creation of a proper food environment.

### 3.8 REDEFINING ROLES, RESPONSIBILITIES AND BEHAVIOURS OF ALL ACTORS

Finally, in Biesbroeck et al. (2023) there is a constant attention at the policies, moving from the consideration that, at the policy level, more is done for food (food procurement) than for food environment. Traditionally, policy and institutions look at the construction of healthy food systems rather than a proper FE (technical nutrition and quality aspects rather than socio economic and cultural aspects). Circular production is a long run goal to be pursued to reduce food environmental impact. “In an economic sense, health and agricultural policies have prioritized competitiveness between supply chain actors and the freedom of consumers to enjoy unsustainable and unhealthy diets. Regulating the supply chain and food environment therefore leads to conflicts between food producers, end users, and civil society”. In conclusion, a new “social contract,” initiated by the national and regional governments, is a viable solution, according to the authors, to overcome the deadlock by redefining the economic and regulatory power balance between (inter)national food system actors. “This should enable public and private stakeholders to scale-up the transition to the systems level, while citizens can create “volume” by buying widely available affordable, healthy, and sustainable foods from supportive food environments”.

Another issue stressed by the EU, and confirming the attention devoted to the upward part of the supply chain in the discourse of HSDs, is the uneven distribution of power along the agro-food system. Some categories are more powerful as groups than as individuals (farmers and consumers), however, they receive the largest attention in terms of regulation, information, and education: “The asymmetrical power distribution in the food

*Emphasis on policies focusing more on food procurement than on food environment*

*Concern about the uneven distribution of power along the agro-food system and initiatives to support weaker actors*

supply chain needs to be addressed. EU initiatives could support the weaker actors along the supply chains to apply fair and sustainable food practices. New legislation on unfair trading practices (Directive (EU 2019/633)) is of particular interest in this area as is the European Economic and Social Committee's recent promotion of short and alternative supply chains, as well as the New Deal for Consumers (COM (2018) 183)" (EU-SAM, 2020).

Accordingly, the EC-JRC study (Bock et al., 2022) identifies actions for every actor to contribute to improve sustainability related to sustainable and healthy diets. For food and drink manufactures and retailers, they range from targeted taxes, to regulations on front-of-pack nutrition labels (including nutrition and/or sustainability score), and on marketing strategies; as for the consumer, food literacy (namely, improving knowledge about food, the origins, how it is produced and sustainability performance, food labels, what constitutes a healthy diet, and the ability to cook) is essential for enabling them to choose a healthy diet from a sustainable food system. However, large manufacturing and retail companies are considered from the participatory process of EC-JRC to have more influence on the food system and should be incentivised to share, guide and support producers and consumers in the journey towards sustainability.

*Actions identified for various actors, including targeted taxes, regulations on nutrition labels and marketing, and improving food literacy for consumers*







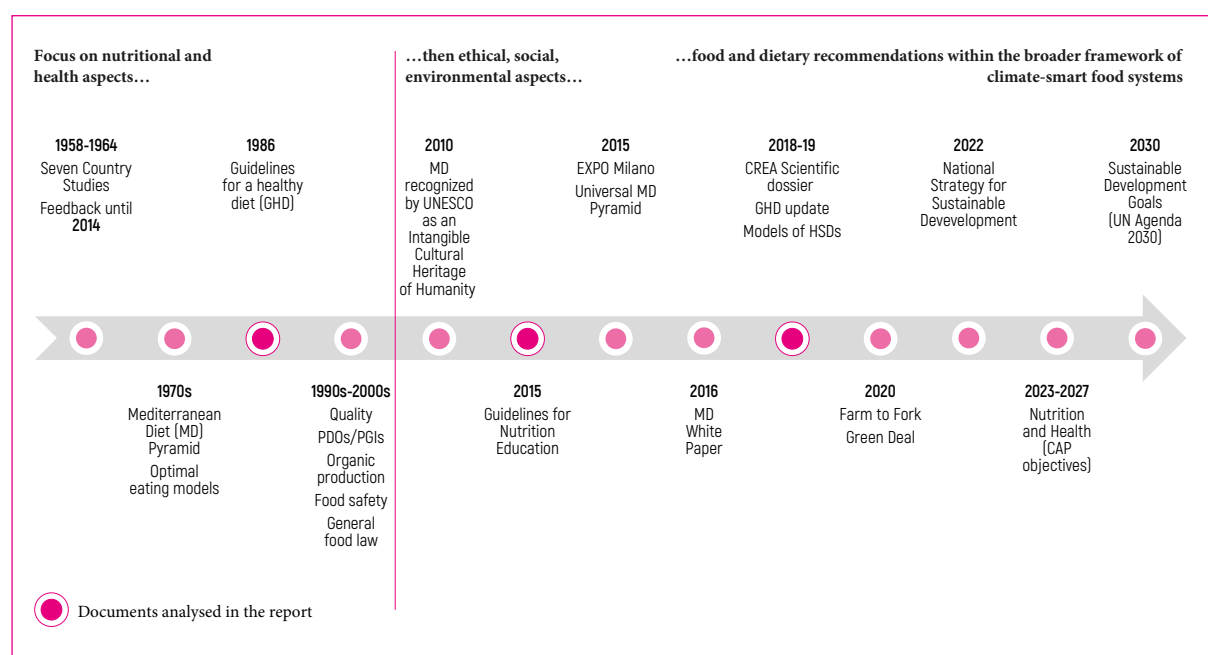
## 4. NATIONAL LEVEL

The search for Italian national documentation that explicitly refers to the sustainability and healthfulness of diets has led to the identification of some documents, which primarily address strictly nutritional and dietary issues, through very precise and articulated indications.

National food policy efforts to promote healthy and sustainable diets have often focused on raising public awareness of the importance of consuming healthy, safe and locally produced food, with the expectation that information campaigns will prompt consumers to make responsible food choices and adopt healthy and ‘green’ lifestyles.

Within this framework, references to policies for HSDs are rather nuanced and focused mainly on sectoral or thematic initiatives, lacking, however, an overall vision that indicates ways and means to combine the various dimensions of HSDs.

FIGURE 4.1 - MILESTONES THAT INFLUENCED NATIONAL DOCUMENTS ON HSDS



In this sense, the role played by nutrition education on consumers, especially those with a low socio-economic profile, as well as children and young people is crucial. However, education on a healthy and sustainable diet requires decisive and stringent regulatory actions that are not yet rooted in our legal system.

Likewise, as mentioned, there is a lack of policy coherence for the development of a sustainable food system, with the multiplication of objectives and instruments derived from sectoral policies that very often do not talk to each other (agriculture, food safety, health, environment, technological development, research, education, social, budget, industry, markets, competition, trade) and undermine their effectiveness.

In Figure 4.1, the steps over the past decades in defining HSDs are highlighted, with a particular focus on national documentation, which is inextricably linked to conceptual models such as food pyramids and European guidelines or frameworks. From the analysis of the main institutional documents, a strong attention to nutritional and health aspects emerges and only recently have they been included in the broader framework of climate-smart food systems, towards an approach that helps guide actions to transform agri-food systems towards green and climate-resilient practices.

## 4.1 GUIDELINES FOR A HEALTHY DIET

The Guidelines for a Healthy Diet (Guidelines), the first version of which was drawn up in 1986 by the INN (National Institute for Nutrition), and the Dietary Reference Values – DRV<sub>s</sub> (LARN in Italy) issued at national level by the Italian Society of Human Nutrition (SINU, 2014), are among the guiding instruments for Italian food policies. DRV<sub>s</sub> are the nutritional recommendations, establishing the quantities of nutrients and energy that can satisfy the relative needs, as well as the quantities that, if in excess, could lead to negative health effects. Guidelines are food and diet-based recommendations, inspired by the Mediterranean dietary model, and indicate with which food choices, depending on local traditions and habits, the DRV<sub>s</sub> can be met. The Guidelines, therefore, translate the nutritional goals set in the DRV<sub>s</sub> into practical dietary recommendations and their periodic revision follows the revision of the DRV<sub>s</sub> (EFSA, 2023).

*The first Italian Guidelines for a Healthy Diet is from 1986*

The last version of the document **Guidelines for a healthy diet** (CREA, 2019) is based on a set of core principles that often align with recommendations and the European context and is supported by a substantial **scientific dossier** (CREA, 2018). Bibliography of scientific dossier was focused

on peer-reviewed works and technical reports from large government agencies. The so-called “grey literature” – i.e. works by private individuals with potential conflicts of interest or works published in journals not subject to the external review procedure – were consulted and cited where the conclusions were also supported and shared by the official literature. Some chapters of the document referring to principal European and National regulations (i.e. Genetically modified organisms). In the dossier, experts in the field were consulted both as suppliers of specific literature and as external reviewers.

Guidelines for healthy eating should, among other functions, be a reference to trace the operational path for policy makers and practitioners (which include the most diverse categories - from urban planners to store designers, passing through manufacturers, importers and wholesalers) (van Dooren et al., 2014) so that they can contribute to create a FEs that promotes access to healthy food for all citizens (Jetter and Cassady, 2006; Vandevijvere and Swinburn, 2014a, 2014b), avoiding that they are created those conditions of “food desert” where access to a healthy food is difficult (Wrigley et al., 2003). Guidelines and DRVs are a useful tool for clinical research, for nutritional planning (in the individual, in groups of individuals or in population segments), for the definition of health and trade policies, for the formulation of health claims, for nutrition labelling and for the development of novel foods and food supplements. Guidelines for a healthy diet and DRVs have a strong focus on nutritional and health aspects while, more recently, the document “**Modelli di diete sane e sostenibili a partire dalle diete tradizionali**” (**Models of healthy and sustainable diets starting from traditional diets**) of the Italian Ministry of Health (MDS, 2019) part of the C.C.M. (National Centre for Disease Prevention and Control) Project of the Ministry of Health fits into the broader framework of climate-smart food systems. These are production-distribution-consumption systems of available and local food that adapt to climate change, conserve natural resources and help reduce the emission of greenhouse gases into the atmosphere, promote biodiversity and environmental health, and sustainable and eco-friendly agriculture and aquaculture, within the broader framework of the circular economy and resource efficiency, from reducing plastic in food and using sustainable and biodegradable food packaging, to reducing waste and reusing waste.

*The current Italian guide for HDS is based on European recommendations and is supported by a scientific dossier*

*Guidelines for HSDs and DRVs have a focus on nutritional and health aspects while the Italian Ministry of Health document fits into the framework of climate-smart food systems*

## 4.2 NATIONAL STRATEGY FOR SUSTAINABLE DEVELOPMENT

Italy, through the development of the **National Strategy for Sustainable Development (SNSvS)** (MASE, 2022), has committed to the specific objectives based on the national indicators produced by ISTAT (Sustainable Development Goals Indicators) with the collaboration of other Research Institutes (CNR, ISPRA, ENEA). The indicators, developed for all 17 Sustainable Development Goals (SDGs) of the 2030 Agenda for Sustainable Development, aim to quantify but also measure the effectiveness of the sustainable development measures. With the approval of the Interministerial Committee for Economic Planning (CIPE) of the National Strategy for Sustainable Development on 22 December 2017, the guidelines for the economic, social and environmental policies were defined.

Consumer attention to environmental issues has grown significantly over the last decade, even if this interest does not seem to have been translated yet into actual behavior of purchase. In Italy, however, there is a positive attitude towards sustainable food, as shown by that an increased trend of purchases (i.e. organic foods). To date, more evidence is needed to shift eating behaviors to the local, national and/or global in support of environmental sustainability. Linking health and environment to food will mean promoting human health and the sustainability of natural resources while ensuring food security. As recognized by ASviS (Alliance for Sustainable Development), a healthy and correct diet in Italy has a direct impact on many of the 17 SDGs and can contribute to development sustainable through two fundamental levers: individual and collective health and well-being and environmental sustainability.

*HSDs in Italy has a direct impact on many of the 17 SDGs and can contribute to development sustainable through individual and collective health and well-being and environmental sustainability*

## 4.3 THE MEDITERRANEAN DIET IN THE ITALIAN CONTEXT

The document **Modelli di diete sane e sostenibili a partire dalle diete tradizionali (Models of healthy and sustainable diets starting from traditional diets)** of the Ministry of Health (MDS, 2019) aims to spread guidelines to promote health through HSDs. The goal is twofold. One is to define and disseminate a model of HSDs that is accessible, inclusive, ethically, and culturally acceptable, inspired to the principles of the Mediterranean Diet and that takes account of local realities, respecting traditions and customs, social and religious aspects, local biodiversity and available resources. The second is to suggest key actions to be taken to follow a HSDs model, providing a practical and informative tool for adults and children.

*The objectives of the Models of healthy and sustainable diets starting from traditional diets*

For these reasons the stakeholders' involvement is crucial and they are

invited to submit programs according to six specific pillars: 1. sustainable food systems for healthy diets; 2. aligned health systems ensuring universal coverage of essential nutrition actions; 3. social protection and nutrition education; 4. trade and investment to improve nutrition; 5. create favourable environments for local food systems, including by encouraging breastfeeding; 6. review, strengthen and promote “governance” in the field of nutrition.

The document of the Ministry of Health focuses on “the paradoxes of nutrition”. Although the world is increasingly suffering from malnutrition, our era is characterized by some serious contrasts: these are authentic paradoxes related to the production of food and its distribution. First there is the problem of lack of “access” to food and on the other hand the problem of “overeating” food. More than 25 million people in Italy are obese or overweight: 46% of adults (more than 23 million) and 26.3% of children and adolescents between 3 and 17 years of age (2.2 million) (IBDO Foundation et al., 2022).

According to the document **Models of healthy and sustainable diets starting from traditional diets** of Ministry of Health (MDS, 2019) a sustainable diet model should identify 4 main benefits: the prevention of all forms of malnutrition, the protection of the environment and the planet, the adaptation to the socio-cultural context and the contribution to the livelihood of local producers; another relevant aspect is to prevent the necessary costs for the treatment of chronic non-communicable diseases.

In the document, from the analysis of a long series of studies and data processed by the Seven Country Studies, the Mediterranean Adequacy Index (MAI) (Alberti et al., 1999) was formulated, which indicates the degree of adherence of a meal to the Mediterranean Diet by relating the calories, therefore the energy, provided by the different classes of foods on the plate.

*The benefits of HSDs according to the Ministry of Health*

*The MAI indicates the degree of adherence of a meal to the Mediterranean Diet*

**MAI =**

**% Energy of CARBOHYDRATES + % Energy of PROTECTIVE FOODS**

**% Energy of ANIMAL DERIVATIVES + % Energy of SWEETS**

The focus on sustainable diets is strongly linked to the model of the **Mediterranean diet** (see Figure 3.1), to the extent that numerous studies have compared a sustainable diet to the Mediterranean diet (CREA et al., 2016; CREA, 2019; Bôto et al., 2022).

The Mediterranean diet represents the set of eating habits that have developed over millennia, constituting a unicum in terms of richness in biodiversity. The first example of a Mediterranean Diet Food Pyramid was drawn up in 1980. The Mediterranean diet consists of a higher intake of

*The first example of a Mediterranean Diet Food Pyramid was drawn up in 1980*

carbohydrates (mainly bread and pasta), which account for 55% of the caloric intake; the intake of simple sugars is, on the other hand, low and largely represented by fruit. Fats are moderately present and account for 30% of total calories and have an abundant monounsaturated component, being represented mainly by olive oil. Proteins are the least present in the diet and their share reaches a maximum of 15%; they are mainly of vegetable origin and to a lesser extent of animal origin. The latter comes from fish, followed by white meat, eggs, dairy products and finally red meat.

The many studies conducted in the following years on the diet-health relationship in the most industrialised countries (Fidanza, 1991; Alberti et al., 1999; De Lorenzo et al., 1999; Trichopoulou, 2004; De Lorenzo et al., 2006, still find most scholars agreeing that adherence to the Mediterranean diet model represents the dietary regime with the lowest risk of chronic degenerative diseases (Bosetti et al., 2013; Toledo et al., 2013; Tsivgoulis et al., 2013).

Lastly, CREA Guidelines (2019), also considers the development of indicators to assess sustainability issues.

- Nutritional and health indicators: statistics of morbidity and mortality related to diet, fruit and vegetable consumption, the ratio of vegetable protein consumption to animal protein, energy intake, nutrient energy density, nutritional anthropometry, prevalence of physical inactivity.
- Environmental indicators: water footprint, carbon footprint, nitrogen footprint, biodiversity.
- Economic indicators: consumer price index, expenditure-related cost of living food, losses and food waste.
- Socio-cultural indicators: collective participation, cohesion, conviviality and commensals, involvement in food preparation; relevance of traditional diet; transmission of knowledge.

In 2015 at ExpoMilano, the MedEatResearch Scientific Committee presented the **New Universal Pyramid of the Mediterranean Diet**. This study sought to extend the concept of the nutritional pyramid to the social practices that are an integral part of this way of inhabiting the earth. The traditional food pyramid becomes social and is proposed as a universal lifestyle. Which is good for people, society and the planet. There are 7 key words at the base of this new pyramid: conviviality, which has always been an infallible recipe for consolidating bonds of friendship and fraternity between people, as between peoples. Tradition, which is the repository of this cultural heritage that has stratified over the centuries and is an infinite repertoire of cathedrals of taste. Seasonality, because consuming seasonal products means reducing environmental pollution and, at the same time, means eating foods that are tastier and have undergone fewer treatments

*Studies on indicators to assess sustainability issues*

*ExpoMilano and the New Pyramid on Mediterranean diet*

for their preservation. Sport, because the outdoors and exercise have a significant impact on health.

The Italian Ministry of Agricultural Food and Forestry Policies has therefore started a path to define a strategy aimed at the development and enhancement of the Mediterranean Diet to be shared with the institutions of the other countries involved in the UNESCO dossier. In continuity with the initiatives that culminated at Expo 2015, a **White Paper on the Mediterranean Diet** was developed with the collaboration of anthropologists, jurists, economists and sociologists, outlining the framework of actions to be taken (CREA et al., 2016). The contribution of research is decisive for the definition of policies and initiatives in the promotion of sustainable food consumption and education for proper nutrition.

### 4.4 THE PROMOTION OF APPROPRIATE EATING HABITS

The Ministry of Education, in 2015, drew up the **Guidelines for Nutrition Education (Linee Guida per l'Educazione Alimentare, MIUR, 2015)**, a document aimed to reach the younger generations.

The fundamental points of the document for the health and well-being of the school population, already in the short and medium term) are as follows:

1. To stimulate awareness of the importance of the food-health relationship.
2. To encourage the adoption of healthy eating behaviours, adopting appropriate didactic methodologies aimed at the knowledge of quality agri-food productions, obtained with respect for the environment, legality and ethical principles, linked to the tradition and culture of the territory.
3. To promote knowledge of the agri-food system, through the understanding of the relations existing between production and distribution systems.
4. To promote the transversality of food education, in the scientific, historical, geographical, cultural, anthropological, ecological, social and psychological aspects linked to the relationship, both personal and collective, with food.
5. To promote a concept of the overall sociality of food, which, starting from safety, incorporates value aspects relating to sustainability, ethics, legality, interculturality, territoriality.

Collective catering as catering for schools, but also hospitals and care homes, businesses, the military and communities, can also provide impor-

*Actions to raise awareness of HSDs among the younger generations*

tant support from the perspective of reducing environmental impact by combating food waste, promoting good circular economy practices and reducing the use of non-recyclable packaging.

In this framework, it is important to mention the establishment in 2017 of the **Technical Table on Nutritional Safety** (Tavolo Tecnico sulla Sicurezza Nutrizionale – TaSiN), under the General Directorate for Food Hygiene and Safety and Nutrition of the Ministry of Health. The TaSiN is an inter-ministerial table, in fact it also includes the Ministries of Education and Research, Environment, Economic Development and Agriculture and Food Policies. It is also composed of representatives of other institutions, bodies and experts with expertise in statistics, nutrition, health, diets and communication. According to the founding decree, the Table's tasks include those of (1) fostering the development of decision-making processes useful to promote a healthy diet, on the basis of adequate knowledge of the existing situation and scientific evidence; (2) defining a preliminary methodology for government decisions on nutrition; (3) establishing educational and training guidelines; (4) drawing up strategic proposals for the institutional leadership. The TaSiN, as highlighted in the Annual Report 2022, has produced or collaborated on a number of dissemination products to promote correct eating patterns, as well as to highlight the role of large retailers in promoting correct lifestyles. In addition, TaSiN participates in the elaboration of the “Voluntary Guidelines on Food Systems and Nutrition”, containing indications on future nutrition strategies considering some key issues such as environmental sustainability and climate change, access to sustainable food patterns, national statistics on poverty and food and consumption habits, promotion of nutrition communication in the context of nutritional security, and sustainability in the kitchen. TaSiN organises events and conferences throughout the country. Of particular note is the National Conference on Nutrition (February 2023), at which institutions, scientific societies, universities, associations, consumers and representatives of the agri-food supply chain met to discuss the main topics in the field of nutrition and to highlight critical aspects of the system.

*The Technical Table on Nutritional Safety is an inter-ministerial table established in 2016 to foster the development of decision-making processes useful to promote a healthy diet*







## 5. CONCEPTUALISATION AND IMPLEMENTATION OF HEALTHY AND SUSTAINABLE DIETS

### 5.1 HEALTHY AND SUSTAINABLE DIETS IN FOOD POLICIES?

Diets assuring health for both people and the planet have been called as crucial components for shifting to a new food policy paradigm connecting many socioeconomics, health, and cultural issues.

The nature of current food policy tends towards dealing with promoting HSDs. Revising different definitions of food policy, Gürsoy (2023) highlights that for some authors “food policy emerges within multi-level governance, multi-sector, and multi-actor chains, since it appears as a wide range of actions and decisions concerning the production and processing of food, its impact on public health and well-being, the environment, and natural resources” (Lang et al., 2009). Other authors (Coff and Kemp, 2014) state that climate change, security policy, development and aid policy, agricultural policy, and health policy are all recognised as being part of or included in food policy. They define food policy areas as “ranging from how food is produced and grown, to how it is processed, distributed, and consumed; from the structures that shape food supply, to those that determine health and the environment; from the sciences and processes that unlock food’s potential, to the formal governance and lobbies that seek to control it; from the impact of the food system’s dynamics on society, to the way its demands are factored into policy-making”.

The process of identifying and targeting policy solutions to policy problems is a critical step in strengthening between the evidence and the policy relationship to promote HSDs.

An interesting paper (Lawrence, 2015) has developed a **policy formulation tool** for strategically informing food and nutrition policy activities to promote HSDs. The policy formulation tool consisting of two complementary components: a **conceptual framework** of the environment–public health nutrition relationship to characterise and conceptualise the food system problem and ‘**Orders of Food Systems Change**’ **schema** drawing on systems dynamics to identify, assess and propose policy options to rede-

*Various definitions of food policy highlight its multi-level, multi-sector, and multi-actor nature*

*The policy formulation tool to promote HSDs*

sign food systems. The conceptual framework tool, that strengthens communication between researchers and policy, comprises three integrated dimensions:

- a **structure** built around the environment and public health nutrition relationship that is mediated via the food system (reference to identify sectors and levels of governance that impact on the structure and operation of the food system);
- **internal mechanisms** that operate through system dynamics; (encourages policy practitioners to extend their analysis and framing of policy problems and solutions from immediate to distal causes and consequences)
- **external interactions** that frame its nature and a scope within ecological parameters (highlight that policy to change the food system can have flow-on effects to the ecological, political, economic, and social systems and vice versa.)

Three reports published in 2019 suggest what measures need to be taken to improve sustainable food systems (Berry EM, 2019):

1. data from the Global Footprint network show that the ecological footprint of Mediterranean countries is higher in HIC countries;
2. the EAT-Lancet commission report recommends a much more comprehensive classification of the environmental effects per serving of produced foods by taking into account multidimensional measurements, proposing to consider energy use, greenhouse gases, land use, acidification potential, and eutrophication potential;
3. a study of guidelines for sustainability from eleven countries —not from the Mediterranean region (but applicable to it also)—listed some thirteen points. The three most recommended were (1) more plant foods (9 countries), (2) reduce food waste (7 countries) and (3) eat less meat (5 countries). These may be summarized in advice to “use more forks than knives”.

In identifying and targeting food policy solutions diet costs are to be considered (Springmann et al., 2021). The implications of food-system and socioeconomic changes on the cost of diets, including reductions in food waste at the household level, and future changes in food prices and demand, have to take in account. The study for the first time includes two cost components that generally are not accounted: the costs of diet-related illness and the diet-related impacts on climate change. At present, these external costs are levied onto society in ways other than through food prices, which distorts prices and can contribute to consumption decisions that are detrimental for public health and the environment. The results of the study show that in high-income and upper-middle-income countries,

*The costs of food-related diseases and the impact of food on climate change are included in identifying and targeting food policy solutions*

dietary change interventions that incentivise adoption of healthy and sustainable diets can help consumers reduce costs while, at the same time, contribute to fulfilling national climate change commitments and reduce public health spending. Instead, in low-income and lower-middle-income countries, healthy and sustainable diets are substantially less costly than western diets and can also be cost-competitive in the medium-to-long term, subject to beneficial socioeconomic development and reductions in food waste.

## 5.2 EVIDENCE FROM A CONSENSUS-BUILDING STUDY FOR INNOVATIVE FOOD POLICY

However, consensus on global actions and policies to move the entire food system forward still lacks. A recent study addressed the issue of incoherent plans for healthy and sustainable diets in Europe based on examining perspectives and generating consensus in a multidisciplinary arena engaging nutrition, health, environmental science experts, and policymakers for discussing about the obstacles, actions, and tools required to make diets and food systems healthier and more sustainable (Bach-Faig et al., 2022). This approach allowed to better understand the sustainable healthy diet components in terms of needs and challenges, and potential solutions. According to the experts, three main contexts and relative actors deal with sustainable healthy diets: food supply chains (storage, distribution, processing, and packaging), consumer behaviour with preferences and decisions, and the in-between *food environment*, which refers to the physical, economic, political, and sociocultural context in which consumers interact with the food supply chains actors to make decisions about acquiring, preparing, and consuming food. To change this complex system, it is necessary to identify leverage points for a system-based approach. The discussion focused on specific food groups whose choice and intake need to be remodulated, as supported by scientific evidence. Specifically, greenhouse gas emissions are generally higher in the production of red meat than in that of any plant food (Strapasson et al., 2016). Moreover, excessive red meat intake has a negative impact on public health (Eat Lancet Commission, 2019, Poux et al., 2018). Accordingly, to lessen the environmental impact of dietary patterns, the need for a shift to plant-based diets, without the necessity of eliminating meat entirely, was emphasised by experts. However, plant-based diets could bring to issues in terms of food acceptability and the risk of nutritional deficiencies (Alcorta et al., 2021, Bakaloudi et al., 2021). In this respect, the experts concluded

*Experts and policymakers identified food supply chains, consumer behavior, and food environment as key elements to healthier and more sustainable diets*

that additional research is needed on alternative protein sources suitable for preventing micronutrient deficiencies keeping low the environmental impact. A reduction of ultra-processed food intake also was stressed, given the evidence of associations with adverse health outcomes, due to the significant content of added sugars, salt and/or fat, and often containing little or no whole foods. Dietary patterns respecting sustainability are in favour of moderate portion sizes, promote local products, and foster biodiversity, as well. A major concern for the experts was about public health recommendations and environmental considerations that should be adapted to the traditions, culture, and gastronomy of every region in Europe.

As for the target of interventions, the study reported that existing policies, primarily target producers and consumers, whereas evidence suggests that efforts should be shifted to target food processing and retail stages.

Although the concept of food sustainability is widely used by a variety of institutions and communities, the discussion highlighted that it is often based on a narrow definition that focuses exclusively on its environmental component rather than a more comprehensive definition that acknowledges its multidimensionality, including the four key features of sustainability: nutritional, social, economic, and environmental. Hence, the experts agreed with the evidence of Scientific Opinion Board (European Commission, 2020), stating that all food policies should ensure the social, economic, and ecological features of sustainability.

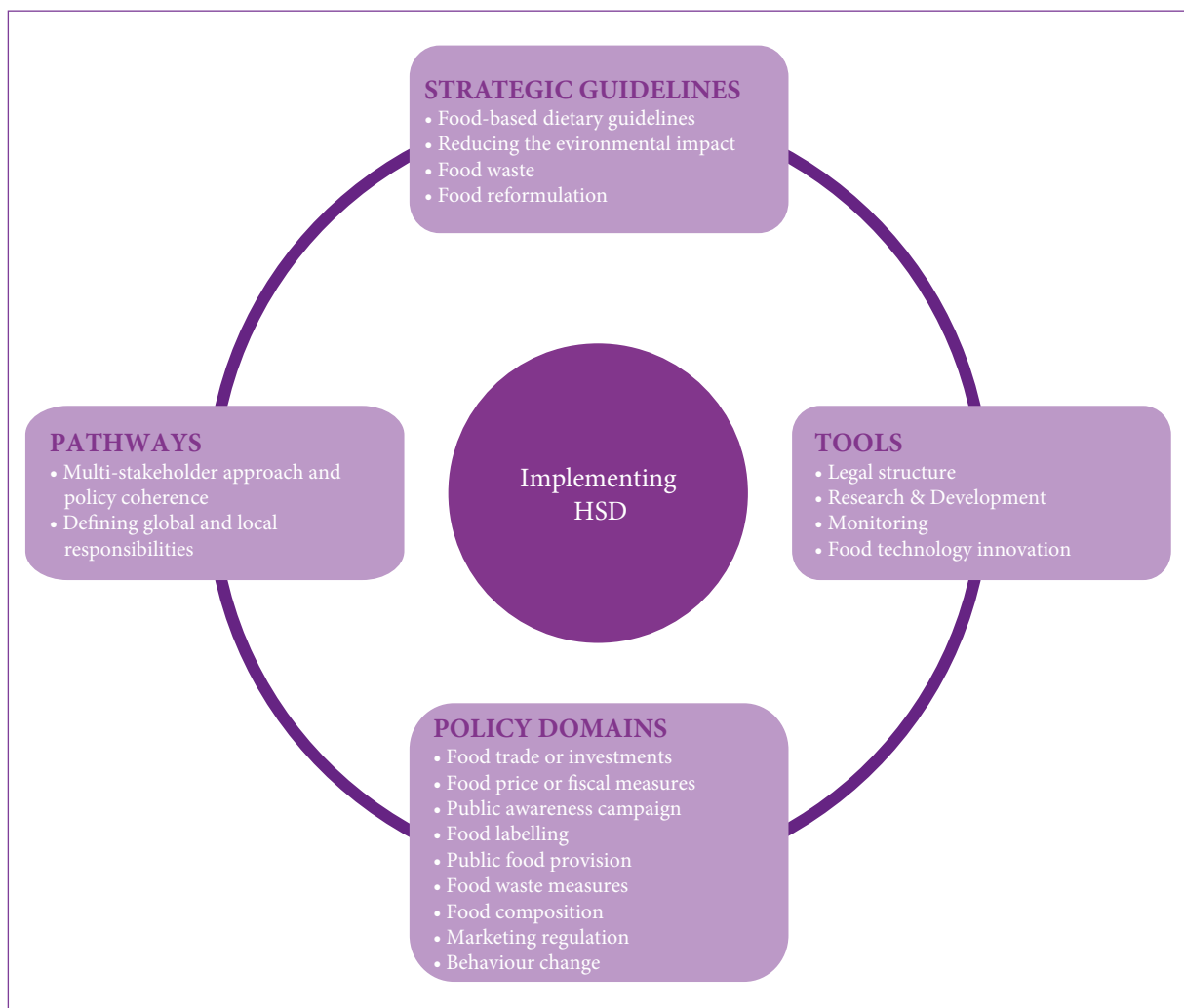
The discussion led the experts to define the main tools and drivers (pathways) for actions to implement HSD, as follows (Figure 5.1):

- **Legal structure.** Although the general opposition of industry lobbies to fiscal instruments, pricing regulation such as subsidies, incentives, taxes targeting the supply chain, have been indicated as a priority.
- **Research and development.** The use of evidence-based knowledge and the development of monitoring tools such as sustainability indicators, life cycle assessments, data platforms for modelling, SDGs research, food-profiling models have been reported as relevant tools.
- **Multi-stakeholder approach and policy coherence.** For policymakers, the sustainability concept requires intersectoral actions and thinking. The study shed light on the more appropriate pathways to follow: a multi-stakeholder approach, involving all actors, from production to consumption and aligning and making coherent the implementation of different policies so that responsibility would fall to the various stakeholders in food industry, the scientific community to government bodies.
- **Defining global and local responsibilities** was stressed by the par-

ticipants, with a combination of bottom-up and top-down initiatives. Political processes approaching issues and potentialities in health and sustainability within strategic food policy action plans requires capacity to bring innovation by means of planning relevant EU and national policies, and regional and local initiatives. In this context, cities with the Urban Food Policy Pact Global Forum have been considered critical for action implementation governing food systems to achieve a sustainable transition.

- **Guidelines.** Strategic guidelines have been proposed as other essential tools. Food-based guidelines should include the sustainability issues with cultural adaptation, but other relevant recommendations should be formulated as guidelines, regarding food loss and waste, reducing environmental impact, and food reformulation.

FIGURE 5.1 - THE POLICY FRAMEWORK TO IMPLEMENT HSDS. Source: authors' elaboration based on Bach-Faig et al., 2022



As components of the framework to implement sustainable healthy, policy domains have been discussed and organized around these substantive issues:

- **Food Price Regulation.** Food pricing strategies including taxation and subsidies could be effective and trigger positive and appropriate market dynamics for influencing food choice. Hence, taxing unsustainable unhealthy foods and subsidising sustainable healthy foods have been reported as effective tools.
- **Food Trade and Marketing Regulation.** Putting into place rules to protect consumers, preventing false or misleading advertisements, and information. Monitoring and regulating marketing of unsustainable and unhealthy foods have been considered as relevant measures.
- **Public Awareness Campaign.** Consumer education and providing information on HSDs were reported as necessary but not sufficient policy interventions to increase public awareness and hence to shape behaviour. The experts agreed that providing information is unlikely to bring about change if not accompanied by stricter measures, (legislation and taxation), considered critical over education, as shown by scientific evidence (SAPEA, 2020). Moreover, food choice is influenced by additional factors such as preferences, advertising and marketing pressure, and pricing. However, effective measures in favour to SHD are early-stage educational projects to shape eating patterns of young generations.
- **Public Food Provision.** Research into public procurement in respect to sustainability suggests that public food catering services influence the food sector decisions and trends. Public food procurement is considered relevant to widespread practices based on sustainability criteria from public procurement schemes within food service. Specifically, the green public procurement aims to decrease environmental impact rather than just apply compensatory measures.
- **Food Waste Reduction.** The reduction in food waste was also highlighted as a relevant, component, but not in isolation, in favour of sustainable healthier nutrition, even though policy specific solutions related to this topic did not emerge.
- **Food Labelling.** The Front-of-pack labels (FoPL) including food ecological footprints have been proposed also as another important tool to increase food literacy. However, their underlying metrics are controversial, due to the assessment of only a subset of food-derived environmental effects. Moreover, understanding sustainable healthy nutrition needs improvement.
- **Food Composition.** The experts considered also the key aspect of food



composition to improve nutritional content of plant-based substitute product, reduce salt, sugars or saturated fat in processed-food.

- **Behaviour Change.** The major perceived barrier is the need for changes in behaviour across food environments, not only by consumers but also by all actors of food value chain. It may imply the necessity to address socio-cultural norms and practices and facilitating food availability and accessibility by ease and affordability for all the actors concerned about sustainable and healthy diets. In this respect, nudging has been proposed, as an effective way to influence citizens' behaviour without further restricting freedom of choice, such as mandatory obligations, or introducing new taxations.



## 6. POLICY DOMAINS FOR HEALTHY AND SUSTAINABLE DIETS

### 6.1 INTRODUCTION

In this part of the study, we aimed to assess which policies have been addressed at the three territorial levels to promote HSDs, starting from a common set of policy domains. To this aim, the policy domains identified by Bach-Faig et al. 2022 have been considered as a starting reference set. However, we discussed the opportunity to aggregate those policy domains or even to add others. As a result, we decide to aggregate “Food trade and marketing” with “Food labelling”, to jointly evaluate the issues of the communication from the food environment to the consumer. Moreover, two other domains (Agri-food production and Socio-economic system) have been included in the research elements that, from the authors’ perspective, intersect the objectives of HSDs in a relevant way. Indeed, the assumption underlying their inclusion in the conceptual framework is that the sustainability principles included in HSDs should also involve agricultural approaches, methods, and techniques. The impact of food systems on the health of people and the planet is, in fact, scientifically proven, and some agricultural models are blamed for various distortions related to greenhouse gas emissions, the use of chemical inputs and the impairment of nitrogen cycles. On the other hand, we face an imposing challenge: producing food for a growing world population while reducing the footprint of this activity, reformulating norms, policies, relationships, and conditions. Indeed, it is the ways and mechanisms that regulate food systems that generate greater or lesser impacts on ecosystems and the socio-economic conditions of access to food. In view of this last aspect, we have also chosen to consider a domain devoted to the socio-economic system that determines the conditions of access to food. In the sustainability of diets, one cannot help but consider the social implications and physical access to food, one of the four dimensions that the FAO identifies for the definition of food security (FAO, 2016a). It should be noted that this broadening of the conceptual framework was also motivated by insights from the cross-reading

*The policy domains identified are:*  
*Food price regulation,*  
*Food marketing and labelling,*  
*Food composition and reformulation,*  
*Public awareness campaign,*  
*Public food provision,*  
*Food waste reduction,*  
*Behaviour change,*  
*Agri-food production,*  
*Socio-economic system*

of documents, which preceded the textual analysis phase presented here.

## 6.2 METHODOLOGY

A textual analysis was carried out to understand the extent to which the set of policy domains selected as promoting HSDs were being addressed in the documentation analysed in the research. The textual analysis was carried out by identifying, for each policy domain, two or three keywords. Consequently, the frequency keywords were processed in the documents. Some semantic expedients were used to refine the search and avoid bias in frequency counting. To compare the frequencies across documents with different size, the number of times the keywords occurred has been divided by the number of pages in each document, net of index and bibliography, providing an Occurrence Index to assess the extent to which HSDs-related policy domains are considered and addressed in documents.

*The Occurrence Index*

Specifically, the Occurrence index Total-Domain  $Occ_i$  for each of nine domains  $i$  has been calculated as follows:

$$1) \text{ Total Domain } Occ_i = \frac{\sum_j^3 n_{i,j}}{\sum_j^3 p_j}$$

Where:

$i=1,2,\dots,9$  (domain)

$j=1,2,3$  (territorial level)

$n_{i,j}$  = number of occurrences of keywords found in the documents considered for the domain  $i$  and at the territorial level  $j$ ;

$p_j$  = number of total pages of the documents considered at the territorial level  $j$

Going in depth also with respect to each of the three territorial levels, the following index was also calculated:

$$2) \text{ Territorial-Domain } Occ_{i,j} = \frac{n_{i,j}}{p_j}$$

Where:

$n_{i,j}$  = number of occurrences of keywords found in the documents considered for the domain  $i$  and at the territorial level  $j$ ;

$p_j$  = number of total pages of the documents considered at the territorial level  $j$

Table 6.1 shows the selected keywords associated with each policy domain, as adapted from the set considered by Bach-Faig et al. (2022) in their

study. Keywords were chosen for the two additional policy domains by the research team as subject matter experts.

Table 6.1 - **POLICY DOMAINS AND RELATIVE SELECTED KEYWORDS UTILIZED FOR THE TEXTUAL ANALYSIS**

Policy domains	Selected keywords (ENG documents)
Food price regulation	price; fiscal; tax
Food marketing and labelling	label; marketing; advertising
Food composition and reformulation	processing/processed; nutrient
Public awareness campaign	education/educative; campaign; school
Public food provision	procurement; canteen
Food waste reduction	waste; food loss
Behaviour change	consumer; behaviour; habit
Agri-Food production	agriculture; rural; farm
Socio-economic system	governance; socio/social; access

The documents examined by the textual analysis are those listed in Table 1.1.

## 6.3 RESULTS

The research allowed to analyse to what extent the nine policy domains listed above (Table 6.1) are treated and addressed in the documentation taken in consideration. Considering the total occurrences found in all documents (Figure 6.1), the domain showing the maximum value of the Occurrence Index was the *Behaviour change* (1.29), followed by *Food production* (1.20), while *Public food provision* ranked last (0.13).

Looking at the index calculated at the different territorial levels - international, European, and National, (Figure 6.2) the aspect that clearly emerges is that the two “extra” policy domains (*Agri-food production* and *Socio-economic dimension*) are among the most recurring. This represents a strong signal, linked to the fact that the dimension of agricultural production is relevant in the strategic orientation documentation at an International and European level. However, at National level, its weight is greatly reduced in favour of policy domains such as *Behaviour change* and *Food composition and reformulation*. This confirms what emerged from the document analysis, that is, nutritional orientation is closely linked to local eating habits and the composition of diets, when it comes down to a national scale. Interestingly, European documentation stands out also for specific attention on a transparent and clear communication to the consumer (*Food marketing and labelling*) and *Price regulation*. As Figure 6.3 shows, this latter evidence

*Behaviour change is the most occurrent policy domain*

*The agri-food production domain is the most relevant at International and European levels, while at National level the nutrition domain is the most important*

Figure 6.1 - THE GLOBAL OCCURRENCE INDEX BY THE NINE POLICY DOMAINS

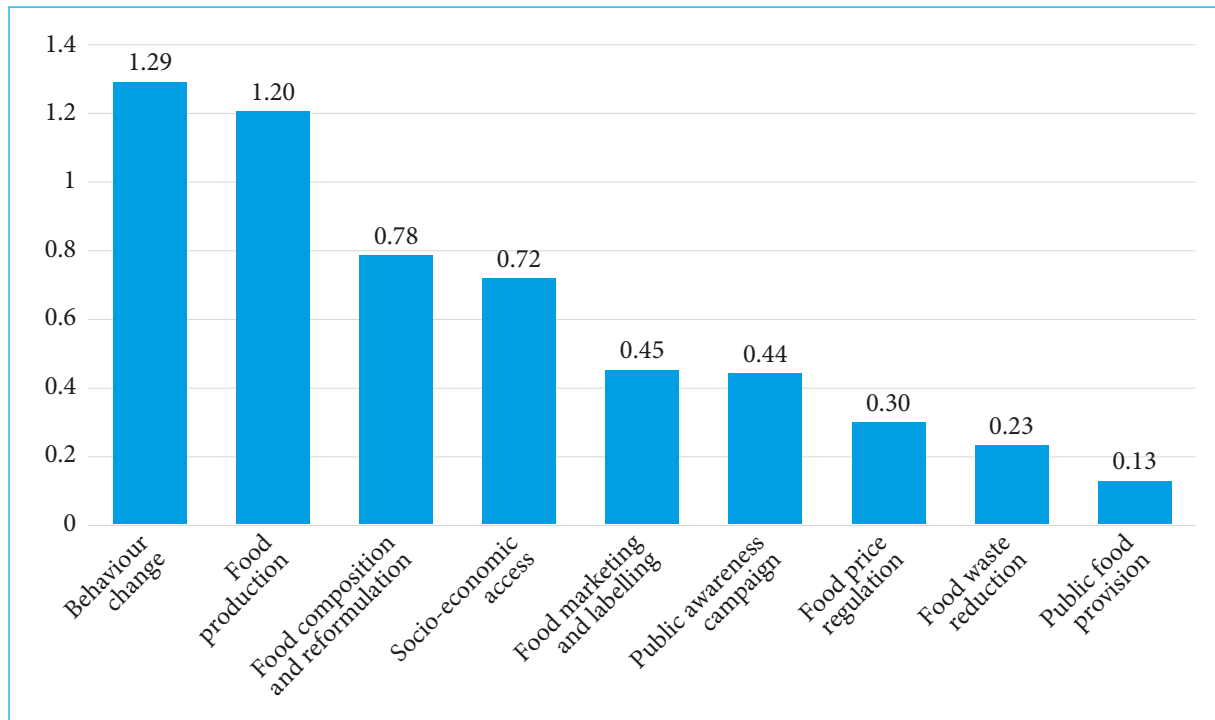
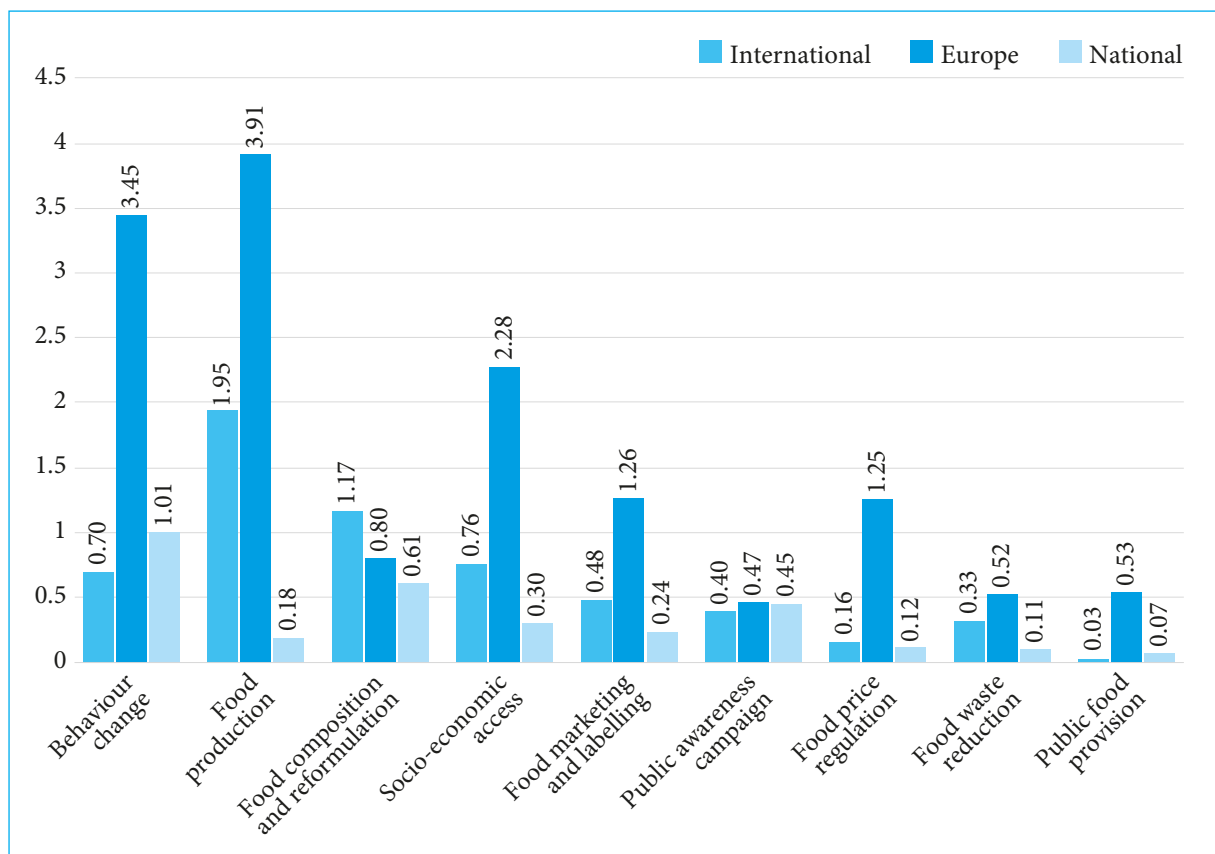


Figure 6.2 - THE OCCURRENCE INDEX BY TERRITORIAL LEVEL



could be due to the high values showed mostly by the document of SAPEA (2023) for both domains, and by the report of JPI –HDHL (2021) for *Food marketing and labelling* domain.

Figure 6.3 highlights also multi-target strategic documents encompassing many policy domains. At international level, Eat Lancet report (2019) presents five high values of the Index for *Food production* (4.205), *Food waste reduction* (2.128), *Socio-economic dimension* (1.359), *Public awareness* (0.831), and *Price regulation* (0.538); at European level, SAPEA report (2023) stands out for six relevant values: *Behaviour change* (7.215), *Public awareness campaign* (0.585), *Public food provision* (0.600), *Food waste reduction* (0.646), other than *Food price regulation* and *Food marketing*, as mentioned before; at national level, *Behaviour change* (1.391), *Food marketing and labelling* (0.432), and *Food composition and reformulation* (0.732), are the most relevant domains emerged in *CREA Italian dietary guidelines* (2018), while *Socio-economic access* (1.143), *Food production* (0.750), *Food waste reduction* (0.679), *Food marketing and labelling* (0.750), and *Food composition and reformulation* and *Behaviour change* (both 0.786), where found to be the most relevant in *Modelli di diete sostenibili a partire dalla diete tradizionali* (2019). Finally, this exercise brought out “invisible” policy domains (*Agri-food production* and *Socio-economic dimension*), which have very high Occurrence Index; these are two policy domains that had not been considered by Bach-Faig et al. 2022 but which the CREA working group decided to add to the list. This is particularly relevant because it provides useful indications for continuing the research. In particular, the European level is the one most compliant with the identified policy domains, since the Occurrence Index values are the highest in almost all domains, while the international and, in particular, the national show much lower values.

FIGURE 6.3 - THE OCCURRENCE INDEX BY POLICY DOMAINS, TERRITORIAL REFERENCE LEVEL, AND SINGLE DOCUMENT

	Food price regulation	Food composition and reformulation	Public awareness campaign	Public food provision	Food waste reduction	Food marketing and labelling	Behaviour change	Food production	Socio-economic access
<b>INTERNATIONAL</b>									
2012 - FAO - Sustainable diets and biodiversity	0.119	1.169	0.367	0.007	0.108	0.112	0.536	2.673	0.755
2016 - FAO - Influencing food environments for healthy diets	0.369	0.424	0.468	0.081	0.036	2.072	1.523	1.432	0.784
2016 - FAO - Plates, pyramids, planet	0.033	0.306	0.361	0.066	0.443	0.377	0.475	0.902	0.410
2016 - FAO - Voluntary guidelines for mainstreaming biodiversity	0.000	0.040	1.375	0.000	0.000	0.000	0.250	4.500	0.250
2019 - EAT Lancet - Food in the Anthropocene the EAT	0.538	0.335	0.821	0.077	2.128	0.256	0.385	4.205	1.359
2019 - FAO - The state of world's biodiversity for food and agriculture	0.000	0.047	0.300	0.110	0.100	0.000	0.400	1.700	0.500
2019 - FAO & WHO - Sustainable Healthy Diets, guiding principles	0.097	0.162	0.226	0.032	0.226	0.129	0.613	0.548	1.774
2021 - BCFN - OneHealth, un nuovo approccio al cibo	0.030	0.183	0.328	0.000	0.821	0.075	0.731	0.597	0.642
2021 - BCEN - Un'alimentazione che rispetta la salute del pianeta e delle persone	0.000	0.000	0.032	0.000	0.000	0.000	0.258	0.258	0.194
<b>EUROPEAN LEVEL</b>									
2017 - Danish University Colleges - Healthy and Sustainable Diets for European Countries	0.683	0.444	0.413	0.492	0.222	0.317	2.317	1.460	1.016
2019 - IPES Food - Towards a common food policy for the EU	0.902	0.973	0.446	0.607	0.455	0.482	1.071	8.920	3.446
2021 - IPI-HDHL Policy Evaluation Network - The Healthy Food Environment Policy Index: Food EPI	0.659	0.829	0.293	0.341	0.000	2.659	0.805	0.659	1.732
2023 - SAPEA - Towards sustainable food consumption	2.154	0.646	0.585	0.600	0.646	2.031	7.215	1.200	2.146
2020 - European Commission - From farm to Fork	0.222	2.000	0.333	0.167	2.278	0.722	0.944	8.333	1.611
<b>NATIONAL LEVEL</b>									
2015 - MIUR - Linee Guida per l'educazione alimentare	0.000	0.159	5.932	0.000	0.136	0.045	0.659	0.273	1.068
2018 - CREA - Linee Guida per una Sana Alimentazione (dossier scientifico)	0.121	0.596	0.258	0.062	0.086	0.197	0.960	0.184	0.248
2018 - CREA - Linee Guida per una Sana Alimentazione - Revisione 2018	0.145	0.732	0.359	0.105	0.136	0.432	1.391	0.095	0.295
2019 - MDS - Modelli di diete sane e sostenibili a partire dalle diete tradizionali	0.036	0.786	0.464	0.036	0.679	0.750	0.786	0.750	1.143







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## 7. CONCLUSIONS

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This study provides a conceptual framework based on a review of studies and reports focused on the implementation of food policy encompassing the promotion of healthy and sustainable diets. Many documents set the vision defining high-level scope and purpose and providing proposals of implementations in terms of policy domains, tools, and pathways, highlighting the need to refine the framework including more specific aspects or additional key domains. Hence, this conceptual framework represents a starting point for a next critical in-depth analysis aimed at designing a theoretical implementation in the Italian food environment. Other components could be introduced in the conceptual framework taking into consideration more in depth current European and National policies, regulations, legislation, and strategic guidelines on agri-food system development, on public health and environmental impacts of food production and consumption.

The definition of a conceptual framework for HSDs necessarily leads to the wider field of food policies as the ongoing outcome of a long process of rethinking of policies addressing food production, processing, consumption, and access. At the same time, food policies have progressively institutionalized and mainstreamed spontaneous and community grass-root movements that have brought at the centre of the action a sustainable approach to food systems. Food policy seems to take a paradigmatic distance from the dominant economic and technological paradigms embracing ecological issues and more ethical approaches to the construction of a new paradigm (Mardsen, 2013).

Having in the background agricultural production which is a heavy regulated sector both for its primary products (food and raw products) and for secondary services (public goods and eco-systemic services), together with the seventeen sustainable development goals, food policy seems to pursue a shift of attention to a mix of technical issues (food composition), social issues (food access and cultural approach), health issues (diets); in other words, it sheds light onto the downstream component of the supply

chain as well as to the food demand. Food policy feeds the growing interest of citizens about how food is processed, transported, kept, sold and so on, with a growing overlapping of security issues, origin of products and environmental issues (Brunori et al., 2013).

Such shift is relevant not only for the definition of the “object” of the policy, and the main policy domains covered, as shown in the previous section, but also for the tools that are put in place. In this regard, food policy lies on global universal principles, which have to do with food security and availability, food access, health and waste. Quite paradoxically, despite the attention and the action have mainly a local dimension, food policy moves from general principles that are reported in any international report on such issues. Consequently, technical aspects such as nutritional, healthy, environmental ones seem to prevail on social and economic aspects of the targets of the policies. On the target issues, food policy tends to follow an upstream approach: through healthy and sustainable food the environmental impact decreases (so no heavy regulation is needed) and, at the same time, the distortions and the trade-offs of the production systems are better balanced. On the contrary, the CAP and the primary products policies are moving in the opposite direction finally moving from general approaches and norms to local attention, designing policies that are closer and closer to local systems of production.

The primary sector has always counted of a generous system of financial support through the CAP, which had looked at the consumer only for cheap food prices and then for healthy products. However, the CAP was born and still is, despite all the relevant changes in the decades, a policy in support of farmers and farming activities, while food policy is meant to be a consumer policy where the focus is on food mainly as a public good (Biesbroeck et al., 2023). The CAP is also a highly regulated policy, based on incentives, standards and, in extreme cases on the elimination of choices available to producers and other actors of the sector. Food policy, having to do with individual choices, is less regulated and can rely on different typologies of intervention such as information, education, transparency, and mild persuasive policies (such as those connected to the food composition, food waste, and so on).

FEs represent a sort of conceptual link between the macro level of regulation typical of the upstream sectors of food and the individual choices made by consumers within a given supply of food. They have been defined as “... the physical (food availability, quality, marketing), economic (food prices), policy (rules and food policies) and sociocultural (norms and beliefs) surroundings, opportunities and conditions that influence people’s food choices and nutritional status” (PEN, 2021). Little is known and in-

investigated about the impact of EU level policies on National food systems and also how EU could pragmatically change its policies in order to create healthy food environments in the EU. FEs provide the choices people have when they make decisions about what to eat. A healthy FEs creates the conditions that enable and encourage people to access and choose healthy diets.



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