

**OVERCOMING THE IMPOSSIBLE TRINITY OF EU
FOOD POLICIES : ADVANCING A NEW APPROACH**



Altermind

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This White Paper has been written by Altermind, with external contributing experts (see appendix on experts).

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EXECUTIVE SUMMARY

Farmers movements in Europe, continued high rates of inflation across the continent, obesity levels that have tripled over 40 years: the year 2024 proves to be challenging for European and national food policymakers. Food policies encompass indeed a variety of policy issues, the three most critical of these being environmental sustainability, health and price aspects.

There is a ‘conflict of policy objectives’ prevailing today (Section 1), as if policymakers – namely the European institutions and the Member States – were driven to choose between the different angles of an ‘impossible trinity’, in which agrifood systems could be at the same time environmentally sustainable, healthy for consumers and affordable.

This conundrum has been intensifying over the past years, since Europe has established an ambitious, yet controversial framework to tackle climate change, notably through the Green Deal and the Fit for 55 packages (Section 2). These comprehensive texts promote legal objectives, as the environmental impact of the agrifood value chain (greenhouse gas emissions, water, land use, waste) is growingly significant in Europe. Because of the fragmentation of food value chains and their variety of stakeholders, the transition of these ‘agrifood systems’ proves to be a tough challenge to address.

Therefore, there is a need for innovative and pragmatic food policies favoring sustainable and sovereign food production (Section 3). A pragmatic approach, also relying on national best practices, could help solve the three pending questions which undermine environmentally sustainable food policies: the absence of definition of a ‘sustainable meal’, the inefficiency of information and labelling policies, the dependence on foreign inputs such as fertilizers.

Such environmentally sustainable policies are bound to improve health outcomes, the healthiness and the ‘green’ aspects of diets being intrinsically linked (Section 4). Unhealthy dietary patterns have been growing in Europe, raising concerns among specialists qualifying these flawed diets as a leading risk factor for disease, mortality and economic negative externalities. Dietary patterns are defined by a series of social, economic and cultural reasons. Food policies should therefore adopt a systematic approach when promoting healthy foods.

Economic considerations are a nodal point of food policies, not least since rising inflation levels at the beginning of year 2022 (Section 5). Even though inflation has been decelerating these past months, price remains a critical factor, and a primary criterion for food purchase, surveys and research suggest. Public policymakers should therefore envision new ways of supporting financial access to healthy and sustainable food for all (Section 6): even though affordable, healthy and eco-friendly diets exist – such as Herbalife’s Formula 1¹, as exclusive data shows –, the perception of quality food remains strictly associated with higher prices. Various policy tools, relying on information, prices or other market mechanisms, could be instrumental to changing behaviors.

The promotion of dedicated, actionable food policies aiming at providing sustainable, affordable and healthier meals would certainly contribute to a virtuous dietary revolution in Europe. A new approach, which continuously envisions the different aspects of policies (environmental, health, affordability) combined, while mobilizing a full spectrum of policy tools (regulations, subsidies, information, research), is therefore necessary.

¹ Formula 1 refers to a range of nutrient-rich shake mixes providing a balance of protein, fiber, vitamins and minerals

SUMMARY

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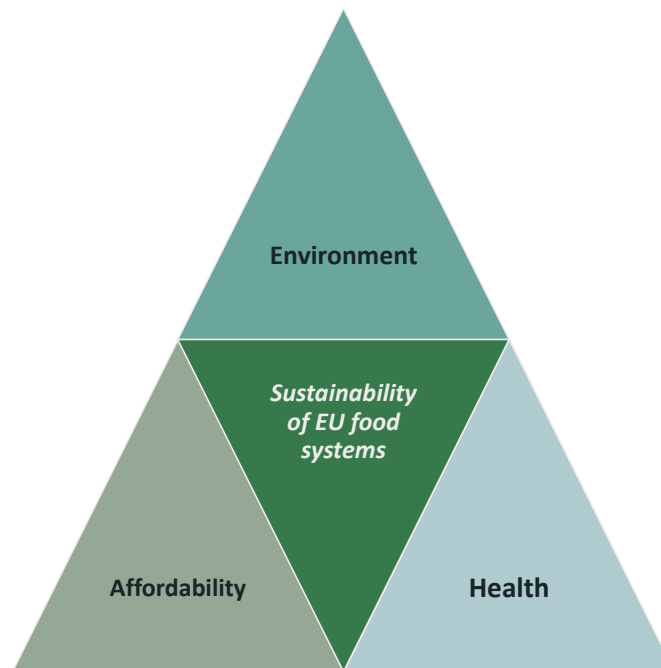
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1 INTRODUCTION

When it comes to agricultural and food policies, the European Union (EU) faces today the challenge of an apparent ‘impossible trinity’: The Union, the Member States and even private stakeholders are simultaneously pursuing the objective of making the agrifood systems more sustainable, healthier and more affordable. This echoes the pursuit of sustainability in food systems as defined by the Food and Agriculture Organization (FAO²), which considers health, environment, economics and society as completely intricately.

These objectives are indeed of pressing importance:



- 1. Environmentally Sustainable diets:** Food systems account for 32% of greenhouse gas emissions, representing a main user of water and land resource³, accelerating climate change. While products with a high climate footprint are still popular and sometimes subsidized, there is to date no clear definition of what a ‘sustainable food’ is;
- 2. Healthy diets:** Europeans tend to eat unhealthily, despite their good intentions. They consume too much saturated fats, sugar, salt, and too little vegetables, nuts and whole grains. Current dietary patterns are a leading health risk associated with, e.g., obesity, cardiovascular disease and cancer, accounting for up to 17% of all deaths in the EU according to recent literature⁴;
- 3. Affordable diets:** While affordability of food is one of the primary objectives of the EU’s common agricultural policy, recent levels of inflation have worsened the accessibility of full meals to too many Europeans⁵. On average, almost one out of ten EU citizens cannot afford a nutrient rich meal every other day.

² Food and Agriculture Organisation of the United Nations (FAO) - [Glossary](#).

³ European Environmental Bureau (2024) - [Food systems](#).

⁴ Yaneva, R. (2023) 'Unhealthy diet as a behavioral risk factor for socially significant diseases and premature mortality', Medis.

⁵ For its statistics, Eurostats defines a ‘proper meal’ as a meal that includes meat, fish or a vegetarian equivalent.

There is today a 'conflict of policy objectives', as if policymakers - namely the European institutions and the Member States - were driven to choose between the different angles of the 'impossible trinity'. Reaching the three 'angles' of the 'impossible trinity' appears to be very challenging as food systems' products are likely to be only:

- **Environmentally sustainable and healthy.** Research suggests that healthy, environmentally sustainable foods are slightly pricier today⁶;
- **Environmentally sustainable, unhealthy and cheap.** Some unhealthy foods, such as sodas, happen to have a moderate carbon footprint without being pricier (sugar being the plant with the lowest GHG, water and land uses). Meta-analyses indicate for example that differences in prices⁷ between juices and sodas are almost non-existent;
- **Healthy and cheap, without being environmentally sustainable.** Meals composed of beef and vegetables, such as lasagna, or imported fishes such as salmon (see figure 1 below), prove to bring good nutrient intakes to consumers at a relatively low price, while implying higher carbon footprints than other meals.

This White Paper is a contribution providing guidelines on how to overcome this apparent 'impossible trinity'. It aims to draw feasible, pragmatic, science-based solutions to this dilemma and provide concrete ideas to address each of the three dimensions – environmental sustainability, health, affordability – in a systematic and consistent way.

To conduct this work, Herbalife has relied on:

- A multi-disciplinary scientific team, composed of policy experts, data scientists, epidemiologists, professors of nutritional sciences, medical doctors, cognitive sociologists, marketing professors (see appendix 1 detailing experts);
- Extensive interviews of professionals in eight countries, contributing with *ad hoc* analyses and brainstorming;
- A comprehensive quantitative data analysis aggregating the price, carbon footprint and nutrient density of a range of popular meals in Europe⁸, to concretely depict all three angles of the 'impossible trinity';

The present White Paper alternates between:

- Expert zooms on the policy challenges studied;
- Visual representations;
- Case studies illustrating those challenges in concrete real-life settings;
- Thematic focuses.

At the end, this White Paper presents a strategic view on the manner to strengthen those policies to reach each of these goals by harvesting the positive co-benefits and avoiding socially harmful trade-offs or bad compromises.

Among the policy options discussed in this paper, it is demonstrated for example that:

- **Information and education policies** are widely used and efficient nutrition policy tools. Improving them to empower consumers to better navigate the food systems is an evident policy approach, at low cost, to make food choices healthier and more environmentally sustainable. **Such an approach includes fostering consumers' nutrition literacy, and**

⁶ Rao M et al. (2013) 'Do healthier foods and diet patterns cost more than less healthy options? A systematic review and meta-analysis', *BMJ Open*, 2013.

⁷ *Ibid.*

⁸ Price, greenhouse gas emissions and nutritional data were collected for a range of foods and then aggregated into meals for analysis. A range of take-out or pre-cooked meals have been selected based on a press review in the five largest EU Member States (Germany, France, Spain, Italy, Poland).

improving consumers' awareness of how consuming a 'sustainable' meal constitutes here a key objective;

- **Tax and subsidy policies** are a powerful tool to make healthy and sustainable choices easier and more accessible for consumers. Adapting the VAT system to reduce the charges imposed on sustainable and healthy (e.g., nutrient dense) products can be a powerful policy tool. Research has shown that even small price incentives can change people's consumption patterns;
- **Financial support for research and development** in understanding, addressing and monitoring of certain diet-related outcomes, e.g., micronutrient deficiency. Promoting the development of alternative, high-quality proteins will also enable stakeholders along the food value chain to improve the composition of their foods, so that they may become more sustainable and healthier.

With this contribution, Herbalife aims to highlight a positive and pragmatic pathway towards overcoming the apparent 'impossibly trinity'.

The graph below draws a three-dimensional comparison between a range of popular full meals – healthy, home-cooked ones, pre-cooked and frozen meals and take-out/out-of-home meals along the three angles of the 'impossible trinity'. It shows how different meals score regarding their sustainable, health and affordable characteristics.

Figure 1: Price, carbon footprint and nutrient density of a selection of meals in Europe



Source: Calculations based on the Nutrient Rich Food Index (NRF) developed by Dr. A. Drewnowski; Agribalyse data base; Ciqual data base; Herbalife’s own data and LCA⁹

⁹ Average EU prices for Herbalife’s products were provided by Herbalife. Prices of other meals were calculated by an average of the five largest Member States (Germany, France, Italy, Spain, Poland, representing approximately 2/3 of European population). For purchases of pre-cooked and home-cooked meals, the average of the price of a mid-level brand in one of the large local supermarkets (discounters excluded) was used (Supermarket chains were selected based on size and online availability of prices (DE: Rewe, FR: Intermarché, ES: El Corte Inglés, IT: Conad, PL: Carrefour PL)). Where a local store had to be selected, a store in the center of the country’s capital city was selected. For take-out meals, the price was calculated by the average of a random choice of 5 restaurants in the capital city on the country’s most popular food delivery website (DE: Lieferando, FR: UberEats, IT, ES: JustEat, PL: Wolt). For Kebab in Germany and France, outside sources were used (Lieferando and Giera conseil, respectively). For McDonalds BigMac and Fries, online prices were consulted on local websites.

Nutrient density was calculated based on the Nutrient Rich Food Index. Developed by Dr. A. Drewnowski, it aggregates 9 nutrients to encourage and 3 nutrients to discourage. For nutritional values, data available on the French authorities’ Ciqual website was used (and McDonald’s website for BigMac + Medium fries). Nutritional values for Herbalife’s products rely on in-house data.

For carbon footprints, Agribalyse data base (developed by French ADEME) which aggregates data on the CO₂ impact of different food products, was used. Through cross-multiplication, kgCO₂/100g of protein or kgCO₂/100kcal was used. CO₂ emissions of Herbalife’s products rely on in-house data from an internal life-cycle assessment.

2 THE ENVIRONMENTAL IMPACT OF FOOD MUST BE REDUCED URGENTLY

Over the last years, the sustainable aspect of agrifood systems has been much debated within the EU institutions, gaining political traction in the Member States primarily under the impulse of the Green Deal, a major turn in environmental policies announced in 2020. The starting point of such discussions is the shift towards environmentally sustainable agrifood systems, which is key to reach carbon neutrality.

2.1 THE SHIFT TOWARDS SUSTAINABLE AGRIFOOD SYSTEMS IS KEY TO REACH CRITICAL SUSTAINABLE DEVELOPMENT OBJECTIVES

2.1.1 The agrifood value chain is a significant source of greenhouse gas (GHG) emissions, a major consumer of water, and a considerable user of land, affecting both climate change and environmental sustainability

In Europe, food systems¹⁰ accounted for around 32% of the direct greenhouse gas (GHG) emissions in 2020¹¹. To achieve a successful mitigation of this massive environmental impact, the environmental assessment of agrifood value chains available to policymakers must be extensive, so that new policy and business solutions can be as impactful as possible.

There is a large variation between the main components of the agrifood value chain in total agrifood emissions:

- 53% comes from pre- and post-production emissions, e.g., manufacturing of fertilizers, food processing, packaging, transport, retail, household consumption and food waste disposal. This whole sector is intensive in labor;
- 43% originate from farm-gate emissions, e.g., cultures and breeding before any process of processing transport. As a matter of fact, agriculture alone accounts for 11% of all European GHG emissions, 54% of methane emissions, and contributes to other air pollutants like ammonia;
- 4% comes from land-use change¹², e.g. deforestation and peatland degradation.

The environmental impact varies from one product to the other. Comparing the GHG footprint of different products, animal products, especially beef prove to be particularly emitting. The graph below recalls the specific emissions related to 100g of protein for different sources of protein. **Depending on the type of plant, producing 100g of plant-based protein can result in emissions nearly 90 times lower** than producing the same amount of protein¹³ through livestock breeding for instance (see figures 2 and 3).

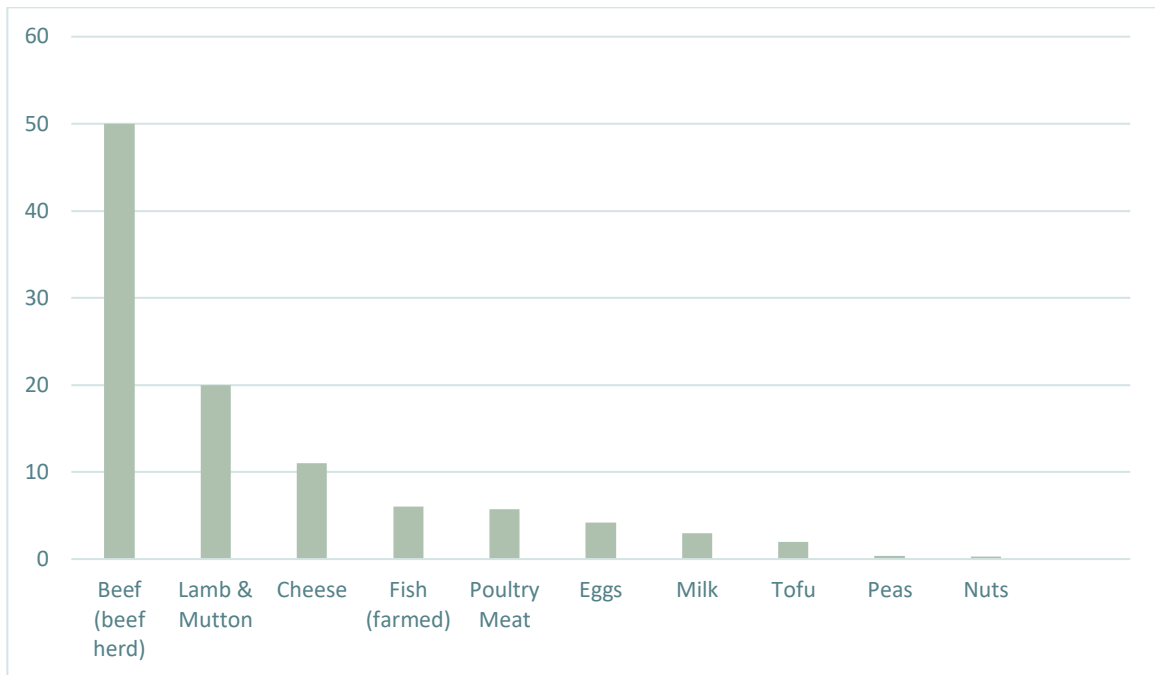
¹⁰ Food systems defined are as “the entire range of actors and interlinked activities that add value in agricultural production and related off-farm activities such as food storage, aggregation, post-harvest handling, transportation, processing, distribution, marketing, disposal and consumption”; Food and Agriculture Organization of the United Nations (FAO) - [Glossary](#).

¹¹ FAO (2022) - [FAOSTAT Portal](#).

¹² FAO (2022) - [FAOSTAT Portal](#).

¹³ Langyan S. et al. (2022) - [Sustaining Protein Nutrition Through Plant-Based Foods](#).

Figure 2: kgCO2 eq. emissions per 100g or proteins of various foods¹⁴



Source: Poore & Nemecek (2018)

The *Formula 1* products range ranks well among full meals in terms of their carbon footprints (see Herbalife’s contributions below and table 1).

¹⁴ Poore, J., & Nemecek, T. (2018) ‘Reducing food’s environmental impacts through producers and consumers’, Science. These data are aggregate global data. They are therefore to be interpreted with caution and should be seen for illustrative purposes only.

Herbalife's contribution: High-quality, low carbon protein

Herbalife has been harnessing the power of plants for over 40 years, while diversifying the sustainable sources of protein humans use in Herbalife's products. Today, based on raw material consumption, 81% of the protein in Herbalife's global products is plant-based, with primary ingredients being soy, pea, rice and quinoa. These sources of protein are low emitting, the figure below demonstrates.

The number-one ingredient in many of the products is soy protein. Soy is one of the only complete plant-based proteins since it contains all nine essential amino acids that our bodies cannot produce on their own. Replacing even a small portion of animal proteins with sustainable plant-based proteins can have a long-term positive impact. At the same time, Herbalife continues looking for alternative plant-based proteins that can be sourced locally.

To that end, Herbalife participates in EU-funded research projects such as the INCREASE, Giant Leaps and SMART protein projects. The INCREASE (Intelligent Collections of food legumes genetic resources for European agrifood systems) project (EUR 7 million funding, during 6 years) aims to promote biodiversity through better managing and using genetic resources. SMART is a partnership of multiple organizations developing plant-rich foods from plants, byproducts and fungi.

Herbalife's plant-based products come with a low carbon footprint. The table below compares the carbon footprint of Herbalife's meal shake Formula 1 with different popular convenient take-out or pre-cooked meals, as well as a selection of healthy home-cooked meals. To compare the products as equally as possible, CO₂ emissions are calculated for the main protein source. Ranked from lowest to highest emissions, it is evident that Herbalife's Formula 1, based on soy protein isolate, only emits a fraction of popular ready-to-eat meals such as pre-cooked lasagna.

Table 1: kgCO₂ eq. emissions per 100g of protein for various foods

Meal	kgCO ₂ /100g of protein	kgCO ₂ /100kcal
Herbalife Formula 1 made with semi-skimmed milk	3.61	0.29
Herbalife Formula 1 made with soy milk	1.69	0.13
Home-cooked Grilled salmon, carrots, pasta	3.27	0.35
Home-cooked Turkey-veggie bread, veggie Soup	2.83	0.23
Pre-cooked Pizza Margherita	1.83	0.07
Pre-cooked Lasagna	8.03	0.38
Pre-cooked Stuffed raviolis	19.94	0.80
Take-out Kebab	7.77	0.47
Take-out Sushi	3.66	0.14
Take-out McDonald's BigMac + medium fries	6.48	0.21

Source: Herbalife's own Life Cycle Assessments (LCA); ANSES Agribalyse data base.

The agrifood system also uses significant quantities of water. At a global level, 72% of all freshwaters extracted is used by the agricultural sector, while 16% only is used directly for human consumption¹⁵. Assessing the total water used, from the irrigation process to the final steps of industrial manufacturing, is key. The table below shows that while cereals’ production needs less water per kilogram than eggs or meat, the production of plant-based meals require little quantities of water.

Table 2: Water footprint of selected food products from crop and animal origin

Product	L/kg	L/kcal	L/g of protein
Cereals	1.64	0.51	21
Pulses	4.06	1.19	19
Eggs	3.27	2.29	29
Chicken meat	4.33	3.00	34
Pig meat	5.99	2.15	57
Bovine meat	15.42	10.19	112

Source: Hoekstra, A. & Merkonen, M. M. (2012)¹⁶

As the availability of water is bound to be limited in some parts of Europe in the next decades, there is an urgent need to support food production that is less intensive in water¹⁷. A focused rebalancing of the common agricultural policy (CAP) could be an effective option. More than 80% of subsidies available in the CAP are destined for animal-based foods today, although the latter supplies only 35% of EU calories and 65% of proteins¹⁸.

Agricultural land use and land use change also impact climate and environment. Almost 40% of all land in the EU is used for agriculture¹⁹. Quantitatively, livestock uses three quarters of the global agricultural land²⁰, and 63% of arable land is used to grow animal feed²¹. Livestock currently leaves very little space for less carbon-intensive cultures and carbon sinks. Carbon removals have been sharply reduced in the last 10 years²², while land use for the livestock sector remained constant²³.

Finally, as they involve considerable logistics, large distances and multiple intermediaries, European agrifood systems also generate significant plastic waste. Plastic packaging has increased alongside

¹⁵ FAO (2021) - The state of the world’s land and water resources for food and agriculture: Systems at breaking point (SOLAW 2021).

¹⁶ Hoekstra, A. & Merkonen, M. M. (2012) ‘A Global Assessment of the Water Footprint of Farm Animal Products’, Ecosystems.

¹⁷ European Environment Agency (2024) - European Climate Risk Assessment.

¹⁸ Kortleve, A. et al. (2024) - Over 80% of the European Union’s Common Agricultural Policy supports emissions-intensive animal products.

¹⁹ Eurostat (2018) - Land use statistics.

²⁰ Mottet, A. et al. (2017) ‘Livestock: On our plates or eating at our table? A new analysis of the feed/food debate’, Global Food Security.

²¹ Greenpeace (2019) - Feeding the Problem: the dangerous intensification of animal farming in Europe.

²² European Environment Agency (2023) - Greenhouse gas emissions from land use, land use change and forestry in Europe.

²³ European Feed Manufacturers’ Association (2024) - A Few Facts About Livestock and Land Use.

the growth in food waste, with Europe's total use of plastic reaching 49 million tons a year, of which 40% is used for food. Most of the plastic is single-use plastic, and every European citizen generates 30 kg of plastic packaging waste every year²⁴. At the European level, only 38% of disposed plastic is recycled, while the remaining waste is either landfilled or incinerated²⁵. First policy responses are emerging, with the EU Single-Use Plastic Directive and the Packaging and Packaging Waste Directive, seeking to reduce single-use plastic and improving recycling and reuse. At Member State level, France for instance set exemplary milestones until 2040 to completely erase single-use plastic in consumption²⁶.

Individual stakeholders in the economy can also play their part in reducing packaging waste. Herbalife (see below) has therefore drawn ambitious strategies to achieve more sustainable packaging along its value chain.

Herbalife contribution: Sustainable packaging

Herbalife tries to integrate sustainable practices into its product packaging. The company has strategically reduced its use of rigid plastics in packaging, going from 15,765 metric tons in 2021 to 13,428 metric tons in 2022²⁷ - a 14.82% decrease - and increased its share of recycled materials in production by 60%.

In the meantime, Herbalife reached a use of 25% post-consumer resin (PCR) in its Formula 1 packaging across key markets, including the U.S. and Mexico, reducing its virgin plastic usage by 332 metric tons.

Herbalife has been exploring renewable alternatives, such as switching to scoops made from sugarcane byproducts. This policy has led to the removal of 8 million plastic scoops per year from products in Europe and Africa markets, eliminating 45.6 metric tons of virgin plastic per year²⁸.

These efforts have been extending to secondary packaging and logistics, where Herbalife has implemented the use of shipping boxes made from recycled paper and sugarcane waste. By removing cardboard dividers in shipping boxes in Northern European markets, Herbalife also saved more than 15 metric tons of cardboard materials in 2022.

Herbalife's proactive involvement in global recycling initiatives and collaborations with local entities showcases its dedication to solving plastic waste challenges. By improving recycling infrastructure and raising awareness, the company not only commits to environmental sustainability but also meets consumer expectations for eco-friendly products, aligning its practices with modern values and sustainability goals.

²⁴ European Court of Auditors (2020) - [EU action to tackle the issue of plastic waste.](#)

²⁵ Eurostat (2022) - [Plastic packaging waste: 38% recycled in 2020.](#)

²⁶ French Act of February, 6th 2020 "relative à la lutte contre le gaspillage et à l'économie circulaire".

²⁷ [Herbalife Global Sustainability Report 2021-2022.](#)

²⁸ *Ibid.*

2.1.2 Food waste is a critical issue to address to promote sustainability in Europe and beyond

Alarming statistics on global food waste underscore another critical issue that demands to be addressed as an immediate priority, including in the EU: Waste. According to the latest report from the United Nations Environment Program²⁹, over 1 billion meals are discarded daily worldwide, accounting for nearly a fifth of food available to people. Food loss and waste generate 8 to 10% of global greenhouse gas emissions, a figure that exceeds for instance the emissions from the aviation sector. In 2022, households were responsible for 60% of total food waste in Europe, while the food services industry and retail sectors accounted for 28% and 12%, respectively³⁰.

To tackle this problem, the European Commission has put forward a revision of its waste framework directive. By 2030, EU member states are required to achieve a 10% reduction in food waste during processing and manufacturing and a 30% decrease per capita at retail and consumption levels (including restaurants, food services, and households), compared to the levels recorded in 2020. Both packaged food producers and fresh food stakeholders will have to play their part in the recycling processes, or in the reutilization solution of organic waste.

Herbalife contribution: Drastically reducing food waste

Herbalife is deeply committed to reducing food waste at all stages of its production process: While the standardized containers and portion sizes allow to reduce waste at a minimum, Herbalife also reduces its food waste impact by converting products that are no longer authorized for sale for human nutrition into animal feed and also use byproducts. For example, in 2021 and 2022, approximately 153 metric tons of food product waste were redirected into animal feed in Herbalife's main distribution center in Venray, Netherlands.

²⁹ United Nations Environment Program (2024) - [Food Waste Index Report 2024](#).

³⁰ *Ibid.*

2.2 EUROPE'S AMBITIOUS CLIMATE OBJECTIVES ARE OF PARTICULAR IMPORTANCE FOR THE AGRIFOOD SYSTEM

2.2.1 The Green Deal and the Fit for 55 package set Europe on the track of climate neutrality in 2050, to which the agrifood system must contribute

The European Green Deal is the most impactful political initiative within the EU of the past years. It introduces legally binding climate targets across all sectors of the economy. Key objectives of the European Green Deal include a reduction of 55% in GHG emissions by 2030 compared to 1990 levels, paving the way to the net-zero objective by 2050. **The agrifood system is bound to play its part in this major climate transition enterprise.**

Focus: The European Green Deal

The Green Deal represents a comprehensive and ambitious plan to make the EU's economy sustainable and climate neutral. Introduced in December 2019 by the European Commission under the impulse of President Ursula von der Leyen, the Green Deal outlines a roadmap for achieving carbon neutrality and fostering economic growth while addressing the challenges of climate change.

It sets a range of ambitious targets, including achieving net-zero greenhouse gas emissions by 2050 and reducing emissions by at least 55% by 2030 compared to 1990 levels. These targets align with the Paris Agreement's goal of limiting global warming to below 2 degrees Celsius above pre-industrial levels, with efforts to pursue efforts to limit it to 1.5 degrees Celsius.

The Green Deal encompasses various policy initiatives and legislative measures, such as:

- The European Climate Law, which enshrines the EU's commitment to achieving climate neutrality by 2050 into law and establishes a legal framework to reach the EU's climate targets;
- The Climate Pact, which aims to engage citizens, businesses, and organizations in the transition to a climate-neutral society by promoting awareness, dialogue, and collaboration;
- The Farm to Fork strategy, which seeks to promote sustainable food systems by reducing the environmental footprint of food production and consumption, improving food quality and nutrition, and ensuring fair and transparent supply chains.

To finance the environmental transition, the Green Deal benefits from a total budget of EUR 1 trillion^{31,32}. While 53% of the expected resources, e.g. EUR 528 billion, is derived from the EU's own budget and the EU Emissions Trading System's product, the InvestEU program, leveraging EUR 279 billion from both public and private contributions up to 2030, will co-finance. Backed by InvestEU, the European Investment Fund, an affiliate of the European Investment Bank, has been gradually investing in new, innovative and sustainable food productions and accompanying their growth³³.

³¹ European Commission (2020) - [The European Green Deal Investment Plan and Just Transition Mechanism explained.](#)

³² FoodDrinkEurope (2023) - [Soil health: Sustainable agriculture transition in Europe will cost US\\$32.3 billion, flags FDE report.](#)

³³ European Investment Fund, December (2023) - [InvestEU: Convent Capital agriFood growth fund receives EUR 35m European backing for sustainable investments.](#)

With the Fit for 55 legislative package, the European Commission has submitted an extensive legislative plan to enforce the Green Deal with its co-legislators. The package is a set of proposals to revise and update the EU legislation, which pieces of legislation have been gradually adopted by the Parliament. Some of the most remarkable proposals are the extension of the EU carbon market (the Emissions Trading System, ETS) to a wider scope and the introduction of a Carbon Border Adjustment Mechanism (CBAM)³⁴.

The Farm to Fork strategy was presented following the reform of the CAP, in 2023. The overarching and ambitious objective of the Farm to Fork strategy is to build a food chain that works for consumers, producers, climate and the environment³⁵. It is meant to address health and sustainability from a holistic point of view³⁶, by:

- Ensuring sustainable food production, while ensuring there is no soil deterioration;
- Promoting sustainable food consumption and facilitating the shift to healthy and sustainable diets, putting a focus on education;
- Enabling the transition by encouraging research innovation, technology and investments, with an encouragement to new skills and models.

While the Farm to Fork strategy emphasizes sustainability and environmental protection, it has been criticized for potentially underestimating the needs, constraints and difficulties met by the farming sector, particularly those farmers dependent on conventional farming practices. Critics have argued that without adequate support mechanisms and incentives for farmers transitioning to more sustainable production methods, the strategy would risk exacerbating inequalities and undermining the subsistence of agricultural communities³⁷. Concerns have been raised about the potential impact on food security and affordability. Stringent regulations and increased production costs may lead to higher food prices and reduced accessibility, particularly for vulnerable populations. **For these reasons, the Farm to Fork strategy has underachieved as far as its original ambitions are concerned. Indeed, out of the almost 30 legislative proposals envisaged in the Commission’s 2020 Communication³⁸, only half of them have been implemented.**

³⁴ Matthews, A. (2022), *‘Trade policy approaches to avoid carbon leakage in the agrifood sector’*, Brussels, The Left in the European Parliament.

³⁵ European Commission (2020) - [A Farm to Fork Strategy For a fair, healthy and environmentally-friendly food system.](#)

³⁶ *Ibid.*

³⁷ European Policy Center (2022) – [Farm to Fork Strategy : The Unconvenient Truth.](#)

³⁸ *Ibid.*

2.2.2 Despite the European institutional changes in 2024, sustainability will likely remain a key political objective in Europe over the next decades

The overall orientation of the Green Deal will be hard, if not impossible, to entirely challenge. Investigating feasible and systemic political solutions to this pillar of the apparent ‘impossible trinity’ remains a paramount priority, even in a potentially evolving political climate, as Europe, among other regions, is gearing up to a general election in June 2024. While a new majority could emerge after these elections in June, the choice of new European commissioners will be proposed by the Council of Member States, following Article 17 of the Treaty on the European Union (TEU), e.g. by Heads of Governments and Heads of States whose mandates are not affected by the EU elections. Article 17.7 TEU states that the choice of the commissioners is made “*taking into account the elections to the European Parliament*”, MEPs being only entitled by the TEU to confirm or veto the proposed commissioners, after organizing official hearings to assess each candidate.

The ongoing CAP will be framing the further greening of the agrifood systems till 2027. The Parliament and the Council have agreed though on a substantial modification of the CAP framework in February 2024, granting Member States the right not to control the application of the “*minimum land left for fallow*” requirement. They also exempted farms with less than ten hectares of land from administrative controls and penalties (which represent two-thirds of all beneficiaries of the CAP). They have maintained the new requirement for Member States to draft Strategic National Plans, outlining how they intend to meet the objectives of the CAP.

These Strategic National Plans could fuel new fruitful, stimulating discussions and prompt necessary adjustments between the European Commission and the Member States on sustainable agriculture and sustainable food in the long run. In economic affairs, the comparable “European semester” process, established to reinforce economic and budgetary convergence, enabled the national financial administrations to assimilate better the Union’s agenda, policies and strategies. In the CAP framework, the introduction of these Strategic National Plans’ requirements could accelerate the “acculturation” of national technocrats to the European agriculture policies and vision. The obligation to draft and implement National Plans seems to be a balanced approach between common, European objectives – agreed upon by the States – and the principle of subsidiarity.

All the regulations mentioned above rely on key principles of European treaties. A complete change of approach would therefore mean amending these treaties³⁹.

³⁹ At the top of the hierarchy of EU norms are the Treaties: they are agreed upon by member states and outline the objectives, competencies, and institutional framework of the EU. Treaties hold the highest legal authority and can only be amended through specific procedures outlined in the Treaties themselves. Beneath the Treaties are secondary legislation, which includes regulations, directives, and decisions. Regulations are directly applicable and binding in their entirety upon Member States, whereas directives set out specific objectives that Member States must achieve through their own national legislation. Finally, decisions apply to specific individuals, entities, or Member States and are binding upon them.

Herbalife's contribution: Ambitious commitments in the framework of the EU Code of Conduct for Responsible Food Business and Marketing Practices

The Code of Conduct for Responsible Food Business and Marketing Practices represents a key milestone within the EU Farm to Fork strategy, delineating shared goals and suggested steps for stakeholders along the food supply chain to voluntarily adopt, endorse, and actively participate in. Its aim is to bolster the shift towards sustainable food systems by fostering alignment, commitment, and collaborative efforts among these actors.

Herbalife has signed the Code and commits to several pledges within this framework for its EU work:

- **Healthy, balanced and sustainable diets.** Herbalife aims to support consumers to shift their consumption habits towards more sustainable diets, particularly towards more plant-based products, improving people's health and meeting consumers' dietary and cultural preferences;
- **A climate neutral food chain in Europe by 2050.** Herbalife aims to achieve net zero emissions in all factories, warehouses and offices by 2050 and plans to develop interim science-based targets as well as including scope 3 emissions once the GHG accounting is completed;
- **An optimized circular and resource-efficient food chain in Europe.** Herbalife aims to achieve 100% responsibly sourced shipper boxes and 100% responsibly sourced paper-based packaging for its products, significantly reducing paper use and reduce the use of virgin plastics by switching to recycled plastic by 2025.

3 THERE IS A NEED FOR INNOVATIVE, SUSTAINABLE AND SOVEREIGN FOOD POLICIES

The EU, the Member States and the agrifood stakeholders need to learn lessons from previous policies, and address pending issues, in order to effectively build more sustainable food systems.

3.1 LEARNING LESSONS FROM ONGOING POLICIES IS A FIRST STEP

3.1.1 The Green Deal in the agrifood systems has revealed structural sector-specific challenges

To overcome the ‘impossible trinity’, focusing on best practices is essential.

Fueled by a perceived lack of recognition and inclusion of the agrifood chain in the debate, the farmers’ protests across Europe at the beginning of year 2024 have crystallized the opposition that have substantially questioned the EU’s ambitious green agenda. One of the most significant reasons that prompted the protests is the EU’s (CAP) reform towards the integration of environmental conditions. Farmers have also invoked external economic pressures, caused by fluctuating market prices and rising production costs as well as concerns about the impact of international trade agreements, notably the EU-Mercosur Trade Agreement.

Zoom: Making the sustainable choice affordable (Dr. Vincent Delhomme)

Price is an essential determinant of food choices, especially for populations with the lowest incomes⁴⁰. Lack of affordability is one of the main barriers to the adoption of sustainable diets. The problem is not only that the healthy and sustainable choice is the most expensive, but that unhealthy products tend to be energy dense and hence offer a better price per calorie⁴¹.

The tax system offers potential to lower the price of sustainable foods. The value-added tax (VAT) system, which is harmonized at the EU level, could be used for such a purpose⁴². Along with the general VAT tax rate (of 15% minimum), reduced rates may be applied on certain categories of goods, the lowest one ranging from 0 to 5 %. EU Member States could use this tool to lower the tax burden on sustainable productions, starting with fresh fruit and vegetables. Conversely, relying on harmonized food sustainability criteria, it could be possible to exclude certain productions from the benefit of the reduced tax rates⁴³.

40 Darmon N. & Drewnowski A. (2015) ‘Contribution of Food Prices and Diet Cost to Socioeconomic Disparities in Diet Quality and Health: A Systematic Review and Analysis’, Nutrition Review.

41 Gupta S. (2019) ‘Characterizing Ultra-Processed Foods by Energy Density, Nutrient Density, and Cost’, Frontiers in Nutrition.

42 Council of the EU (2006) - on the common system of value added tax.

43 See in that regard Edoardo Traversa and Benoît Timmermans, ‘Value-Added Tax (VAT) and Sustainability in the European Union: A Radical Proposal Design Issues, Legal Aspects, and Policy Alternatives’ (2021) 49 Intertax. For example, the inclusion of certain products into tax benefits could potentially be constrained by the results of a life-cycle assessment (LCA).

3.1.2 Acknowledging that local, national policies prove sometimes to be more efficient in reaching environmentally sustainable targets than European plans, is necessary

Locally rooted policies, considering the expectations of all stakeholders, are likely to succeed, recent evidence suggests. Denmark stands out as a best-practice example in Europe for a successful transition towards more plant-based diets. The country's commitment to promoting plant-based diets was exemplified by the publication of the world's first national action plan⁴⁴ aimed at encouraging the consumption of alternative proteins. To do so, the Danish government has committed to foster more networks for plant-based foods, as well as to provide help for plant-based start-ups through a dedicated fund⁴⁵. Denmark also aims at boosting the consumption of plant-based foods, by signing new procurement agreements with municipalities and strengthening access to plant-based foods to primary schools.

Additional best practice case studies below underline successful national policies to ensure the environmental transition of the food system.

Case study: Takeaways of country focuses on efficient sustainable policies

European countries chose to follow certain national policies to promote a more sustainable agriculture.

Some national policies focus on domestic objectives:

- The Austrian government initiated the strategy process **“Future crop production”** to develop new solutions for crop production that are sustainable. It proposes a 10-point⁴⁶ program for **modern plant cultivation**, including the **adaptation of breeding varieties to planting sites** or the critical **reduction of plant protection products**;
- The **Croatian Law on agricultural land**⁴⁷ focuses on modern plant cultivation and on the protection of soils. It mandates **Croatian agricultural actors to monitor the health of their land** (Article 7), compels them to **repair subsequent damages** (Article 10). The law also addresses the transformation processes of agricultural lands.

Other countries have adopted international approaches:

- In the context of the COP21 France proposed the **“4 for 1,000”** international initiative, aiming to **increase soil fertility while increasing carbon capture and storage**⁴⁸. The **“4 for 1,000”** initiative aims to target both public and private actors of the agricultural sector, from official authorities to farmer organizations and private companies⁴⁹.

On the other hand, in absence of a clear implementation plan, more ambitious policies are doomed to fail (see case study below).

⁴⁴ Agriculture and Fisheries of Denmark (2023) - [Danish Action Plan for Plant-based Foods, Ministry of Food](#).

⁴⁵ Innobooster, under the scope of the Innovation Fund Denmark (IFD).

⁴⁶ AGES (2024) - [Future crop production](#).

⁴⁷ Croatian government, summary on the FAO website (2022) - [Law on agricultural land](#).

⁴⁸ 4 for 1000 initiative (2016) - [Understanding the “4 per 1000” Initiative in 3’30](#).

⁴⁹ 4 for 1000 initiative (2022) - [Members of the 4for1000 initiative](#).

Case study: Assessing the Farm to Fork strategy

The Farm to Fork strategy, presented by the European Commission in 2020 aimed for a “*fair, healthy and environmentally friendly food system*” with a list of more than 20 legislative and non-legislative proposals to achieve this objective. By the end of the Commission’s mandate in 2024, only less than half of those initiatives have even been presented as proposals by the Commission, while others have seen their ambitions lowered during the legislative process. Among them are the mandatory nutritional front-of-pack labelling, initiatives on reformulation of processed food as well as legislation on nutrient profiles.

The failure of the Farm to Fork strategy has been attributed to the lack of policy evaluation accompanying the different initiatives and a flawed onboarding of European farmers to the objectives of the strategy⁵⁰. Furthermore, the reality of an increased need to ensure food security in the geopolitical context including the Covid pandemic as well as the war in Ukraine have led the EU to prioritize food sovereignty, a trend clearly and necessarily reinforced by the farmers’ protests in 2023-2024.

These developments clearly call for a thorough review of the strategy applied regarding its feasibility and acceptability, in order to deliver policies effectively promoting healthy diets. The FAO emphasizes the importance of evaluating the ‘hidden’ costs, currently insufficiently assessed, of food systems to more thoroughly inform policymaking⁵¹. A lack of policy evaluation has been pointed out in several studies and including in the European Parliament’s assessment of the Farm to Fork strategy.

3.2 CLOSING EXISTING GAPS IS THE SECOND STEP

3.2.1 The concept of sustainable meal is to be defined

As of today, there is no legally enforced European definition of sustainable food. The only existing international definition is the one of the United Nations’ FAO⁵². According to the FAO, “[a] *sustainable food system (SFS) is a food system that delivers food security and nutrition for all in such a way that the economic, social and environmental bases to generate food security and nutrition for future generations are not compromised*”. This means that:

- It is profitable throughout (economic sustainability);
- It has broad-based benefits for society (social sustainability);
- It has a positive or neutral impact on the natural environment (environmental sustainability)⁵³.

With a view to defining the “environmental sustainability” in food production, the concept of lifetime cycle assessment (LCA) is relevant. The LCA is a methodology to evaluate the environmental impacts of a product, process, or activity throughout its entire life cycle, from raw material extraction to its disposal. Originating in the 1960s and evolving into a standardized methodology by the 1990s, the LCA has become a fundamental tool in sustainable development and environmental management⁵⁴. The procedure is standardized as an environmental management procedure under ISO

⁵⁰ European Parliament (2024) - [EU 'farm to fork' strategy: State of play](#).

⁵¹ FAO (2019) - [The State of Food Security and Nutrition in the World](#).

⁵² FAO (2018) - [Sustainable food systems : Concept and framework](#).

⁵³ FAO (2018) - [Sustainable food systems : Concept and framework](#).

⁵⁴ Curran, M. A. (2016) *'Life cycle assessment handbook: A guide for environmentally sustainable products'*, John Wiley & Sons.

norm 14044 (2006)⁵⁵. The inventory analysis involves compiling data on resource consumption, emissions, and waste generation at each stage of the life cycle. Impact assessments evaluate the potential environmental consequences of the inventory data, considering factors such as climate change, resource depletion, and human health impacts. The LCA provides valuable insights into the environmental hotspots and trade-offs associated with different products or processes, easing decision-making for sustainability improvements⁵⁶ and represents a valuable contribution to defining the sustainability of meals as analyzed in the zoom below.

⁵⁵ European Commission (2021) - [Life cycle assessment](#).

⁵⁶ Rebitzer, G. et al. (2004) '*Life cycle assessment: Part 1: Framework, goal and scope definition, inventory analysis, and applications*', Environment International.

Zoom: What is a sustainable meal? (Dr. Vincent Delhomme)

Sustainability is a multi-dimensional concept⁵⁷. In the field of food, sustainability is usually understood as covering the impact of diets across three dimensions: Environment, health and socio-economic fairness. The standard definition of a sustainable food system is one that provides “*safe, nutritious and healthy food of low environmental impact for all current and future EU citizens in a manner that [...] is robust and resilient, economically dynamic, just and fair, and socially acceptable and inclusive*”⁵⁸.

Populations have an opinion on what a sustainable diet means and what changes are required to adopt such diets. On a more specific level, however, there is no precise legal definition of what a sustainable food is. Is meat produced locally and directly sourced from the producer sustainable? Is it more or is it less sustainable than an avocado from South America? Such definition is essential to compare products and adopt policies that promote the consumption of sustainable foods.

A legally relevant and workable definition of sustainable foods requires a metrification of the different dimensions – environment, health and socio-economic fairness – along which foods perform⁵⁹.

There is a need to devise indicators that account for all three dimensions. As to environmental sustainability, the method most used is the life-cycle analysis (LCA)⁶⁰. A LCA analyzes the different phases in the life cycle of a product, from the extraction of materials and the manufacturing of the product to its distribution, usage and disposal. Specifically, an LCA addresses both direct and indirect emissions associated with the product. Some researchers have tried developing indicators that cover other aspects of sustainability, such as a life-cycle sustainability assessment (LCSA)⁶¹, combining social and economic impacts, or a nutritional LCA⁶².

The potentially contradictory aspect of these different dimensions and the complexity inherent to measuring sustainability have made it difficult to come up with a robust method and indicator. More research is needed in this area.

A clear definition of sustainable foods could then be integrated to several legal instruments, e.g. including mandatory public procurement criteria for food⁶³, to be used in collective catering services; restricting the use of advertising or promotion for unsustainable foods; excluding unsustainable foods from EU trade agreements.

⁵⁷ Tuomisto, H.L. (2019). ‘The Complexity of Sustainable Diets’, *Nature Ecology & Evolution*; Steenson, S. & Buttriss, J.L. (2020) ‘The Challenges of Defining a Healthy and “Sustainable” Diet’, *Nutrition Bulletin*.

⁵⁸ SAPEA (2020). ‘A sustainable food system for the European Union’; see European Commission: ‘A Farm to Fork strategy for a fair, healthy and environmentally-friendly food system’ COM (2020) 381 final.

⁵⁹ Schebesta, H. (2023). ‘How to Save the Farm to Fork strategy: A Two-Phased Approach’, *European Food and Feed Law Review*.

⁶⁰ See Arayess, S. & de Boer, A. (2022). ‘How to Navigate the Tricky Landscape of Sustainability Claims in the Food European’, *Journal of Risk Regulation*.

⁶¹ Visentin C. et al. (2020) ‘Life Cycle Sustainability Assessment: A Systematic Literature Review through the Application Perspective, Indicators, and Methodologies’, *Journal of Cleaner Production*.

⁶² Ridoutt B. (2021) ‘Bringing Nutrition and Life Cycle Assessment Together (Nutritional LCA): Opportunities and Risks’, *The International Journal of Life Cycle Assessment*.

⁶³ Janssen W. & Caranta R. (2023) ‘Mandatory Sustainability Requirements in EU Public Procurement Law: Reflections on a Paradigm Shift’, Hart Publishing.

Some food producers - such as Herbalife (see below) - have been conducting LCA assessments of their products over the past years, with the ambition to better identify their potential improvements.

Herbalife contribution: An LCA of Formula 1

To assess the entirety of the environmental impact associated with Formula 1 in Europe, Herbalife has conducted an LCA with the objective of identifying where to act in order to further reduce the environmental footprint (so-called “consequential LCA”). Over the entire lifecycle, the main driver of carbon emissions is the milk or soy beverage used by the end consumer, with soy beverage representing 50% lower emissions. Other contributors include production, notably of soy protein isolate (that has a much lower carbon footprint than other protein sources, as shown above), and the last mile of distribution, e.g. consumers’ ways to and from the selling point.

3.2.2 Information relating to sustainable food today is numerous and thereby misleading

To improve the sustainability of diets in the EU in a systematic and holistic manner, consumers need to be included in the process. Europeans today have a clear vision of what a sustainable meal is to them. When asked which of, on a given subset of characteristics, is seen as the one or two most important characteristics of a “sustainable” food, European Union citizens across the 27 member states answered⁶⁴, in that order:

- Nutritious and Healthy (41%);
- Little or no use of pesticides (32%);
- Affordability of food (29%);
- Local or short supply chains (24%);
- Low environmental and climate impact (e.g. carbon footprint), e.g. 22%;
- Minimal packaging, no or little plastic (20%).

Still, European consumers are skeptical about the impact on climate of their eating habits, as they feel rather powerless to achieve environmental change on their own (individual efforts vs. collective actions). Some often enter the *Inaction Triangle*⁶⁵: every consumer, company and public policy do share common objectives but are faced with a responsibility issue that triggers an inaction pattern between the three of them. This inaction is fueled, on the consumers’ side, by a perceived lack of official certification, food labeling and finally transparency, the environmental labels being often accused of being mere greenwashing⁶⁶.

Such a pattern is reinforced by the fact that labels and claims about the sustainability of food have multiplied in the recent past, leaving the consumer puzzled with their content and validity. **Ensuring the trustworthiness of sustainability claims appears crucial (see zoom below).**

⁶⁴ Grunert, K.G (2020) - Consumer attitudes and Views on Sustainable Food Systems.

⁶⁵ Conceptualized by Pierre Peyretou, 2020.

⁶⁶ van Bussel, L.M. et al. (2022). ‘Consumer’s perceptions on food-related sustainability: A systematic review’, Journal of Cleaner Production.

Zoom: Ensuring the trustworthiness of sustainability claims (Dr. Vincent Delhomme)

Consumers seek value in their diets and are interested in the sustainability of food products⁶⁷.

Access to reliable information is essential to enable food purchases that align with consumers' interests, hopefully promoting healthier and more sustainable diets. It is however difficult to assess the truthful character of claims such as 'carbon neutral' or 'good for the planet'⁶⁸. Public authorities have a key role to play to ensure the reliability of sustainability claims and fight disinformation.

The European Commission has released legislative proposals aimed at fighting greenwashing and ensuring that green claims are substantiated⁶⁹. These would be a useful addition to the existing regulation on the use of nutrition and health claims on foods⁷⁰.

There is a crucial need, for greater coordination of these parallel legal frameworks, to ensure that unhealthy products cannot claim positive environmental performance, or vice versa. Ultimately, there would be merit in using universal sustainability criteria to devise a sustainability score for food products⁷¹.

3.2.3 The EU should strengthen its vision of environmental sustainability in including food sovereignty

Not least since the farmers' protests in 2024, the goal of 'food sovereignty' is gaining relevance, so is the criticism of 'green' policies in the agrifood industry. Despite their apparent opposition, sovereignty and environmental sustainability must effectively go hand in hand.

European agrifood systems have been disturbed by significant geopolitical events in the past years that fueled food inflation. The years 2020 to 2024 are indeed great examples of the geopolitical role of food, with occurrences such as:

- **Covid-19**, whose related food-protectionist policies triggered price surges of several foodstuffs;
- **Direct blockades** as in the case of the Polish farmer's border blockage of Ukrainian grain and food exports. In December 2023, while protesting in the town of Medyka, at the border with Ukraine, groups of Polish farmers started to impede Ukrainian agricultural goods from entering Poland in a move to protest non-EU grain imports, considered as unfair competition to Polish goods. Among their grievances was the request for "mirror clauses" on Ukrainian products, as well as tax cuts and favorable conditions for loans to farmers;
- **Farmers' movements denying trucks the right to leave ports with imported food**, such as in Spain in February 2024.

While "food availability (was) not a stake" within the European Union⁷², these events have contributed in raising awareness on the the reliance on food imports. The European Union's Versailles Declaration, issued right after Russia's invasion of Ukraine in March 2022, includes an

⁶⁷ European Commission - [Farm to Fork strategy](#).

⁶⁸ Arayess, S. & de Boer, A. (2022). 'How to Navigate the Tricky Landscape of Sustainability Claims', Food European Journal of Risk Regulation.

⁶⁹ Proposal for a Directive on empowering consumers for the green transition, COM(2022) 143 final, Proposal for a Directive on the substantiation and communication of explicit environmental claims, COM(2023) 166 final.

⁷⁰ Regulation (EC) No 1924/2006 on nutrition and health claims made on foods OJ L 404/9.

⁷¹ This is an enterprise the European Commission is considering: see the 'Farm to Fork strategy'.

⁷² European Commission (2022) - [Ensuring availability and affordability of fertilisers](#).

objective to decrease the dependence on some agricultural products and inputs, in particular targeting an increase in domestic production of plant-based proteins. The declaration also *“invites the Commission to present options to address the rising food prices and the issue of global food security as soon as possible”*.

The EU’s agrifood systems depend on some key inputs⁷³, as depicted in a report commissioned by the European Parliament in March 2024. In 2018, more than 75% of the EU’s plant-based proteins had to be imported from third countries, particularly Argentina and the US. While being the world’s leading exporter of food products in value, the EU imports 11% more calories and 26% more protein than it exports, these figures being driven upwards by its net imports of feed proteins. The European Union is also largely dependent on imported fertilizers⁷⁴, which are essential inputs, and some raw materials⁷⁵. Wheat, coarse grains and grassland, which are highly dependent on fertilizers, are most likely to remain import-dependent in the EU. **There is a consensus in Europe, within political⁷⁶ and business spheres⁷⁷, that strategic dependence on some segments must be addressed.**

Europe needs to reinforce the sovereignty or resilience of its agrifood systems through resilient and robust supply chains. After the Covid-19 crisis, European Heads of States⁷⁸ and European Commissioners⁷⁹ called for the need of *“fewer exports”* and *“more sovereignty”*, the term ‘food sovereignty’ being added to the denomination of some national agriculture ministries, like in France and Italy. Food sovereignty implies increased resilience against ‘unforeseen circumstances’⁸⁰. As the Delors Institute put it in 2022, *“the need to discuss food sovereignty resilience and security of food supply is apparent. Focusing on food sovereignty means addressing the issues of building capacity for self-sufficiency, reducing input dependency, and reassessing the role of EU agriculture in global markets as trade and consumption patterns change”⁸¹*.

Some of the farmers’ movements that flooded the streets of most EU capitals in early 2024 in Europe reflect that viewpoint. Numerous communiqués or media statements by union leaders highlight the necessity for imports to be checked according to standards already applicable to their own productions. The statements emphasized the need to restrict imports of goods, at least when there is no assurance that these goods have been produced under sanitary or environmental conditions which are equal to those in application in Europe. In this regard, opposition to the free trade agreement of the European Union with the Mercosur market (countries in South America) was at the core of the movement, particularly in France⁸².

⁷³ European Parliament (2024) - [Research for the AGRI Committee - The dependency of the EU’s food system on inputs and their sources.](#)

⁷⁴ In 2021, imported fertilizer products accounted for a substantial percentage of total consumption: 85% of total potash consumption, 68% of total phosphate consumption and 30% of total nitrogen consumption - Fertilizers Europe (2023) [Facts & Figures.](#)

⁷⁵ The EU produces 18.3 million tonnes (nutrients), or about 9% of global production of nitrogen fertilisers, 3% phosphate fertilisers and 7% potash fertilisers - Fertilizers Europe (2023) [Facts & Figures.](#)

⁷⁶ Reuters (2022) - [EU wants less dependence on imported chips, food, raw materials, as Ukraine war rages.](#)

⁷⁷ Copa and Cogeca (2022) - [Copa and Cogeca’s position on the Proposal for a Regulation on the Sustainable Use of Plant Protection Products.](#)

⁷⁸ La France Agricole (2020) - [Souveraineté alimentaire : Emmanuel Macron veut des décisions de rupture.](#)

⁷⁹ Euronews (2020) - [Wojciechowski vuole la sovranità alimentare dell’UE: “Meno importazioni non è protezionismo”.](#)

⁸⁰ Johns Hopkins Goldberg School of Public Health (2024) - [How to Make Sure Food is Available in a Crisis.](#)

⁸¹ Institute Jacques Delors (2023) - [Revamping Food Sovereignty? Europe’s response to changing global dynamics.](#)

⁸² Euractiv (2024) - [Accord UE-Mercosur : la France intensifie la pression contre la Commission européenne.](#)

Following this, there is a need for Europe to rely more on resilient food supply chains, that require:

- Fewer imported inputs;
- Fewer (imported) fertilizers;
- More domestically produced plant-based proteins, for humans and feedstuff;
- Foods less subject to shortages;
- More generally, production cycles that are resilient to geopolitical or climatic crises.

To reach these objectives, several policy tools to reduce dependence exist, such as, e.g.:

- ‘Onshoring’ or ‘reshoring’ food manufacturing sites on European soil, can thereby contribute to making the food system more sustainable and resilient. An example of this link between sovereignty and environment is the ‘protein strategy’ that is still under development in the European institutions: On March 24, 2022, the European Parliament adopted a resolution calling for a “EU protein strategy” reducing – among others - the “EU’s dependency on third countries”. The Commission, in its food security communication, also stated that it would update its protein policy in this view by mid-2024, but has failed to do so since the legislative processes have stopped officially;
- Ensuring responsible trade policies with the EU’s partners and within the WTO⁸³;
- Transitioning from volatile and unsustainable energy (like natural gas for production) to renewable energy sources;
- Promoting pesticide reduction strategies, including organic agriculture.

⁸³ European Parliament (2024) - The dependency of the EU’s food system on inputs and their sources.

Herbalife's contribution: Resilient and innovative supply chains

Herbalife's products, based on diversified plant-based ingredients, have key advantages regarding their climate resilience. Herbalife indeed prioritizes responsible sourcing of naturally grown ingredients, such as soy, with a strong focus on human rights and environmental stewardship.

The products are distributed via a highly efficient distribution center in Europe, supplying EU markets & 57 other countries worldwide. It helped Herbalife earn several supply chain awards, including the 'Supply Chain Skills Award' and the 'Supply Chain of the Year Award'.

Because Herbalife ships directly to consumers through a vast global distributor network, and is not reliant on retail channels, the company has on-the-ground, immediate feedback based on field activity. The company has recently made changes to improve its supply chain, which have enhanced forecasting accuracy, transparency and control over the end-to-end journey of its products. It also enhanced resiliency and agility of its supply chain.

To ensure the reaping of the co-benefits of the different food policy objectives which the EU pursues – sustainability, health and affordability – and avoid any detrimental trade-offs (e.g., sacrificing the promotion of sustainable diets in order to produce cheaper), the following section will gradually link the issues of sustainability and health aspects of European diets, before waving in the overarching question of their affordability.

Key policy take-aways as for environmental sustainability issues:

To ensure that food systems can transition to a more sustainable production and consumption pattern that also enables long-run food security in the face of climate change, the EU must ensure a continued implementation of the Green Deal with efficient long-term policies:

- **The Green Claims Directive is an important step towards the improvement of the environmental information available to consumers.** It has the potential to positively impact and crackdown on untrue and illicit claims, amongst others, also in the food industry. At the same time, the directive should ensure that it does not discourage green initiatives or place excessive *ex ante* verification burdens on fair players in industry ;
- **Assess and adapt the climate impact of current subsidies structures,** with a view to steer and support the agricultural sector in the environmental transition. This includes increasing subsidies for the cultivation of climate-resistant and high-protein crops, e.g., through promoting the conversion of farms;
- **As to the internal market, critically adapt the tax system with a view to systematically considering the environmental impact of foods in the single market.** This includes a review of the VAT system in order to incentivize low carbon foods;
- **Dedicate funding for research and development of alternative proteins and low carbon foods.**
- **Within the possibilities of the legal framework of the WTO, ensure that imported goods are aligned with the EU climate law and the legislations derived thereof, e.g., through so-called 'mirror measures' in free-trade agreements, or applying the carbon border adjustment mechanism (CBAM) to food products as well.**

4 CURRENT DIETS HAVE DETRIMENTAL EFFECTS ON HEALTH, AND THEY ARE INTRINSICALLY LINKED WITH THE ENVIRONMENTAL SUSTAINABILITY OF DIETS

4.1 FORGED BY SOCIETAL TRENDS, EUROPEAN NUTRITIONAL PATTERNS CONVEY HEALTH RISKS THAT POLICY MUST ADDRESS

4.1.1 Current consumption patterns do not match nutritional recommendations

Current diets in Europe impose a burden not only on the climate, but also on people's health. Diets in Europe are characterized by an elevated calorie intake and an inadequate nutrient intake, when compared to most European dietary guidelines set up at a national level. An assessment of the healthiness of diets in Europe, comparing observed consumption patterns to recommended food and nutrient intakes in food-based dietary guidelines (FBDG)⁸⁴, reveals that actual consumption is not aligned with health standards.

As shown in the table, Europeans eat too many calories but inadequate nutrients⁸⁵. Overall, they eat too much saturated fats, salt and sugar, and too little amounts of fruits, vegetables, nuts, wholegrains and legumes.

⁸⁴ Food-based dietary guidelines (FBDGs) are defined at national level, and the EU and other international organizations, notably the WHO, provide further recommendations on food and nutrient intakes.

⁸⁵ In the absence of dietary guidelines for all items in all countries, the evaluation is based on the EAT-Lancet Commission on healthy diets, EFSA recommendations, WHO recommendations, cross-referenced with national FBDGs. Where no national recommendations exists, one of the supra-national sources was used, in particular: EAT Lancet (food intakes, saturated fats) ; WHO (free sugar, salt) ; EFSA (protein, overall calories).

Table 3: Food and nutrition patterns in Europe and selected EU Members States

Italic = recommended levels ; red = intakes above recommended levels, orange = intakes below recommended levels, green = meeting recommended levels, white = unable to establish comparison⁸⁶

Metric	Europe	Belgium	Germany	France	Italy	Poland	Sweden
Food intakes estimates (grams per day)							
Fruit	129.3g <i>200g*</i>	103.9g <i>200g*</i>	140.8g <i>250g</i>	150.8 <i>400-500g fruit and vegetables</i>	199.4g <i>5 portions fruit and vegetables</i>	234.9g <i>400g fruit and vegetables</i>	115.0g <i>min. 500 g fruit and vegetables</i>
Vegetables	167.0g <i>300g*</i>	113.2g <i>300g*</i>	193.2g <i>400g</i>	155.4g <i>400-500g fruit and vegetables</i>	194.4 <i>5 portions fruit and vegetables</i>	178.7g <i>400g fruit and vegetables</i>	150.8g <i>min. 500 g fruit and vegetables</i>
Legumes	13.8g <i>75g*</i>	4.5g <i>Min. once per week</i>	5.3g <i>70 g raw legumes or 125 g cooked legumes</i>	13.4g <i>Min. twice per week</i>	13.8g <i>3 servings per week</i>	2.9g <i>75g*</i>	15.3g <i>75g*</i>
Whole grains	52.8g <i>232g*</i>	66.1g <i>Min. 125g</i>	75.5g <i>232g*</i>	33.4g <i>232g*</i>	9.2g <i>232g*</i>	21.4g <i>232g*</i>	25.0g <i>232g*</i>
Nuts	7.8g <i>50g*</i>	3.4g <i>15-25g</i>	3.2g <i>25g</i>	2.4g <i>Handful</i>	3.3g <i>1-2.5 portions per week</i>	3.6g <i>50g*</i>	5.1g <i>50g*</i>
Dairy	603.0g <i>250g*</i>	767.5g <i>250- 500ml</i>	481.5g <i>250-250g</i>	671.1g <i>2 dairy products</i>	322.0g <i>3 portions</i>	651.4g <i>Min. 2 large glasses</i>	609.9g <i>250g*</i>
Red meat	51.7g <i>14g*</i>	57.4g <i>Max. 300 g per week</i>	50.3g <i>300-600g per week (all meat)</i>	46.1g <i>Max. 500 g per week</i>	53.4g <i>1 portion per week</i>	69.3g <i>Max. 500 g per week</i>	70.7g <i>Max. 500 g per week</i>

⁸⁶ Recommended values marked with an asterisk are based on supra-national guidelines, as detailed in the previous footnote.

Metric	Europe	Belgium	Germany	France	Italy	Poland	Sweden
Relevant nutrient intake (grams per day)							
Proteins⁸⁷	c. 85g	83.5g	79.2g	87.0g	84.5g	N/A	81.5g
Sugar	c. 36g 25g*	48.3g 25g*	37.7g 25g*	33.7g 25g*	32.9g 25g*	45.7g 25g*	33.4g 25g*
Saturated Fats	N/A 11.8g*	12.9g 11.8g*	N/A 11.8g*	14.2g 11.8g*	11.2g 11.8g*	N/A 11.8g*	13.1g 11.8g*
Salt	c. 11g Max. 5-6g	10.5g Max. 5g	10.4g Max. 6g	8.0g Max. 5g	9.5g Max. 5g	N/A Max. 5g	8.0g Max. 5g*
Calories available for human consumption from food balance sheets	3 537kcal 2,000-2,600 kcal*	3 784 2,000-2,600 kcal*	3 549 2,000-2,600 kcal*	3 515 2,000-2,600 kcal*	3 509 2,000-2,600 kcal*	3 511 2,000-2,600 kcal*	3 164 2,000-2,600 kcal*
Plant-based consumption styles							
Vegetarian	5 to 6%	7.0%	9.0%	3.2%	4.2%	6.4%	12.0%
Vegan	2 to 3%	1.0%	3.0%	0.3%	2.4%	1.8%	4.0%

Sources: Tufts University, Global Dietary Database; NCD Risk Factor Collaboration; Eurostat; IDF Atlas by OECD; European Environment Agency; European Commission; Simplified computations from Kwong and Whiting (2023); OECD Sugar Projections; Smart Protein Project; Simplified computations from EFSA's questionnaire; Statista; Roslinniejemy; World Bank; Trading Economics; FAO Statistical Pocketbook.

It is to be noted that in the past years, in Europe:

- Calories intake has been continuously increasing⁸⁸;
- On average, meat consumption has been high and increasing over the past 20 years but is slowly starting to decline on EU average, from 67.5 kg per person per year in 2021-2022 to a projected 66.00 kg in 2032⁸⁹;
- The consumption of fruit and vegetables is projected to mildly increase (e.g., 0.6% per year for apples, stable for tomatoes)⁹⁰.

⁸⁷ The recommended protein intake by EFSA is 0.83g per kg of body weight. The average values displayed are aligned with recommendations even at >95 kg body weight, which is beyond average body weight in Europe.

⁸⁸ WHO (2022) - [Once again, US and Europe way ahead on daily calorie intake](#).

⁸⁹ European Commission (2022) - [EU Agricultural Outlook 2022-2032](#). That would be a decline of 3g per person per week or a decline of 0.4g of meat per person per day, equivalent to a decline in animal protein of 0.08g per person per day.

⁹⁰ *Ibid.*

4.1.2 Current consumption patterns are the result of an increasing consumption of a certain type of processed foods, a category that needs to be defined precisely

This dietary profile results from an evolution of consumption patterns towards increasingly lower prices and unhealthy foods. In fact, today's European dietary habits include a high share of foods like processed meats, sugar-sweetened beverages, sweets and pastries, dairy products, crackers and chips⁹¹. The sales of these goods rose by 13% between 2005 and 2017⁹².

Due to their bad reputation, ultra-processed foods (UPFs) have logically gained in attention in the public debate⁹³. They need to be defined better. The *NOVA* classification system for foods is getting traction as a tool to classify foods according to their 'degree' of processing, into 4 categories⁹⁴. These categories of the *NOVA* score are very broad and do not allow to concretely inform public policy. Other systems like *Siga*, proposing 7 different categories, are also emerging. Depending on the classification chosen, even wholegrain breakfast cereals or low sugar yoghurts might be classified as UPF, despite their nutritional value. With an increasing focus on plant-based diets, many of those alternatives require greater processing and will therefore automatically be labeled 'UPF'.

Second, while current majority UPF consumption patterns are indeed unhealthy, this does not stem from the processing itself: According to the *Nutri-Score* classification, 87.5% of UPFs are classified C, D, E⁹⁵. The negative nutritional profile stems from a high content of unhealthy nutrients (sugars, salt, saturated fats) as well as high calorie density⁹⁶. Consequently, most studies identify an association of UPFs with unhealthy diets and negative health outcomes⁹⁷.

This shows that UPFs are not unhealthy *per se*, but their nutrient composition can in fact be beneficial for consumers' health: A recent study has found that it is possible to construct a healthy diet with adequate macro- and micro-nutrient intake based on a majority of UPFs except for an excessive salt and insufficient whole grain intake⁹⁸. The study therefore stresses the need to carefully consider nutrient profiles in qualifying UPF as healthy or unhealthy. At the same time, **some UPFs appear to be necessary to ensure an adequate level of a range of nutrients like calcium, niacin, folate and vitamin E. This warrants a balanced approach to ensure nutritional adequacy⁹⁹.** Based on this, studies have even shown that some packaged and UPFs are a 'success story' to promote healthy food behaviors¹⁰⁰.

While the excessive consumption of those foods causing the unhealthiness of diets must be tackled, it remains key to do so by considering the objective and indisputable nutrient composition, reflected in nutritional guidelines, based on solid, state-of-the art scientific evidence.

⁹¹ Candari, C. et al. (2017) 'Assessing the economic costs of unhealthy diets and low physical activity', World Health Organization.

⁹² *Ibid.*

⁹³ For example, in Germany, a strategy has been published to reduce saturated fat, salt and sugar in processed foods. In other countries, these are already considered in FBDGs, e.g., in Belgium, France and Sweden (focus on processed meat).

⁹⁴ The *NOVA* score is a food classification system that was developed by researchers at the University of Sao Paulo, Brazil. It divides foods into four categories (unprocessed and minimally processed foods, processed culinary ingredients, processed foods and ultra-processed foods).

⁹⁵ Sarda, B. et al. (2024). 'Complementarity between the updated version of the front-of-pack nutrition label *Nutri-Score* and the food-processing *NOVA* classification', Public Health Nutrition.

⁹⁶ Monteiro, C.A. (2019). 'Ultra-processed foods, diet quality, and health using the *NOVA* classification system', FAO.

⁹⁷ *Ibid.*

⁹⁸ Hess, J. et al. (2023). 'Dietary Guidelines Meet *NOVA*: Developing a Menu for A Healthy Dietary Pattern Using Ultra-Processed Foods', American Society for Nutrition.

⁹⁹ Hallinan, S. (2021). 'Some Ultra-Processed Foods Are Needed for Nutrient Adequate Diets: Linear Programming Analyses of the Seattle Obesity Study', Nutrients.

¹⁰⁰ Miller, K. et al. (2021). 'Role of Food Industry in Promoting Healthy and Sustainable Diets', Nutrients.

Zoom: Health implications of UPF (Prof. T. Sanders)

Ultra processed foods (UPF) are formulations of ingredients created by a series of industrial techniques and processes. They account for 30-60% of food and drinks consumed in North America and Europe¹⁰¹ with the proportion being greater in an urban setting and among lower income consumers with limited food budgets. According to a recent review¹⁰², UPF may be linked to an increased risk of all-cause mortality, being overweight/obese and having diabetes (2%, 3% and 12% respectively).

Such a pattern **might not be causal because a high intake of UPF is linked with unhealthy life-style factors (smoking, poverty, low socioeconomic status). There is uncertainty regarding the specific ingredients and processes, as well as regarding the mechanisms that might be responsible for the proposed adverse health effects.** However, UPF are more likely to be categorized as high in fat, saturated fat, sugar and salt by front of pack nutrition signposting¹⁰³ - even though the presence of these ingredients are not criteria of the UPF category *per se*. A large European study with 266,000 participants in seven European countries found higher UPF consumption to be associated with a small (9%) increased risk of multimorbidity of cancer and cardiometabolic diseases. However, associations were only found for animal-based products and artificially and sugar-sweetened beverages.

Other subgroups of UPF such as breads and cereal products or plant-based alternatives are not associated with risk in literature¹⁰⁴.

¹⁰¹ Touvier M. et al. (2023) 'Ultra-processed foods and cardiometabolic health: public health policies to reduce consumption cannot wait', British Medical Journal.

¹⁰² Lane M. et al. (2024) 'Ultra-processed food exposure and adverse health outcomes: umbrella review of epidemiological meta-analyses', British Medical Journal.

¹⁰³ Dickens S. et al. (2024) 'Nutrients or processing? An analysis of food and drink items from the UK National Diet and Nutrition Survey based on nutrient content, the NOVA classification and front of package traffic light labelling', British Journal of Nutrition.

¹⁰⁴ Cordova R. et al. (2023) 'Consumption of ultra-processed foods and risk of multimorbidity of cancer and cardiometabolic diseases: a multinational cohort study', The Lancet Regional Health – Europe.

4.2 IN THE ABSENCE OF APPROPRIATE POLICY RESPONSES, THERE ARE SIGNIFICANT COSTS FOR HUMAN LIVES AND SOCIETIES AT LARGE

4.2.1 Current dietary patterns are a leading risk factor for disease and mortality, especially in the context of an aging population

Unhealthy eating behavior is a main behavioral risk factor for mortality and morbidity. On average in the EU, eating habits as a behavioral risk factor account for up to 17% of all deaths¹⁰⁵. 950,000 deaths per year are *directly* linked to unhealthy diets¹⁰⁶. The most important dietary risk factors are low consumption of whole grains, fruit, nuts and seeds, as well as high consumption of sodium, processed meat and sugar-sweetened beverages¹⁰⁷.

The zoom below contextualizes these numbers considering today's consumption patterns and highlights the concept of 'nutritional adequacy' depending on the age of consumers.

Zoom: Health consequences of today's diets (Prof. T. Sanders)

European public health nutrition policy focuses on the prevention of obesity and its related disorders (type 2 diabetes *etc.*) and promotes the selection of healthy diets that may reduce risk of dental caries, cardiovascular disease (CVD) and cancer. Unhealthy diets are characterized by high intakes of saturated fat, salt and sugar and low intakes of fruit and vegetables.

Less attention has been paid to nutritional deficiencies, which are widely considered to be uncommon in Europe. However, concerns remain regarding adequate nutrient intakes throughout the life course e.g., for pregnant and lactating women, infants and toddlers, adolescents and particularly the elderly.

Many older people have difficulties preparing food, and malnutrition is becoming increasingly common over the age of 70 years. Age related frailty resulting from sarcopenia (loss of muscle mass), osteoporosis and possible dementia may be exacerbated by poor diet. Public health measures that encourage healthy diets and lifestyle (smoking cessation, increased physical activity, better mental health *etc.*) are seen as the most effective way to increase healthy life expectancy¹⁰⁸.

This consumption pattern, also termed as 'Western diet'¹⁰⁹, has a negative impact on metabolism, inflammation, and antioxidant status¹¹⁰, leading to a series of negative impacts on health related to non-communicable diseases (NCD). Reversely, it is highly important to underline that healthy eating behavior significantly reduces these risk factors by around 20%¹¹¹. **Concretely, the table below recalls the statistical evidence on NCD caused, to a significant amount, by unhealthy diets.**

¹⁰⁵ Yaneva, R. (2023) 'Unhealthy diet as a behavioral risk factor for socially significant diseases and premature mortality', Medis.

¹⁰⁶ European Commission (2021) - Health Promotion and Disease Prevention Knowledge Gateway.

¹⁰⁷ *Ibid.*

¹⁰⁸ Nguyen X. et al. (2024) 'Impact of 8 lifestyle factors on mortality and life expectancy among United States veterans: The Million Veteran Program', American Journal of Clinical Nutrition.

¹⁰⁹ E.g., Clemente-Suárez, V. et al. (2023) 'Global Impacts of Western Diet and Its Effects on Metabolism and Health: A Narrative Review', Nutrients.

¹¹⁰ Clemente-Suárez, V. et al. (2023) 'Global Impacts of Western Diet and Its Effects on Metabolism and Health: A Narrative Review', Nutrients.

¹¹¹ *Ibid.*

Table 4: Statistics on a selection of diet-related health features

Diet-related health features	Europe	Belgium	Germany	France	Italy	Poland	Sweden
<i>Micronutrient deficiency¹¹²</i>	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<i>Overweight rate among adults</i>	53.0%	50.0%	54.0%	47.0%	46.2%	58.0%	51%
<i>Diabetes prevalence</i>	6.2%	4.6%	6.9%	4.8%	5.0%	6.1 %	4.8 %
<i>Prevalence of cardiovascular diseases (deaths per 100,000 inhabitants)</i>	351	222	356	175	288	543	273
<i>Diet-related deaths caused by cancer/year</i>	101,477	N/A	N/A	N/A	N/A	N/A	N/A

Source: Eurostat, European Commission.

As illustrated in the table, overweight and obesity is today a major diet-related health risk. Its causes and impacts are well known and studied, but adequate political responses are yet to be defined, as discussed in the expert zoom below.

¹¹² The EU has started to remedy the problem of insufficient data on micronutrient deficiency only recently, with a call for proposal under Horizon EU (HORIZON-CL6-2023-FARM2FORK-01-1009).

Herbalife's contribution: Nourish, don't demonize – the case for nutrient-dense foods

Herbalife develops products to be nutrient-dense and low in calories where possible, instead of calorie-rich and nutrient-poor options that lead to serious consequences for consumers such as non-communicable diseases (NCDs). As manufacturing meal replacements for weight control has proven to be effective, Herbalife champions a healthy lifestyle for consumers, so that they use these products to meet their nutritional needs and goals.

A healthy, balanced diet must rely on whole foods (vegetables, white meat and fish, nuts and eggs), with processed and ultra-processed components playing a supporting role. There is a need to acknowledge practical considerations that impact the decisions people make about their food, from convenience and time to price and availability. A more nuanced ultra-processed food (UPF) debate on what should be eaten would give consumers confidence in making the right choices.

Consumers who become empowered to make better dietary decisions, rather than encouraged to fear types of foods, will be happier and healthier. The 'foods to be feared narrative' jeopardizes the goal of ensuring everyone's access to healthy balanced diets, given the near impossibility of eliminating processed food, especially for those without time and/or resources. This means accepting that today, where local fresh food is not always possible, processed and UPF foods play a role in balanced, healthy diets. This is especially true when governments pursue 'sustainable, healthy diets' containing higher plant content and less meat, fish and dairy.

Zoom: The obesity epidemic (Dr. J.-D. Zeitoun)

Obesity is a global phenomenon, currently estimated to affect one billion people. Over the past thirty years, the incidence of obesity has doubled in adults and quadrupled in children. All countries worldwide are affected, and obesity is on the rise in more than 90% of them, although recently, the increase has been stronger in less affluent countries. When looking at the static world map, the obesity map is mainly one of prosperity, but when we look at the dynamic reality, the perspective is different: Obesity rates grow in those countries that were historically the least affected.

The impact of obesity is monumental, with at least 5 million deaths a year, not to mention the economic losses (both in terms of healthcare costs and lost productivity at work). By way of comparison, tobacco causes between 7 and 8 million deaths a year (but is slowly declining), and pollution around 9 million deaths (including an estimated 40,000 to 90,000 a year in France). Moreover, obesity is only one part of the food problem, since diets also cause a very large number of chronic illnesses that do not involve obesity.

The causes of obesity are known, but only partially understood in detail: quality and quantity of food (its content) and lack of physical activity (sedentary lifestyle). Controversy surrounds the share of each of these three factors (which varies from one individual to another), and it is likely that over the last few decades, too much emphasis has been placed on excess quantity and sedentariness, while neglecting the role of quality, e.g. the food itself: There has undoubtedly been a drop in average physical activity in most countries, and there are also indications that the quantity of food ingested daily has increased (sugar production has tripled while the world's population has only doubled, for example). But the scientific community increasingly believes that the quality (in fact, the mediocrity) of the food itself has also played a role that has undoubtedly been underestimated.

Furthermore, emerging evidence also suggests that there is a bidirectional relationship between diet and mental health. Unhealthy diets have been linked to an increased risk of depression, anxiety, and

other mental health disorders such as a higher likelihood of depression¹¹³. Conversely, adequate nutrient intake is shown to have a positive impact on the preservation of normal brain function and mental well-being¹¹⁴.

Finally, nutrient insufficiency is an increasing serious health risk, especially for aging populations. Insufficient intake of vitamin D is associated with an increased risk of osteoporosis, muscle weakness, and autoimmune disorders. These health effects are particularly concerning for women: For example, approximately one in two women over age 50 will experience an osteoporosis-related fracture in their lifetime¹¹⁵. Pursuing the joint goal of healthy and sustainable diets must therefore be based on healthy and high-quality protein, as well as adequate nutrient fortification, especially since the health risks associated with micronutrient insufficiency increase with accelerating population ageing, as discussed in the zoom below.

Zoom: Population ageing and dietary patterns

As the EU grapples with the challenges of population aging, understanding and addressing the unique dietary needs of older citizens is essential for promoting individual well-being all along people's lives as well as achieving a proper level of disease prevention. Any aging population tends to consume fewer calories while needing roughly the same amount of nutrients as their younger counterparts. With population ageing, there will be changing nutritional requirements in Europe such as decreased caloric needs, but a need to maintain adequate nutrient intake to support overall health and well-being¹¹⁶. With therefore fewer calories required, it is important that those calories that are consumed are nutrient rich, e.g., through fortified formulas complementing regular meals. For instance, protein becomes increasingly important for preserving muscle mass and strength, which is crucial for maintaining mobility and independence. Additionally, older adults may require more calcium, vitamin B12 and vitamin D to support health and vitality¹¹⁷. These increasing nutritional requirements **underline the need for increased nutrient density** which improves the quality of life, prevents chronic disease and mortality¹¹⁸.

¹¹³ Lai, J. S., et al. (2014). 'A systematic review and meta-analysis of dietary patterns and depression in community-dwelling adults', *Molecular Psychiatry*.

¹¹⁴ Muscartoli, M. (2021) - [The Impact of Nutrients on Mental Health and Well-Being: Insights From the Literature](#).

¹¹⁵ National Osteoporosis Foundation (n.d.) - [What women need to know](#).

¹¹⁶ European Commission (2018) - [Nutrition and physical activity guidelines for different populations](#).

¹¹⁷ Kahoe, L. et al. (2019) '*Nutritional challenges for older adults in Europe: current status and future directions*', Proceedings of the Nutrition Society.

¹¹⁸ Troesch, B. et al. (2017) '*Nutrient Density: An Important Concept to Ensure Food and Nutrition Security in Modern Societies*', Sustainable Nutrition in a Changing World.

4.2.2 Negative externalities of current dietary patterns cost billions to European social security systems

In Europe, the cost burden from current dietary patterns is estimated at USD 2.3 trillion¹¹⁹. The burden of disease related to unhealthy diets has negative externalities that pertain to both direct healthcare costs from treating disease and productivity loss due to absence at work, early retirement, *etc.* Estimations of the overall financial burden of the food system vary depending on different methodologies, but all reveal an alarmingly high ‘hidden cost’ related to current dietary patterns. The indirect costs related to cardiovascular disease and cancer amount to EUR 190 billion¹²⁰ according to recent literature. In the meantime, recent research suggests that improved nutrition is beneficial to productivity¹²¹.

At the same time, as healthcare costs are projected to increase by 0.8% every year until 2050, an increased focus on prevention is needed¹²². With diets being a main determinant for health care costs, there is a clear need to improve dietary patterns to prevent increasing direct and indirect cost burdens¹²³.

With persisting and even mounting health consequences and their substantial financial implications for EU Member States’ budgets, policy must address all diseases and their causes, focusing also on currently neglected issues like nutrient deficiency, a mounting problem in Europe.

4.2.3 Unhealthy food choices are the result of the interplay of complex individual and societal factors, which are therefore hard to erase

The dietary patterns described above are the result of food choices which are influenced by a range of factors which policy must address in a systems-based approach:

- Individual determinants (e.g., taste, hunger, education, income, *etc.*);
- Social-cultural determinants (e.g., socio-economic class, culture);
- Community determinants (e.g., availability);
- Market determinants (e.g., production and distribution);
- Global determinants (e.g., climate change, international trade, *etc.*).

These determinants differ according to people (as detailed in the TECH_V model¹²⁴, see section 6 as well). Moreover, there is sometimes a discrepancy between the consumer’s attitude – in surveys, *vis-à-vis* the authorities – and the actual buys: this is the ‘intention-action’ gap, well documented in the scientific literature (below).

¹¹⁹ FAO (2023) - [The State of Food and Agriculture](#).

¹²⁰ European Commission (2024) - [Health Promotion and Disease Prevention Knowledge Gateway](#).

¹²¹ Drewnowski, A (2020) ‘*Impact of nutrition interventions and dietary nutrient density on productivity in the workplace*, Nutr Rev.

¹²² Goryakin, Y. et al. (2020). ‘*Assessing the future medical cost burden for the European health systems under alternative exposure-to-risks scenarios*’, PLoS One.

¹²³ At a global scale, the FAO estimates the ‘hidden cost’ of food to be as high as USD 12.7 trillion with health-related costs as the main contributor (73%, USD 9.3 trillion) to this cost. This health-related cost is equivalent to 14% of global GDP and nearly double total government expenditure in the United States.

¹²⁴ Drewnowski, A. & Monsivais, P. (2020) - [Taste, cost, convenience, and food choices](#).

Zoom: The intention-action gap (Dr. L. Cordonier)

The intention-action gap refers to the discrepancy between an individual's intention to perform a behavior and their actual enactment of that behavior. It is a common observation that people do not always follow through on their intentions, even when they are strongly motivated to do so. This is particularly true in eating behavior: A US study concerning the self-evaluation of one's diet, 75% of participants overestimated the healthiness of their diet¹²⁵. Similarly, in a consumer study conducted by Herbalife, 72% of respondents mentioned that they would make short-term sacrifices to improve their long-term health, but the data on widespread unhealthy eating behavior is proof of the opposite. This phenomenon has been extensively studied in psychology and behavioral science. The Theory of Planned Behavior (TPB) states that behavior is influenced by three factors that are the individual's evaluation of the behavior, subjective norms, and perceived behavioral control¹²⁶.

As for eating behavior, research has identified several additional factors that contribute to the intention-action gap such as:

- Weak executive control, e.g., cognitive processes, enable individuals to regulate and control their behaviors to achieve goals and adapt to changing situations. Weak executive control can lead to discrepancies between intended and actual dietary intake¹²⁷.
- High availability of goal-incongruent foods (e.g. snacks when trying to increase the intake of fruit and vegetables);
- Social eating triggers (such as peer pressure, or social facilitation, e.g. the increased intake of food in a social setting, where individuals tend to eat more while in a group);
- Stress, cravings, and impulsivity, particularly in the consumption of saturated fat^{128 129}.

To counter the intention-action gap, a research-based successful strategy could rely on Peter Gollwitzer's "implementation intention theory". This theory is based on the idea that linking actions to specific situational cues helps overcome obstacles. For eating behaviors, it might imply on an individual basis:

- **Pre-planning responses** to challenging situations, individuals better navigate temptations and distractions, e.g., 'Before attending a social gathering where unhealthy foods will be present, I will eat a healthy snack to curb hunger and reduce temptation to overindulge';
- **Repetition and reinforcement**, "If I feel hungry between meals, I will eat a piece of fruit instead of reaching for crisps or cookies";
- **Cue-response association**: By linking specific cues or triggers with desired behaviours, implementation intentions create strong associations in memory. For instance, 'When I sit down to watch TV, I will make sure to have a bowl of cut-up vegetables nearby instead of reaching for snacks';

Specificity: Implementation intentions require individuals to specify exactly when, where, and how they will engage in a desired behavior. For example, deciding "Every weekday morning, immediately after

¹²⁵ American Heart Association (2022) - [Study finds dieters may overestimate the healthiness of their eating habits](#).

¹²⁶ Ajzen, I. (1991). 'The theory of planned behavior', *Organizational Behavior and Human Decision Processes*.

¹²⁷ Allan, J. (2011). 'Missed by an inch or a mile? Predicting the size of intention-behaviour gap from measures of executive control', *Psychology and Health*.

¹²⁸ Aulbach, M. (2024). 'Why we don't eat as intended: Moderators of the short-term intention-behaviour relation in food intake', *British Journal of Health Psychology*.

¹²⁹ Mullan B. et al. (2014). 'Self-regulation and the intention behaviour gap. Exploring dietary behaviours in university students', *Appetite*.

waking up and before leaving for work, I will prepare and eat a nutritious breakfast consisting of oatmeal with fruit and nuts in my kitchen”¹³⁰.

Unhealthy food choices are conditioned by social norms, cultural acceptance, and ongoing societal transitions. In fact, socio-cultural, economic and political transitions have led to a lifestyle that favors individual choices that are convenient, cheap, and often unhealthy for a significant part of European citizens. Globalization has led to diets that favor complex and global food chains shifts and urbanization has shifted consumer behavior towards convenient foods¹³¹. The covid-19 strengthened these habits.

Case study: The effects of the Covid pandemic on dietary patterns

Beyond the long-term societal changes that have led to the dietary choices described above, recent developments have also impacted eating behavior. For example, the pandemic prompted shifts in food preferences and consumption priorities, with many individuals prioritizing shelf-stable pantry items, frozen foods, and comfort foods that provided a sense of familiarity and security during uncertain times¹³². These changes were accompanied by a rise in snacking behaviors and indulgent treats as individuals grappled with stress, boredom, and emotional distress associated with the pandemic¹³³.

Lastingly, the pandemic will have contributed to an increase in telework and telecommuting which also affects dietary choices and eating behavior: For example, a study from Japan shows the increase of telecommuting on various unhealthy nutrition patterns such as increases in skipping breakfast, solitary eating, lower frequency of meals, or meal substitution by unhealthy options like snacks¹³⁴.

Hence, considering the individual and societal determinants of food choice discussed above, efforts to enhance the nutritional quality of diets must consider taste, cost, and convenience as primary influencers of food choice and consumption patterns as **they influence all three angles of the ‘impossible trinity’**.

¹³⁰ Adriaanse, A. et al. (2011). 'Do implementation intentions help to eat a healthy diet? A systematic review and meta-analysis of the empirical evidence', *Appetite*.; Armitage C. & Arden M. (2008). 'How useful are the stages of change for targeting interventions? Randomized test of a brief intervention to reduce smoking', *Health Psychology*.

¹³¹ Fanzo, J. & Davis, C. (2016) - Can Diets Be Healthy, Sustainable, and Equitable ?.

¹³² Górnicka, M. et al. (2020). 'Dietary and Lifestyle Changes During COVID-19 and the Subsequent Lockdowns among Polish Adults: A Cross-Sectional Online Survey PLifeCOVID-19 Study', *Nutrients*.

¹³³ Rodríguez-Pérez, C. et al. (2020). 'Changes in Dietary Behaviours during the COVID-19 Outbreak Confinement in the Spanish COVIDiet Study', *Nutrients*.

¹³⁴ Kubo, Y. et al. (2021). 'A cross-sectional study of the association between frequency of telecommuting and unhealthy dietary habits among Japanese workers during the COVID-19 pandemic', *Journal of Occupational Health*.

Herbalife's contribution: A business model dedicated to nutritional empowerment

Herbalife products are distributed via direct selling, *e.g.* a method of selling goods or services directly to a consumer, through direct personal contact without the need for permanent retail premises, that is promoting entrepreneurship and self-employment without requiring large start-up costs.

Herbalife products are sold by a network of independent distributors who provide the advice, support and community that many consumers need to make lifestyle changes and achieve their fitness and wellness goals. Consumers get tailored support and receive personalized one-on-one coaching as well as community encouragement to commit to a healthier lifestyle (competitive challenges, nutrition clubs, fit camps). There are 67,000 nutrition clubs, worldwide, run by Herbalife distributors.

Herbalife believes that good nutrition - eating a varied, well-balanced diet, and providing our bodies with all the nutrients they need to feel good and have energy - is a cornerstone of good health. However, consumers are often unaware of the direct impact on their health of what they eat. When they do decide to take control of their diets, they often lack support and information to change their eating behaviours effectively. Understanding basic nutritional requirements and being able to differentiate between empty calories and nutrient dense foods is essential knowledge for instance. This is why education is crucial to support a truly healthy society and we need to remember that 'health' is more than just food – it is lifestyle choices, it is exercise, it is mental wellbeing, and all these things need to be tackled to improve people's lives.

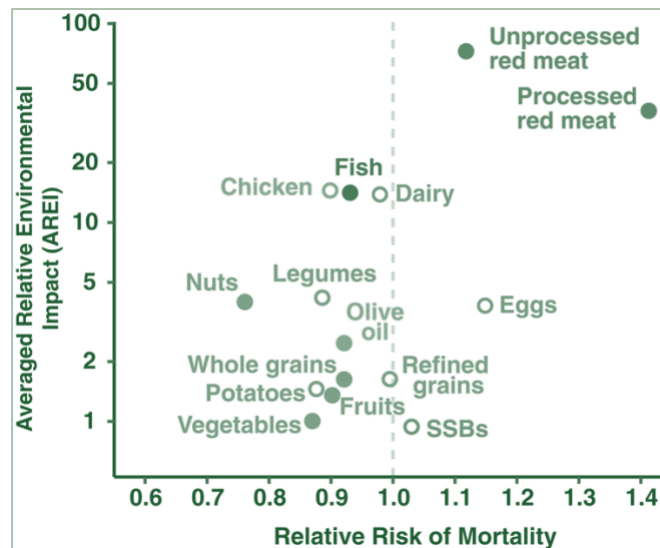
4.3 WHEN IT COMES TO FOOD, POLICY MUST CAREFULLY WEIGH THE INTERDEPENDENCES OF SUSTAINABILITY AND HEALTH, IN ORDER TO BUILD IMPACTFUL FRAMEWORKS

4.3.1 The co-benefits of healthy and environmentally sustainable diets must be leveraged

The transformation of food systems along the three dimensions of health, environmental sustainability and affordability requires to carefully consider the interactions of these dimensions. A low environmental impact is linked with low health risk. The foods associated with improved health (whole grain cereals, fruit, vegetables, legumes, nuts, soy), except for fish, have among the lowest environmental impact¹³⁵. A study associating five diet-related negative impacts on adults' health (mortality, type II diabetes, coronary heart disease, stroke, colorectal cancer) and five environmental outcomes (GHG emissions, water use, land use, two forms of nutrient pollution) found that those foods associated with low health impacts are also associated with low environmental impacts (see figure 3).

¹³⁵ Clark, M. et al. (2019) - [Multiple health and environmental impacts of foods.](#)

Figure 3: Risk of mortality and environmental impact of a selection of foods¹³⁶



Source: Clark *et al.* (2019)

Against this background, shifting towards healthier dietary patterns, e.g., a high-grain vegetarian or vegan diet can save up to 22-34% of costs (notably environmental and health costs)¹³⁷, which stresses the substantial co-benefits through addressing sustainability and health in a common approach. Long-term effects of plant-based diets furthermore show that such diets have lasting positive effects on people’s health, as illustrated above.

Zoom: Positive long-term health effects of plant-based diets (Prof. T. Sanders)

Many conclusions regarding the effects on health of plant-based diets have been based on long term studies on people who have chosen to follow vegetarian or vegan diets for many years, or even a lifetime compared with those consuming mixed diets¹³⁸.

A limitation is that the vegan/vegetarian participants of these studies may not be representative of the general population in terms of health-related behavior (non-smoking, low alcohol intake, higher levels of education, more exercise). Still, the health of these vegetarian and vegan groups seems good, and nutritional deficiencies can be easily avoided by taking dietary supplements or consuming fortified foods. Indeed, their diets are closer to healthy eating guidelines than meat eaters. Their prevalence of cardiovascular disease is lower, mainly due to a lower prevalence of coronary heart disease rather than stroke. Total cancer incidence is also lower. However, elderly vegans appear to be more susceptible to bone fractures.

Therefore, there is a clear and scientifically proven rationale for European institutions to support plant-based meals with a view to reaping the co-benefits of plant-based diets for health and the climate. They should support changing consumer perceptions of plant-based products to move away from unsustainable food systems and ensure the availability to all consumers with regards to affordability and information. In this regard, Herbalife’s products can be seen as a best-practice example of how sustainable, plant-based nutrition is at the same time designed to fully contribute to people’s health.

¹³⁶ Clark, M. et al. (2019) - *Multiple health and environmental impacts of foods.*

¹³⁷ Springmann, M. et al. (2021) - *The global and regional costs of healthy and sustainable dietary patterns: a modelling study.*

¹³⁸ Sanders T. (2023) *‘Vegan/Vegetarian Diets’*, Oxford University Press

Herbalife's contribution: High-quality, plant-based protein

Protein quality is a crucial metric in assessing the nutritional value of dietary protein sources, as it determines the extent to which a protein source can meet the body's requirements for essential amino acids. Essential amino acids are those that the human body cannot synthesize on its own and must be obtained through a chosen diet. Protein quality is typically evaluated based on amino acid composition, digestibility, and bioavailability. The main ingredient in many of Herbalife's products is soy protein. Soy stands out as a remarkable plant-based protein source due to its high protein quality. It contains all nine essential amino acids in proportions that closely match those required by the human body¹³⁹. Soy is also significantly more efficient to grow, uses less water and emits less carbon, and produces more protein per acre than beef, eggs or milk. Nonetheless, today, most of the soy produced worldwide is used for animal feed.

Herbalife's innovative research and development program continues to explore sustainable, convenient and healthy options. Alongside soy protein, Herbalife's effort focuses on alternative plant-based sources. Pea, rice, flaxseed and quinoa are four components of a new and innovative product that maintains all 9 essential amino acids to meet the characteristic of dairy proteins, without compromising on its nutritional properties. To further support sustainable and healthy plant-based options, Herbalife has recently explored other alternatives with an eye on by-products. Not only has there been a planned reduction of GHG by concentrating the effort on agricultural crops, but there has also been an intent to identify waste streams, maximize their nutritional benefits for human nutrition rather than disposing of them in the animal feed chain or landfill.

4.3.2 Environmentally sustainable plant-based diets can bring nutritional adequacy to populations (with Prof. T. Sanders)

Beyond the clear advantages of environmentally friendly plant-based diets, plant-based diets, when smartly calibrated and alternated, can be a valuable solution to provide nutritional adequacy to populations. Nutrient fortification has made plant-based diets nutritionally adequate¹⁴⁰. In practice, plant-based diets –e.g. diets relying primarily, not exclusively, on plant-based proteins - usually contain similar proportions of protein, carbohydrates, and fats compared to mixed diets. However, they contain less saturated fat, more unsaturated fat and dietary fiber¹⁴¹. Plant-based diets can be less energy dense than traditional mixed diets, especially if high in water and low in fat. However, estimates of dietary energy intake in adults show no clear differences between plant-based and mixed diets¹⁴².

- **Protein:** Animal products account for 58% of average protein intake in Europe. Protein intakes are lower on plant-based diets supplying on average about 12% of the energy intake as opposed to 15% in mixed diets. An intake of 10% of energy from protein is regarded as sufficient to meet protein requirements. Cereals form the basis of most plant-based diets and lysine is usually the limiting amino acid. The addition of even small amounts of milk protein greatly improves the biological value of the protein in cereal based diets. Meat protein has a biological value about twice that of most plant proteins (except for soy protein). However,

¹³⁹ Hughes, G. J., et al. (2011). 'Protein digestibility-corrected amino acid scores (PDCAAS) for soy protein isolates and concentrate: Criteria for evaluation', Journal of Agricultural and Food Chemistry.

¹⁴⁰ Drewnowski A. (2024) 'Alternative proteins in low and middle-income countries (LMIC) face a questionable future: will technology negate Bennett's law?' Current Developments in Nutrition

¹⁴¹ Neufingerl N. & Eilander A. (2021) 'Nutrient Intake and Status in Adults Consuming Plant-Based Diets Compared to Meat-Eaters: A Systematic Review', Nutrients.

¹⁴² *ibid.*

combinations of appropriately processed mixtures of plant proteins (cereals, nuts and pulses) supply protein of similar biological values to meat;

- Iron deficiency and anemia are still prevalent in Europe, mainly affecting women of reproductive age. Sources of iron from plants include wheat, pulses, dark green vegetables (especially low oxalate varieties, such as kale), fortified cereals, and dried fruit. The iron from meat (heme iron) is better absorbed than from plant sources. Indeed, the UK Biobank Study with over 450,000 participants¹⁴³ found mild to moderate anemia to be more prevalent on plant-based diets. Anemia was more likely in vegans who did not take iron supplements;
- **Calcium:** Where milk is not consumed, calcium intakes are of concern especially for girls aged 11-13 years of age (a time when bone mineralization with calcium is at its maximum). After this age bone density gradually declines until mid-life, after which it declines more rapidly. Vitamin D facilitates calcium absorption and dietary intake is required when sunlight exposure is limited. Supplementation is preferred because dietary sources of vitamin D are limited in both plant based and mixed diets. Combined supplementation of vitamin D with calcium in postmenopausal women slows the rate of bone mineral loss and decreases the risk of fractures¹⁴⁴;
- **Vitamin B12:** Vitamin B12 is the vitamin of most concern because it is absent from food of plant origin. Vitamin B12 deficiency was found in 52% of vegans and 7% of vegetarians in a large cross-sectional study¹⁴⁵ despite the availability of fortified products such as soya milk, yeast extracts, some margarines, and breakfast cereals. Many vegans avoid fortified foods and only sporadically take supplements. The importance of ensuring an adequate dietary intake of vitamin B12 on plant-based diets cannot be overemphasized because deficiency results in megaloblastic anemia and irreversible neurological damage¹⁴⁶.

It is recognized that there are unhealthy plant-based diets. A healthful plant-based dietary score has been developed¹⁴⁷, where positive scores are given to healthy plant foods (wholegrains, fruit and vegetables, nuts, legumes, vegetable oils) very large prospective studies show that greater adherence to a healthful plant-based diet is associated with a lower risk of mortality, cancer, and particularly cardiovascular disease¹⁴⁸ and increased life expectancy¹⁴⁹.

4.3.3 To facilitate this transition, a new approach is needed

The development of new alternative proteins will first need to comply with the Novel Foods Regulation. Under this legislation, food that had not been consumed to a significant degree by humans prior to 1997 must comply with an authorization procedure before being approved to be placed on the market. The current approval process is lengthy, and consideration should be given to fast-track approvals;

Nutrient fortification with iron, zinc, and vitamin B12 is necessary to make meat substitutes substantially equivalent to animal protein sources. In particular, the addition of vitamin B12 to organic

¹⁴³ Tong T. et al. (2019) 'Hematological parameters and prevalence of anemia in white and British Indian vegetarians and nonvegetarians in the UK Biobank', American Journal of Clinical Nutrition.

¹⁴⁴ Liu C. et al. (2020) 'Effects of combined calcium and vitamin D supplementation on osteoporosis in postmenopausal women: a systematic review and meta-analysis of randomized controlled trials', Food Funct.

¹⁴⁵ Gilsing A. et al. (2010) 'Serum concentrations of vitamin B12 and folate in British male omnivores, vegetarians and vegans: results from a cross-sectional analysis of the EPIC-Oxford cohort study', European Journal of Clinical Nutrition.

¹⁴⁶ Nicklewicz A. et al. (2023) 'The importance of vitamin B12 for individuals choosing plant-based diets', European Journal of Nutrition.

¹⁴⁷ Baden M. et al. (2019) 'Changes in Plant-Based Diet Quality and Total and Cause-Specific Mortality', Circulation.

¹⁴⁸ Thompson A. et al. (2023) 'Association of Healthful Plant-based Diet Adherence With Risk of Mortality and Major Chronic Diseases Among Adults in the UK', JAMA Network Open.

¹⁴⁹ *Ibid.*

soy milk is currently prohibited by EC regulations. The regulations require modification so that vitamin B12 can be added to milk and meat substitutes¹⁵⁰. As populations age and diets shift towards plant-based options, policies promoting nutrient-dense foods contributes to improved public health: Nutritional education programs, food fortification initiatives, and incentives for food manufacturers to enhance the nutritional quality of products are essential components of this approach¹⁵¹.

Focus: The need for food fortification in the transformation of food systems

Food fortification is the practice of adding micronutrients (e.g., vitamins, minerals) in food items with the purpose of improving nutritional quality. Therefore, according to the WHO, it represents a “*public health benefit with minimal risk to health*”¹⁵².

The benefits of food-fortification are proven and manifold. In fact, food fortification has been shown to:

- Prevent, reduce and control micronutrient deficiencies, and other diet-related non-communicable diseases (NCDs).
- Reduce health disparities without having to change behaviors¹⁵³;
- Play a key role in achieving the transition towards sustainable food because they make nutrient-dense food affordable to consumers independent of their budget¹⁵⁴;
- Improve nutritional intakes, with notable health improvement, especially in older adults¹⁵⁵.

Food fortification is recommended as an evidence-based policy tool by the WHO, which recommends notably universal salt iodization as well as vitamin and mineral fortification of wheat and maize flour and corn meal. In the EU, food fortification is regulated primarily through Regulation 1925/2006 on the addition of vitamins and minerals and of certain other substances to food, also establishing harmonized maximum levels (the latter still pending). Only some Member States have mandatory fortification strategies, for example:

- Ireland: Mandatory fortification of bread with calcium, iron, thiamin (vitamin B1), and niacin (vitamin B3); voluntary fortification of some foods with folic acid and vitamin D;
- Finland: Mandatory fortification of milk and margarine with vitamin D and salt iodization;
- Amongst others: Austria, Bulgaria, Croatia, Czech Republic, Denmark, Hungary, Poland, Romania, Slovakia, Slovenia: Mandatory salt iodization.

This explains why the consumption of fortified food in Europe has been very low in the past (<10% of dietary energy)¹⁵⁶. Nevertheless, in the absence of a mandatory fortification strategy, voluntary fortification by industry players has been shown to improve nutrient status.

¹⁵⁰ Prior to that, consideration should be given to revising protein claims so that they are based on the weight of protein in a serving rather than the percentage energy. Currently, a protein claim is permitted on foods supplying 10% energy and a high protein claim at 20%. It would be more efficient to translate these to 5 g and 10 g per typical portion (an amount that is equivalent to 10% and 20% of energy intake on the reference energy intake of 2000 kcal). A caveat today is that there is no officially mandated serving size unlike in the US, which would need to be defined for Europe as well.

¹⁵¹ Mozaffarian, D., & Ludwig, D. S. (2010). ‘*Dietary guidelines in the 21st century—a time for food*’. JAMA.

¹⁵² WHO (2023) - Food fortification.

¹⁵³ WHO and FAO (2006) - [Guidelines on food fortification with micronutrients.](#)

¹⁵⁴ *Ibid.*

¹⁵⁵ Kahoe, L. et al. (2019) ‘*Nutritional challenges for older adults in Europe: current status and future directions*’, Proceedings of the Nutrition Society.

¹⁵⁶ Hennesy, A. et al. (2013). ‘*The impact of voluntary food fortification on micronutrient intakes and status in European countries: a review*’. Proceedings of the Nutrition Society.

Herbalife's contribution: Fortification through rigorous scientific processes

Herbalife's science-backed products are designed to provide consumers with a plant-based meal covering all the essential nutrients necessary for a healthy lifestyle. Taking the example of Herbalife's Formula 1, one meal shake provides 16-18g of proteins, 12 vitamins and 10 minerals, as well as the sufficient contribution of amino acids.

Herbalife's 14 steps 'seed to weed' process ensures that its products are best in class for industry standards in quality - from source ingredients to finished products.

Herbalife's science-backed products are developed through a rigorous scientific process with:

- More than 300 scientists and 50 PhDs work on Herbalife's products;
- 19 laboratories ensuring nutritional adequacy, safety and taste of Herbalife's products;
- A Nutrition Advisory Board composed of more than 25 leading nutritional experts.

Herbalife's products are a convenient and safe way to ensure a sufficient intake of micro and macro nutrients. Per 100kcal, no other pre-cooked or take-out meal has a similar nutrient density score.

Table 5: Nutritional value for 100kcal of specific meals

Meal	NRF 9.3 (per 100kcal), an index of nutritional density
Herbalife Formula 1 with Protein Drink Mix (2 scoops + 2 scoops) made with water	172.00
Herbalife Formula 1 Savoury Meal made with soy milk	153.59
Herbalife Formula 1 made with soy milk	144.91
Herbalife Formula 1 Express Healthy Meal Bar	126.56
Herbalife Formula 1 Savoury Meal made with semi-skimmed milk (1.5% fat)	121.14
Herbalife Formula 1 made with semi-skimmed milk (1.5% fat)	116.74
Home-cooked Grilled salmon, carrots, pasta	111.87
Home-cooked Turkey-veggie bread, veggie Soup	43.93
Pre-cooked Pizza Margherita	19.24
Pre-cooked Lasagna	16.29
Pre-cooked Stuffed raviolis	14.25
Take-out Sushi	11.96
Take-out Kebab	9.87
Take-out McDonald's BigMac + medium fries	5.66

Source : Calculations based on the Nutrient Rich Food Index (NRF) developed by Dr. A. Drewnowski with data retrieved from Ciqua data base

Key policy take-aways as for health issues:

The EU must act to address the health consequences of current diets:

- **Focus on promoting nutritional adequacy**, which emphasizes on the nutrient density rather than on the manufacturing processes;
- **Promote and facilitate food fortification** to improve nutritional adequacy and guarantee that plant-based diets are beneficial for consumers' health;
- **Financially enhance funding and research for healthy diets**, notably to monitor nutrient deficiency and other food-related negative impact on health;
- **Facilitate the development** of plant-based alternatives through funding and lighter administrative procedures.

5 AS EUROPEAN HOUSEHOLDS STRUGGLE WITH INCREASING FOOD PRICES AND INFLATION, EUROPE MUST ACT TO LOWER COSTS OF HEALTHY FOODS, AS WELL AS PROMOTE NON-VOLATILE PRODUCTS

Food inflation has been hitting Europe for a few years and its persistence has raised concerns among specialists as price effectively remains the critical criterion for purchase among Europeans.

5.1 EUROPE HAS BEEN STRUGGLING WITH HIGH FOOD PRICES AND INFLATION, ACCENTUATING THE DIFFICULTIES TO ENSURE FOOD AFFORDABILITY

5.1.1 Although being a main objective of the EU's agriculture and food policies, there is no equal access to nutritious food in Europe

Ensuring “that supplies reach consumers at reasonable prices” is one of the five objectives laid down in the Common Agricultural Policy (CAP), e.g., the cornerstone of European agrifood policies. It is also key for the success of any food system transition. Such a priority of the EU institutions echoes the current preoccupations of European households. As shown in the figure below, 8.3% of the EU's population could not afford a full meal including meat, chicken, fish or a vegetarian alternative every second day in 2022 - a one percentage point increase compared to 2021. This percentage was logically higher among people whose income falls below the poverty line, of which almost one out of five (19.7%) were unable to afford a full meal every other day (2.2 percentage points increase)¹⁵⁷.

The increasing difficulty of affording a full meal¹⁵⁸ is well-documented and is now considered by the European Commission's food policy experts the most pressing issue for food security in the EU. There is now a need for all agrifood stakeholders, all along the value chain, to align to a common objective to drag prices down.

5.1.2 Inflation is still high in Europe and higher in Eastern Europe

Europe has been suffering from ever higher food inflation rates since 2022, data show. Food prices accelerated to unprecedented levels in the Eurozone between March 2022 – a consequence of the outbreak of the Russian war in Ukraine - and March 2023, reaching 15.5% on an annual basis and accounting for 3.1 pps¹⁵⁹ out of 6.9% headline inflation¹⁶⁰. Households, in particular low-income households, had to prioritize their spending, which drove consumer and business confidence down throughout the year 2022¹⁶¹. Aggregate statistics at the European level suggest that the share of non-discretionary spending - including food - surged during that period, while households' available cash-

¹⁵⁷ Eurostat (2023) - [Inability to afford a meal with meat, chicken, fish \(or vegetarian equivalent\) every second day - EU-SILC survey.](#)

¹⁵⁸ While there is no uniform definition of a 'full meal' in Europe, we consider here a meal that includes meat, fish or a vegetarian equivalent (Eurostat definition), e.g., a meal representing a balanced combination of food items that provide essential nutrients necessary for sustenance and energy.

¹⁵⁹ Forecast European Commission (2024) - [Winter 2024 Forecast - Food inflation.](#)

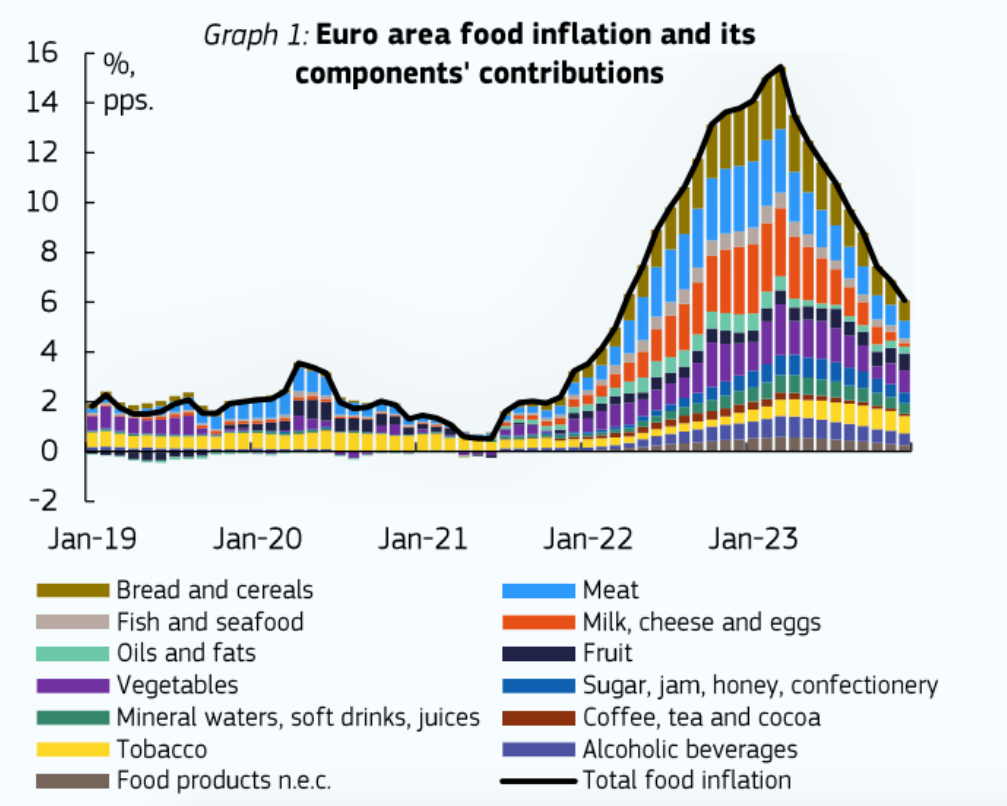
¹⁶⁰ European commission (2023) - [Euro area annual inflation down to 6.9%.](#)

¹⁶¹ Citigroup (2022) - [Europe's Cost of Living Crisis - Modelling Household Spending.](#)

flows¹⁶² and saving rates decreased¹⁶³. These various elements suggest that on average, European households had to use savings to compensate for higher prices in food.

The surge in food prices applied to both processed and unprocessed foods. Only prices of alcoholic beverages, fruit and tobacco have remained stable since 2022. The highest inflation rates were measured on cereals, meat, milk, cheese, eggs and vegetables between March 2022 and the end of 2023: 54.9% price increase for sugar for example, 22.7% for eggs, 35.3% for cheese, 16.7% for bread, 25% for milk¹⁶⁴. They account for a large part of food-related spending, which explains why total food inflation has been so high in Europe. The figure displayed below shows that bread and cereals, meat, as well as milk, cheese, eggs, accounted for more than 50% of Eurozone food inflation between 2022 and 2023.

Figure 4: Euro area food inflation and its components contributions¹⁶⁵



Source: European Central Bank, 2023

Prices of major food commodities have indeed surged throughout the years 2022 and 2023, the graph below underlines.

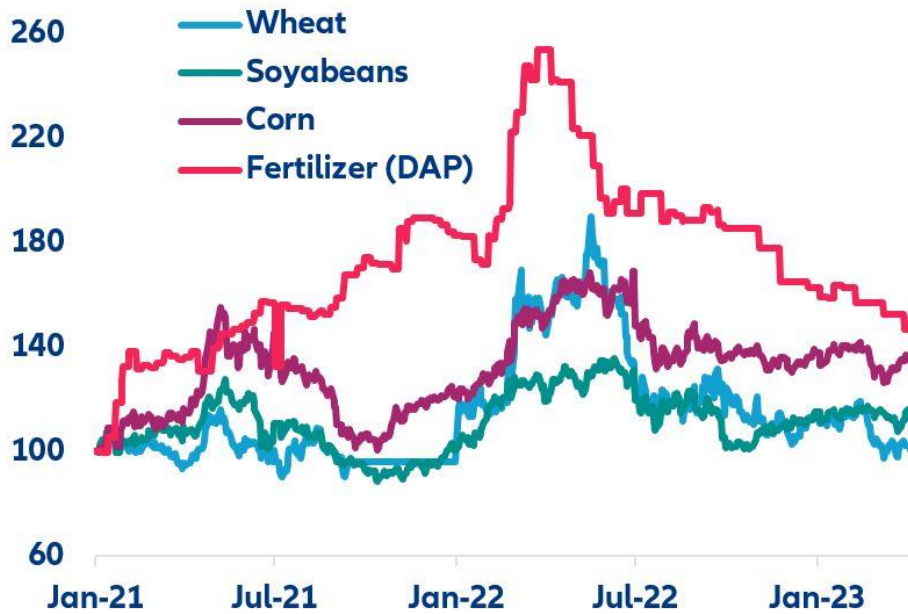
¹⁶² *Ibid.*

¹⁶³ *Ibid.*

¹⁶⁴ Eurostat (2023).

¹⁶⁵ Forecast European Commission (2024) - Winter 2024 Forecast - Food inflation.

Figure 5: Evolution of prices (indices) of major food commodities in Europe



Source: Allianz Research

Levels of food inflation have greatly varied between EU Member States. The Baltic countries, Slovakia and Croatia have had the highest rates, reaching more than 30% over the 2022-2023 period, well above the median and average rate of 15.5%. Between Q2 2023 and Q3 2024, food prices increased less rapidly in Western Europe - such as in France (+7.3%), Italy (+9.3%) and Spain (+11.6%) - than in Eastern Europe, such as in Poland (+14.5%) and Slovakia (+18.6%)¹⁶⁶. These differences can be explained by structurally lower shares of wages in the cost structures in Eastern Europe, making these countries relatively more vulnerable to commodity shocks.

Spikes on everyday products in Western Europe have driven anxiety vis-à-vis food affordability in these countries. In Italy, pasta prices increased by 17% between mid-2022 and mid-2023¹⁶⁷. Food inflation in this country in 2022 was 50% due to energy prices, which have been a major component of prices' dynamics in the last two years. Another reason is the global rise of imported inputs' prices, durum wheat and in particular soft wheat. Nearly 50% of durum wheat is imported in Italy today, especially from Canada. Shortages in durum exports due to drought in North America led to consequences on pasta prices in Italy¹⁶⁸. Likewise, cheese prices have skyrocketed in Germany, going up by 40% between Q2 2022 and Q2 2023¹⁶⁹.

Inflation levels have been declining over the past months. In most Eurozone countries, disinflation started at the end of Q2 of year 2023, annual food inflation declining to 6.8% in November 2023. This trend started earlier in some countries like France, whose food prices began to go down in April 2023¹⁷⁰. The Eurozone average annualized inflation food rate fell to 5.7% in January 2024, well below the 15.5% level of March 2023, but still above the pre-pandemic long-term average of 2.1%¹⁷¹.

¹⁶⁶ Allianz trade article (2023) - [European food inflation - hungry for profits?](#)

¹⁶⁷ Italy's Industry Ministry, cited by *The New York Times* (2023).

¹⁶⁸ S&P Global Commodities (2023) – [Drought dries up Canada's prospects for wheat exports.](#)

¹⁶⁹ Germany's federal statistical office (2023).

¹⁷⁰ European Supermarket Magazine (2023) - [Food Inflation Slows In France For 'Seventh Month In A Row'](#).

¹⁷¹ ECB Economic Bulletin (2024) - [What were the drivers of euro area food price inflation over the last two years?](#)

Healthy purchases have become unaffordable for far too big a share of European citizens. Member States and the European institutions are determined to act on the impact high, rising and volatile food prices have on citizens' incomes, consumption patterns and health.

5.1.3 Price evolution has been triggered by numerous factors, all along the agrifood value chain

Three main factors explain such increases in food prices in Europe, according to recent literature:

- **Input prices**, such as those of energy, electricity and commodities (fertilizers for example) have started to increase since the beginning of year 2021. The outbreak of the war in Ukraine has accelerated the share of these elements on the individual budget, especially during the year 2022 (see above);
- **Extreme weather and climate shocks** negatively impacted some productions, namely legumes, vegetables or fruit. Usual best-selling products in some countries, such as olive oil in Spain and Italy or fruit in the South of France, have been affected by these severe events¹⁷²;
- **The unequal distribution of price increases along the value chain**, with certain intermediaries disproportionately increasing prices. Large, packaged food companies, in particular, have increased their prices by 17% between 2022 and 2023¹⁷³, while food producers only increased them by 12%.

Among the causes of inflation, complex value chains are a key factor leading to price volatility. Although internationalization of value chains was promising as for decreases in price levels, the share of households' budgets dedicated to food has remained the same in Western Europe these past decades, data on France¹⁷⁴ and Italy¹⁷⁵ suggest. Plus, recent literature indicates that a bigger inclusion into global agricultural value chains (GAVC¹⁷⁶) does not lead to more resilience and may drive costs' volatility up.

¹⁷² Reuters article (2023) - [Spanish drought means olive oil output set to be a third below 4-yr average](#).

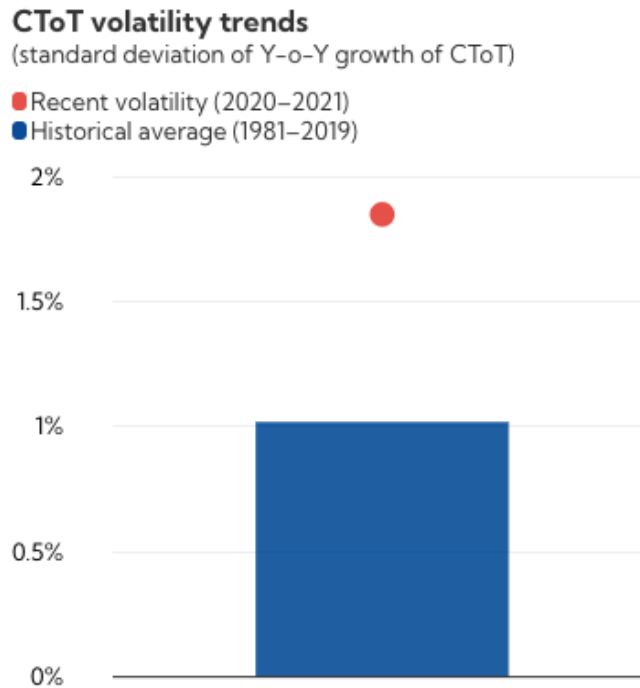
¹⁷³ Allianz trade article (2023) - [European food inflation - hungry for profits?](#)

¹⁷⁴ INSEE (2024) - [Transformations de l'agriculture et des consommations alimentaires](#).

¹⁷⁵ Italian ministry of economic development (n.d.) - [Consumi agro-alimentari in Italia e nuove tecnologie](#).

¹⁷⁶ Bernhard Dalheimer, Marc F. Bellemare and Sunghun Lim (2023) - [Global Agricultural Value Chains and Food Prices](#).

Figure 6: Volatility index of commodity terms of trade (CToT)



Source: The Economist, 2022

In Europe, food production that depends less on volatile, foreign-sourced inputs – such as oil and gas – will have therefore a growing advantage *vis-à-vis* the competitors. It is indeed easier for food manufacturers to grow their business when costs and revenues are more predictable¹⁷⁷. **Under these conditions, plant-based meals manufacturers and plant-based products are likely to be less subject to price volatility** (see below)¹⁷⁸, as they do not need food refrigeration, on site or during transportation for example¹⁷⁹.

¹⁷⁷ FAO (2017) - [The future of food and agriculture - Trends and challenges](#).

¹⁷⁸ Arvis, B. et al. (2020) '*Consequences of global climate change and their impacts on Europe – a view on agricultural commodities, report for the European Environment Agency*', Ramboll France

¹⁷⁹ Tassou, S. et al. (2009) '*Food transport refrigeration - Approaches to reduce energy consumption and environmental impacts of road transport*', Applied Thermal Energy.

Table 6: Qualitative volatility assessment of selected meals' production process

	Potential use of foreign-sourced cereals	Higher need of energy (cold storage, quick heating)	Dependence on volatile costs
Herbalife Formula 1 made with semi-skimmed milk (1.5% fat)	Yes	No	Medium
Herbalife Formula 1 made with soy milk	Yes	No	Medium
Take-out Sushi	Yes	Yes (salmon)	High
Home-cooked Grilled salmon, carrots, pasta	Yes	Yes (salmon)	High
Home-cooked Turkey-veggie bread, veggie soup	Yes	Yes (turkey)	High
Pre-cooked Pizza Margherita	Yes	Yes	High
Pre-cooked Lasagna	Yes	Yes	High
Take-out McDonald's BigMac + medium fries	Yes	Yes (fries)	High
Take-out Kebab	Yes	Yes (meat)	High
Pre-cooked Stuffed raviolis	Yes	Yes (meat)	High

Source: Foodsafety.gov; Ciqua Database

Some of the mechanisms driving prices up and volatility are predicted to last, in view of the current structure of commodities trade and markets. With the heightened impact of climate change on productions, and an increasingly insecure geopolitical situation, institutions and governments should be proactive in addressing the hazards on food prices caused by such situations.

5.2 PRICE REMAINS THE PRIMARY CRITERION FOR FOOD PURCHASE

5.2.1 Price is a critical factor determining food choices, especially for low-income households, together with taste

There is a persistent consensus within scientific literature that price is the first factor impacting food purchases. It is a critical element of any food policy. A comprehensive review of data and studies analyzing the relationship between food prices and consumption, performed by an international team focusing on dozens of countries¹⁸⁰ concluded that on average in the world, **a 10 % decrease in prices boosts consumption of fruit and vegetables by around 14%, and of other healthy meals by 16%.** Still, other research makes a distinction between grains, fruit and vegetables, whose elasticity tends to be relatively low¹⁸¹, and other foods such as meats¹⁸². One other comprehensive study highlights a very high level of (negative) elasticity: Price responsiveness peaks with beef (-0.986) and lamb (-1.062), then come pork (-0.914) and poultry (-0.779). These values are consistent with other comparable scientific surveys^{183 184}. As for processed foods, such as snacks, sugary beverages, and ready-to-eat meals, consumers are more likely to adjust their consumption patterns in response to price changes¹⁸⁵. This suggests that lower prices for healthy foods would potentially allow higher, stable consumption of those goods.

Most of the existing specialized literature centers on price-elasticity depending on the income. Unsurprisingly, most of the specialized articles concur with a higher responsiveness to price increases - and decreases - among low-income households. The Economic Research Service of the United States Department of Agriculture published in 2017 an estimate of price-elasticities for eleven food groups and 164 countries¹⁸⁶. Special focuses were made on processed meat, fish, milk beverages, milk. Results suggest that both low-income countries and low-income households of high-income countries respond more to prices hikes. Low-income households typically exhibit higher price sensitivity compared to higher-income households, particularly for basic food items¹⁸⁷. Households with children may also demonstrate unique patterns of price sensitivity, especially regarding food items targeting children like snacks, sugary drinks, and convenience foods. Research indicates that price elasticity may be higher for these households due to budget constraints and parental concerns about nutrition¹⁸⁸.

¹⁸⁰ Afshin A, Peñalvo JL, Del Gobbo L, Silva J, Michaelson M, O'Flaherty M, et al. (2017) 'The prospective impact of food pricing on improving dietary consumption: A systematic review and meta-analysis', PLoS ONE.

¹⁸¹ Beydoun, M. A., & Wang, Y. (2009). 'Do nutrition knowledge and beliefs modify the association of socio-economic factors and diet quality among US adults?', Preventive Medicine.

¹⁸² Gallet, C. A. (2010) 'Meat meets meta: a quantitative review of the price elasticity of meat', Am. J. Agric. Econ.

¹⁸³ Andreyeva, T., Long, M. W. & Brownell, K. D. (2010), 'The impact of food prices on consumption: a systematic review of research on the price elasticity of demand for food', Am. J. Public Health.

¹⁸⁴ Femenia, F. 'A meta-analysis of the price and income elasticities of food demand'. *Ger. J. Agric. Econ.* 68, 77-98 (2019).

¹⁸⁵ Smed, S., Jensen, J. D., Denver, S., & Nordström, J. (2016). 'Choice of organic foods is related to perceived consequences for human health and to environmentally friendly behaviour', *Appetite*.

¹⁸⁶ Economic research service of the US Department of Agriculture (2017) - [The Influence of Income and Prices on Global Dietary Patterns by Country, Age, and Gender](#).

¹⁸⁷ Jones, A. M., & Rice, N. (2014) 'Low take-up of food assistance in OECD countries: A review of evidence and implications for improving outreach', *Journal of Social Policy*.

¹⁸⁸ Powell, L. M., Wada, R., & Persky, J. J. (2013). Chaloupka, F. J. 'Employment impact of sugar-sweetened beverage taxes'. *American Journal of Public Health*.

5.2.2 Food-price demand elasticity remains high in Europe, even in the presence of other factors of preference

Taste still plays a primary role in the individual construction of food consumption and should not be neglected. In European countries, respondents generally view¹⁸⁹ food as a central aspect of their cultural life, defining their social existence (see section 3). The emphasis on taste and pleasure in eating is very high in Europe¹⁹⁰. Taste is a primary criterion that is especially applicable to Europe. Taste for instance is unsurprisingly a primary driver of food acceptance and preference among children¹⁹¹. Children are naturally drawn to foods that taste good to them, and taste preferences established during childhood can have long-term effects on dietary choices. For their initiatives to be acceptable, policy makers must take the cultural and individual factors into account, including taste, when designing public policies (see section 3).

¹⁸⁹ See in particular Rozin, P., Fischler, C., Imada, S., Sarubin, A., & Wrzesniewski, A. (1999). 'Attitudes to food and the role of food in life in the U.S.A., Japan, Flemish Belgium and France: Possible implications for the diet-health debate'. *Appetite*.

¹⁹⁰ *Ibid.*

¹⁹¹ De-Regil, L. M., & Jaramillo, A. (2018) 'Understanding the role of taste in food acceptance and preference among children: A narrative review', *International Journal of Gastronomy and Food Science*.

6 PUBLIC POLICY SHOULD ENVISION NEW WAYS OF SUPPORTING FINANCIAL ACCESS TO HEALTHY AND SUSTAINABLE FOOD FOR ALL

Under certain conditions, healthy foods are not always more expensive than their unhealthy counterparts. Still, market-based policies and subsidies remain useful tools to aim at advancing access to healthy foods.

6.1 HEALTHY FOODS ARE NOT NECESSARILY PRICIER

6.1.1 While prices of healthy food are generally higher than those of unhealthy meals, nutrient-rich meals are not necessarily more expensive

A systematic review of the literature indicates that, on average, healthier diets cost slightly more than unhealthy diets. A meta-analysis of 27 reference studies, for instance, conducted in ten countries has been conducted by Rao, Afshin and Mozaffarian¹⁹². Within the categories of food items, meats and protein-based meals exhibited the most significant disparities in prices, healthier alternatives being priced at approximately + EUR 0.29 per serving (with a 95% confidence interval of EUR 0.19 to EUR 0.40¹⁹³) and + EUR 0.47 per 200 kcal (ranging from EUR 0.42 to EUR 0.53) higher than less healthy options. The discrepancies in price per serving between healthier and less healthy food choices were comparatively smaller in grains (approximately EUR 0.03), dairy products (EUR -0.004), snacks/sweets (EUR 0.12), almost non-existent for soda/juice (EUR 0.11¹⁹⁴). Gaps may differ according to countries, healthier diets being for example much pricier in the United Kingdom than in continental Europe.

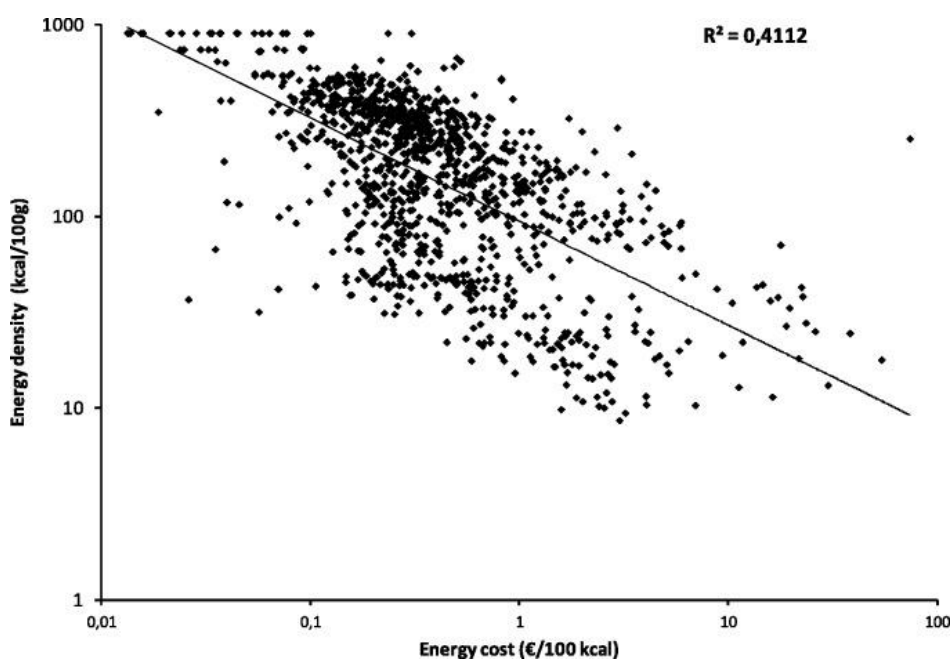
Research is unanimous on the average lower cost of empty calories compared to nutrient-rich foods. Grains, fats, and sweets imply lower per-calorie food costs (energy cost, in EUR/100 kcal). By contrast, fruit and vegetables are associated with higher per-calorie food costs. As a result, the relation between the energy density of foods and the energy cost tends to be negative.

¹⁹² Rao M et al. (2013) 'Do healthier foods and diet patterns cost more than less healthy options? A systematic review and meta-analysis', *BMJ Open*.

¹⁹³ Prices have been updated to 2024 current values, in euros, for the purpose of this White Paper.

¹⁹⁴ P-value of 0,64.

Figure 7: Correlation between energy density and energy cost



Source: Drewnowski & Darmon, 2007

A positive correlation is also noticeable between the cost of diets and their intrinsic diversity¹⁹⁵, whether nutrients were calculated individually or combined into a composite measure like the Mean Adequacy Ratio¹⁹⁶.

On the opposite, when dietary patterns primarily center on a single or a few isolated nutrients, the cost of the highest-rated (healthiest) category of diets meeting these criteria do not show a significant difference from the lowest-rated (least healthy) category of diets. However, when standardized to a daily intake of 2,000 kcal, the highest-rated category of nutrient-based patterns incurred an additional cost of approximately EUR 1.27 compared to the lowest-rated category (ranging from EUR 0.50 to EUR 2.04).

These general statistics reflect international trends and do not say much about social aspects within societies. Food costs are an entrance barrier to the adoption of nutrient-dense diets and fat-reduced meals, especially by the lower income groups. Socio-economic studies also suggest that impecuniosity may lead to the selection of low-cost diets that are both energy rich - reaching satiety more efficiently - and 'shelf stable'¹⁹⁷. Foods with longer shelf lives happen to be dry packaged foods. They contain more, on average, refined grains, added sugars, and added fats.

¹⁹⁵ Vlismas K, Panagiotakos DB, Pitsavos C, et al. (2011), 'Quality, but not cost, of diet is associated with 5-year incidence of CVD: the ATTICA study', Public Health Nutr; Ryden PJ, Hagfors L. (2011), 'Diet cost, diet quality and socio-economic position: how are they related and what contributes to differences in diet costs?', Public Health Nutr; Aggarwal A, Monsivais P, Cook AJ, et al. (2011), 'Does diet cost mediate the relation between socioeconomic position and diet quality?', Eur J Clin Nutr; Schroder H, Vila J, Marrugat J, et al. (2008), 'Low energy density diets are associated with favorable nutrient intake profile and adequacy in free-living elderly men and women', J Nutr.

¹⁹⁶ See for instance Steyn NP, Nel JH, Nantel G, Kennedy G, Labadarios D. (2006), 'Food variety and dietary diversity scores in children: are they good indicators of dietary adequacy?', Public Health Nutr.

¹⁹⁷ Darmon N. and Drewnowski A. (2008) 'Does social class predict diet quality?', The American Journal of Clinical Nutrition.

6.1.2 The perception of healthy food remains strictly associated with higher prices, relying on biases

Consumer surveys suggest that a large percentage of people think that healthy food is more expensive than unhealthy food. In 2021, a pan-European survey entitled “What Consumers Want” - conducted by the EU-funded Smart Protein project¹⁹⁸ - asked respondents about the reasons why they were not embracing more plant-based alternatives in their meals. Prices were quoted as the first factor, the researchers declaring themselves unable to determine whether it was “*an issue of perception or not*”. When asked to determine which initiative policymakers should launch in priority, most Europeans responded first in favor of “*subsidizing healthier foods*”, with no statistical link between the purchasing power of the respondents and their likeliness to praise for subsidies. For example, the recently published report by the German citizens council on nutrition recommends altering the tax system to favor healthy and plant-based alternatives such as substitutions to milk and meat, as well as for pulses and legumes, while penalizing meat products¹⁹⁹. In the meantime, this report does not assess the prices *per se* of healthy and unhealthy foods in Germany (higher prices on healthy foods being taken for granted).

The perception that healthy is necessarily pricy, while being true in many cases (see section 2.1.1), is so anchored that consumers overgeneralize this belief to every product and situation²⁰⁰. Natural experiments in research corroborate the idea that consumers might overestimate the healthy aspects of a given ingredient or meal when a price is elevated²⁰¹.

These perceptions are hard to change, as consumers might look for a higher standard of evidence when - counter-intuitively for them - they observe a narrow pricing gap between expected-to-be healthy and unhealthy meals. Overall, “*the healthy = expensive intuition has a powerful influence on consumer decision making, with significant implications for both consumers and marketers*”²⁰².

Another bias playing a role in the vision of prices related to health is the information available to consumers. Selling prices also reflect the packaged quantity of the product, which may differ (see table 6 below). Still, European regulation on the provision of food information to consumers obliges retailers to display prices per unit of measurement²⁰³ - liters as for liquids, kilograms as for fruit and vegetables for instance. This entails differences between face prices and prices per 100 grams.

¹⁹⁸ Smart protein project (2021) - What consumers want: A survey on European consumer attitudes towards plant-based foods.

¹⁹⁹ Bürgerrat Ernährung des deutschen Bundestages (2024).

²⁰⁰ Haws K.L. et al. (2017) ‘*Healthy Diets Make Empty Wallets: The Healthy = Expensive Intuition*’, Journal of Consumer Research.

²⁰¹ *Ibid.*

²⁰² *Ibid.*

²⁰³ The EU Regulation (EU) No 1169/2011 is already quite extensive on the provision of food information to consumers.

Table 7: Comparison of prices and quantities of best-selling products in select European countries

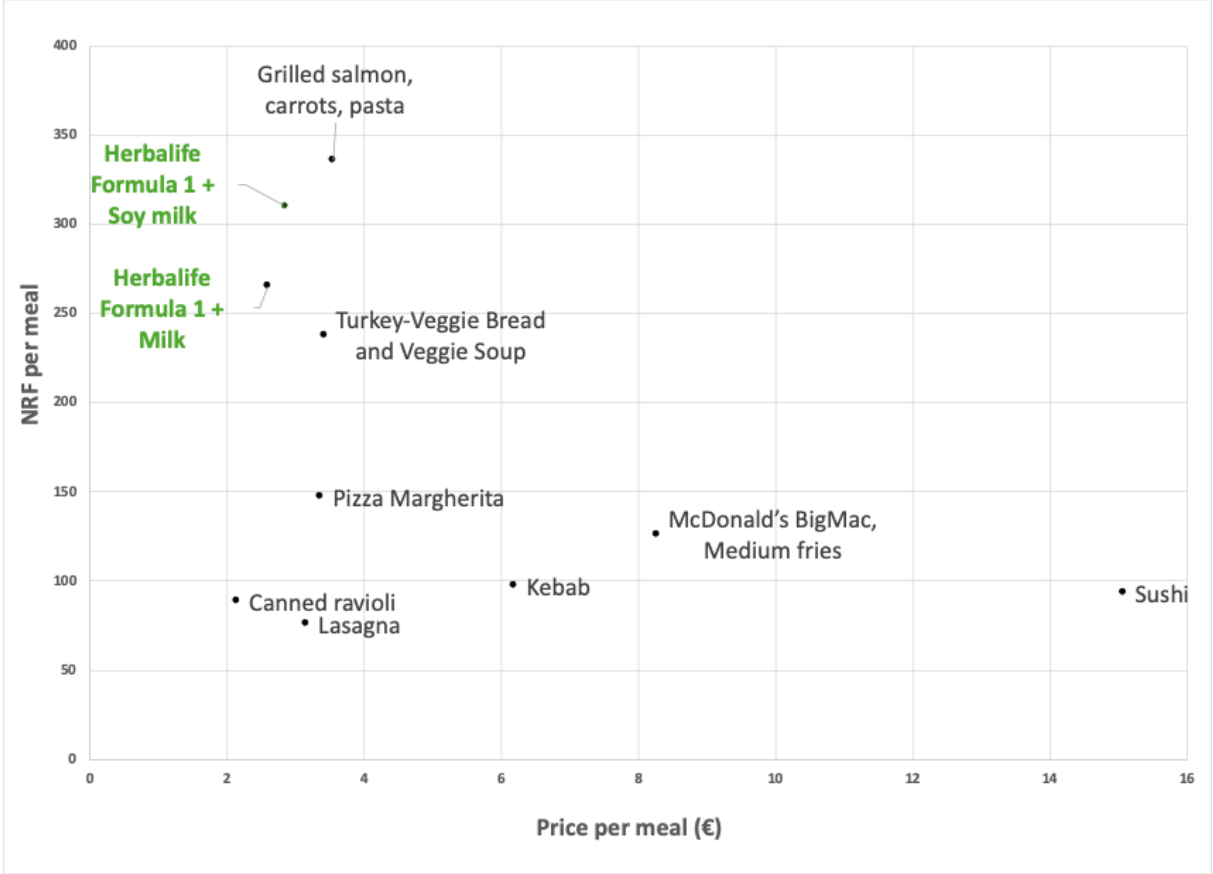
Meal	Germany	France	Spain	Italy	Poland	Sample average price	Average price per 100kcal
Frozen/Pre-cooked							
Pizza Margherita	3.49	3.46	3.89	3.69	2.31	3.37	1.00
Lasagna	2.79	4.04	3.79	2.99	2.20	3.16	0.91
Stuffed raviolis	1.50	1.11	3.15	2.99	2.01	2.15	0.60
Take-out							
Kebab	7.08	7.00	5.10	6.50	5.28	6.19	1.55
Sushi	12.90	15.84	14.80	13.20	18.62	15.07	4.19
McDonald's BigMac + medium fries	9.18	9.50	8.90	6.75	6.95	8.26	2.50
Herbalife							
Herbalife Formula 1 made with Milk	N.A.	N.A.	N.A.	N.A.	N.A.	2.25	0.63
Herbalife Formula 1 made with soy milk	N.A.	N.A.	N.A.	N.A.	N.A.	2.84	0.84

Source: Price approximation for 5 EU Member States and energy information retrieved from Ciqua data base²⁰⁴

²⁰⁴ Average EU prices for Herbalife's products were provided by Herbalife. Prices of other meals were calculated by an average of the five largest Member States (Germany, France, Italy, Spain, Poland, representing approximately 2/3 of European population). For purchases of pre-cooked and home-cooked meals, the average of the price of a mid-level brand in one of the large local supermarkets (discounters excluded) was used (Supermarket chains were selected based on size and online availability of prices (DE: Rewe, FR: Intermarché, ES: El Corte Inglés, IT: Conad, PL: Carrefour PL)). Where a local store had to be selected, a store in the center of the country's capital city was selected. For take-out meals, the price was calculated by the average of a random choice of 5 restaurants in the capital city on the country's most popular food delivery website (DE:

Still, prices per weighted portion do not say much about the nutrient intake affordability of the product. A cross analysis of prices per meal, among the best-selling meals in Europe, and of their Nutrient Rich Food (NRF) indices allows a comparison on that matter. Herbalife Formula 1 products position themselves very well in the graph below, its NRF/Price ratio being the highest of the sample.

Figure 8: NRF per meal and prices per meal



Source: Calculations based on the Nutrient Rich Food Index (NRF) developed by Dr. A. Drewnowski and data retrieved from Ciqual data base, and price approximation for 5 EU Member States²⁰⁵

Lieferando, FR: UberEats, IT, ES: JustEat, PL: Wolt). For Kebab in Germany and France, outside sources were used (Lieferando and Giera conseil, respectively). For McDonalds BigMac and Fries, online prices were consulted on local websites. Nutrient density was calculated based on the Nutrient Rich Food Index. Developed by Dr. A. Drewnowski, it aggregates 9 nutrients to encourage and 3 nutrients to discourage. For nutritional values, data available on the French authorities' Ciqual website was used (and McDonald's website for BigMac + Fries). Nutritional values for Herbalife's products rely on in-house data. Weight and energy density are based on an average of the products used to determine prices.

²⁰⁵ Ibid.

6.2.1 Citizens and consumers should get better information on the 'nutritional value for money' of the products

It is still difficult for consumers, for the reasons mentioned above, to connect displayed prices of food and their nutrient intake. The presence on shelves of face prices and of prices per unit of measurement may confirm biases that consumers already have on their minds. Products containing many servings per package, such as Herbalife Formula 1 for example, thus appear as expensive products. Plus, while nutritional intakes are displayed on packaged products, there is no compulsory synthetic index allowing consumers to assess the 'nutritional value for money' of products and comparing between them.

A better comparability of the nutritional value of products in relation to their prices is only possible with good availability and circulation of data within and among the Member States.

EU Regulation (EU) No 1169/2011 is already quite extensive on the provision of food information to consumers. It mandates that pre-packaged foods display certain nutritional information, including energy value and quantities of fat, saturates, carbohydrates, sugars, protein and salt. The regulation also requires this information to be presented in a consistent format and font size, in order to facilitate easy comparison. However, this information is not linked with the nutritional value for money, e.g., not linked directly to product prices.

To encourage the circulation and centralization of nutrition-related data, the European Commission could for example allocate subsidy budgets from structural funds to accelerate the movement in certain Member States. Still, to help national policymakers assess the nutritional value of the main circulating foods, samples through in-site surveys for example might be enough at first. The ultimate objective is that researchers, policymakers and consumers enjoy a free, user-friendly, accessible, informative database which enables them to learn about the nutritional value of the foods and meals they consume.

Once the data is collected the question indeed arises of how consumers will use it. Several dissemination channels can be distinguished:

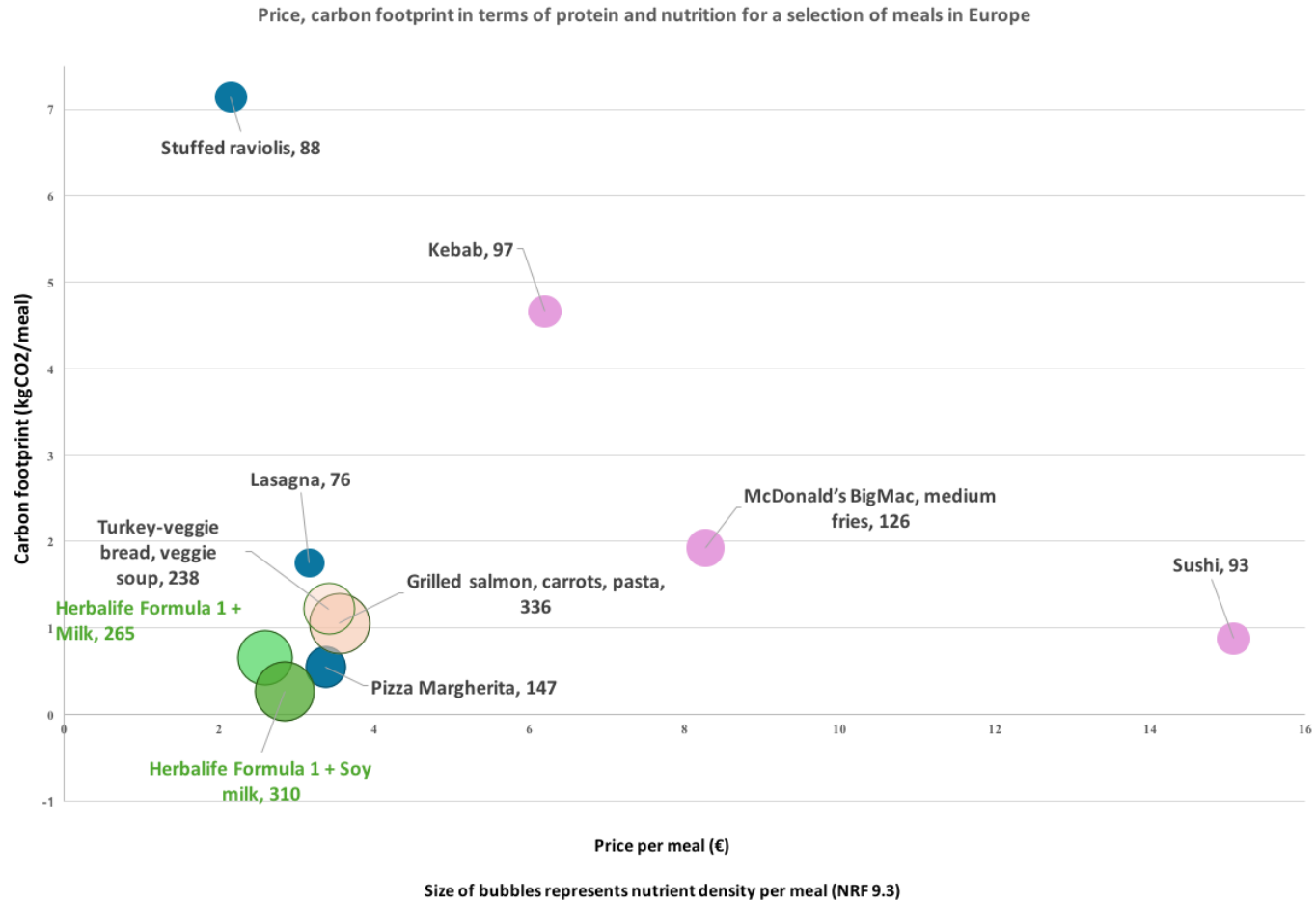
- Partnerships with public services and associations linked to vulnerable populations could be established, so that they have more tools to assist these populations with budget management. Among disadvantaged people, food is indeed a main expenditure item. Social programs financed by the EU addressing financial literacies²⁰⁶ could systematically include in their content the cross issue of nutrient intake and price of meals, when addressing the 'groceries' issue;
- Digital labeling can provide consumers with additional information about products beyond what is available on traditional packaging labels;
- Nutrition education programs should foster the essential knowledge to understand basic nutritional requirements, to differentiate between empty calories and nutrient dense foods;
- This data can also be used more institutionally by retailers. A European directive on labeling could theoretically lead to the standardization of nutritional labeling based on price and nutrients across Europe. Experience shows that due to structural differences in retail among countries and in the advancement of information systems, imposing this level of information on a European scale is doomed to fail. Relying on large retailers, on a country-by-country basis,

²⁰⁶ European Commission on literacy programs - [Financial literacy](#).

for experiments could be an important step before national regulations decide whether to be more demanding on the subject.

As analyzed by Herbalife in the context of this White Paper, many full meals in the EU currently do not sufficiently meet the imperatives of health, affordability and sustainability. However, the analysis also shows that those solutions exist. Herbalife's products, and its Formula 1 product range are particularly affordable, nutrient-dense and with a low carbon footprint:

Figure 9: Price, carbon footprint and nutrient density of a selection of meals in Europe



Note: Color coding of the bubbles represents 4 categories of meals (pink = take-out, blue = pre-cooked, orange = home-cooked, green = Herbalife meal replacements)

6.2.2 European and national policymakers could support the consumption of healthy food choices, depending on specific situations

The European Union (EU) and the Member States have several economic and fiscal tools at their disposal to subsidize healthy and sustainable foods.

Five types of policies could be - with amendment to applicable regulations or not - of help to make healthy food affordable, may they be launched, supported or financed by the European Union or the Member States.

- **Direct Payments and Subsidies to food producers:**
 - State aids to innovative, sustainable food producers, reaching 100% of the funding gaps are to be imagined since the issuance of new Guidelines on State Aid for Climate Environmental Protection and Energy (“CEEAG”), applicable since January 2022²⁰⁷. It is now up to food producers and Member States to seize this opportunity to advance new innovative, healthy solutions through public-private partnerships, to the benefits of consumers;
 - *De minimis* aids, e.g. small amounts of State aid envelopes that are supposed not to have any effect on trade between Member States and not to distort competition, are also an option to subsidize local, virtuous food production facilities.
- **Direct payments and subsidies to consumers.** There is no specific European legal constraint applicable to direct payments to consumers to encourage the consumption of sustainable or healthy foods, provided that the mechanisms do not favor any stakeholder on the relevant market. Food checks and direct food subsidies to low-income households have been rampant in Europe after the outbreak of the covid-19 crisis and when the war in Ukraine started (see zoom below). Because they are costly for States struggling with deficits, food subsidies are bound to be reduced in the coming years. Still, a significant share of employed people enjoys food vouchers through their employment benefits, such as *Ticket Restaurant* in France or *Tarjeta de Comida* in Spain. Their use is regulated by national laws, executive orders generally detailing which types of restaurants or retail stores can accept these types of payments. There should be a revision and an amendment of the food voucher approach and use so that workers can take advantage of their vouchers online for instance, and maximize their use for healthy foods, assessments reporting large misuses of these benefits in Europe²⁰⁸;

²⁰⁷ European Commission (2022) - [Guidelines on State aid for climate, environmental protection and energy 2022](#).

²⁰⁸ Fortune Insights (2022) - [Meal vouchers and employee benefits solutions market](#).

Focus: Food aid in selected European countries

European countries receive financial support for their food aid programs thanks to the **Fund for European Aid to the most Deprived (FEAD)**²⁰⁹. The FEAD allows European members to finance their partnership with food organizations operating in their country, while making it mandatory for countries to at least finance 15% of their national program. Starting 2021, the FEAD is part of the European Social Fund Plus (ESF+), which aggregates four European programs aiming to support low-income households. Countries are then free to decide the form of their food aid: they can either purchase food by themselves and supply their redistribution organizations, or directly fund these organizations. The FEAD funds are supposed to go to households with low income and focuses on three target groups:

- Poor families with children;
- Homeless people;
- Socially deprived people with reduced working capacity and low-income elderly people.

During the COVID crisis in France, 2 million people benefited from national food aid which represented on average EUR 92 per month per person²¹⁰. The beneficiaries were mostly low-income citizens who joined food banks during the crisis. In 2021, 38 million French citizens earning less than EUR 2,000 a month received a 100 euro “inflation compensation”²¹¹. Against the inflation caused by the war in Ukraine, the French government provided, in September 2022, an “emergency food aid” for 9 million people, which was worth EUR 100 per person, plus EUR 50 per child²¹².

In Germany, national food banks have been playing a major role in feeding low-income people. They are accessible to any person with less than 60% of national median net income at their disposal (roughly EUR 18,000 a year), which represents 13 million Germans.

Belgian citizens who are below the ‘at-risk-of-poverty’ threshold (earning less than 60% of the national median income) are eligible for food aid given by FEAD-funded food banks. In 2020, approximately 380,000 people received food aid from FEAD support²¹³. Food banks and equivalent actors benefited from social subsidies during the COVID crisis. In 2020, EUR 2.2 million were given by the state of Wallonia to food banks and social centers²¹⁴.

Finland does not have a national food bank system compared to most European countries. Instead, food aid is organized either by municipalities or by independent organizations. However, FEAD funds are still used in bi-annual campaigns to supply long shelf-life products to approximately 320,000 people (2020).

The Hungarian FEAD program is region-focused, with regions receiving aid depending on their poverty rates. It is then adapted to target groups. The program allowed to feed roughly 346 000 people (2020).

In Spain, the FEAD support fed at least 1.5 million people in 2020. Big cities also play a major role in organizing food aid initiatives. For instance, Barcelona launched the “Network for the right to adequate nutrition” and the “Alimenta project” which focused on providing vulnerable people with a healthy diet.

²⁰⁹ European Commission (2021) - [Fund for European Aid to the Most Deprived \(FEAD\)](#).

²¹⁰ France Bleu article (2021) - [Plus de 2,1 millions de français bénéficient de l'aide alimentaire, la moitié depuis moins d'un an.](#)

²¹¹ French government taxes website (2021) - [Indemnité inflation](#).

²¹² Aide-sociale.fr (2022) - [Chèque alimentaire 2022](#).

²¹³ University of Antwerp (2023) - [Food aid in four European countries: Assessing the price and content of charitable food aid packages by using food basket, household budget survey and contextual data.](#)

²¹⁴ RTBF Actus (2021) - [La Wallonie débouque 2,2 millions d'euros supplémentaires pour l'aide alimentaire urgente.](#)

- **Research and innovation grants and Funding Programs:** The EU offers various grants and funding programs to support initiatives related to healthy and sustainable foods. These programs may include research and innovation funding, rural development grants, and grants for promoting healthy eating habits. The EU Horizon Europe framework, as the biggest vehicle to finance innovative projects aiming to produce and develop affordable food, could dedicate more funding opportunities for research and innovation in the food and agriculture sector;
- **Tax Incentives (see section 3):** The EU can provide tax incentives to encourage the production and consumption of healthy and sustainable foods at affordable prices. Such measures could include reduced value-added tax (VAT) rates for certain types of foods, such as fruit, vegetables, plant-based meals and whole grains, and/or tax breaks for farmers who adopt sustainable farming practices. It is up to Member States to lower VAT on fully taxed foods such as plant-based foods;
- **Public Procurement Policies and public collective catering:** The EU can use its public procurement policies to promote the purchase of healthy and sustainable foods for public institutions such as schools, hospitals, and government offices. By setting standards for food procurement that prioritize health and sustainability criteria, the EU can incentivize countries to legislate on that matter. Such a move would create demand for healthy types of foods and support producers who supply them. Public collective catering - for schools, hospitals, municipalities, ministries - account for billions of euros of turnover in 2022 in Europe. It is a precious tool to leverage the use of healthy foods.

Key policy take-aways as for affordability issues:

The EU must urgently act to address the affordability of full and healthy plant-based meals to achieve the transition of its food system and live up to its goal of accessible food prices for all:

- **Use comprehensive education programs with a view to prioritize literacy about nutritional adequacy and understanding nutritional information provided,** and thereby to counteract the misconception that healthy food is necessarily more expensive;
- **Fully consider all public funding options available** to subsidize food production and drive down prices for end-consumers, notably through adapted state aid guidelines;
- **Improve availability of healthy and sustainable plant-based food** through enhanced public procurement and community catering guidelines;
- **Empower Member States to apply equal or preferential VAT regimes for plant-based food products,** to ensure that they are more affordable to all.

In the meantime, private stakeholders, especially those whose solutions are affordable, should play their part by maintaining in their products high standards in environmental sustainability and healthiness.

7 CONCLUSION

A new approach in EU food policies is necessary to overcome the ‘impossible trinity’ that this report has analysed previously. This new approach should be:

- Systematic in its scope, e.g. always envisioning the three dimensions of food policies – environmental sustainability, health and prices – combined;
- Mixed in its policy recommendations, e.g. promoting different policy tools.

The systematic approach implies improving the information available to consumers. It is indeed necessary that Europeans know more and better about the environmental dimension of their meals (through the Life Cycle Analyses for instance, or simplified models), their nutritional adequacy (through the NRF index), and their ‘nutritional value for money’. In that regard, open data, circulation of information are useful, so that consumers and policymakers focus less on secondary issues, such as the degree of food processing or the face prices of meals - unrelated to the underlying intakes.

This systematic approach is also a way to overcome ‘false solutions’ and incomplete answers: Greenhouse Gas Emission (GHG) are not the only criterion to assess the environmental sustainability of food, while nutritional adequacy must be adapted to populations depending on their age and living conditions.

This essential stance should be a new ‘policy-mix’ with:

- A clear support to R&D, with the firm objective that funding innovative food must be a useful step towards a ‘dietary revolution’ in Europe, without compromising taste for the consumer. By promoting competition and innovation within the food industry, market-based approaches can also stimulate the development of affordable alternatives to current flawed or unhealthy diets;
- Regulations, which are necessary to guide for example agricultural practices towards greater resilience to climate change, greater regenerative practices, and to reduce the environmental impact of agrifood systems;
- Market mechanisms, which offer proven ways to improve the affordability and accessibility of healthy and sustainable food options;
- Targeted subsidies and financial incentives to encourage virtuous behaviours.

Embracing such a determined path, the EU can set a course toward a future where nutritious, environmentally sustainable food is accessible to all.

APPENDIX 1: BIOGRAPHIES OF EXPERTS WHO CONTRIBUTED TO THIS WORK

PROFESSOR ADAM DREWNOWSKI

Professor Adam Drewnowski, a leading expert on diet quality and cost, is Professor of Epidemiology and Director of the Center for Public Health Nutrition at the University of Washington.

He is renowned for inventing the Nutrient Rich Foods Index and the Affordable Nutrition Index, and for his extensive work on taste function, food preferences, and spatial epidemiology. With a background in biochemistry and psychology, he has authored over 200 research papers and advised numerous government and international agencies.

Professor Adam Drewnowski supervised this work.

PROFESSOR THOMAS SANDERS

Professor Tom Sanders, a leading figure in nutrition and dietetics, is Emeritus Professor at King's College London. With a background in global health from his time at UNICEF in Indonesia, he focuses his research on dietary fats and cardiovascular health, particularly in vegetarians and vegans. He has led numerous large-scale trials aiming to reduce heart disease and diabetes risk.

Professor Sanders is also active in public engagement, appearing on TV and radio, and contributes extensively to scientific literature. He holds key positions in organizations like HEART UK and the British Nutrition Foundation, and his expertise is sought internationally, including with the World Health Organization.

DOCTOR VINCENT DELHOMME

Vincent's research focuses on economic regulation and public health. He serves as an Assistant Professor of EU Law at Leiden Law School and as a Visiting Professor at UCLouvain and the College of Europe. Vincent's teaching covers various aspects of EU law, including the internal market and constitutional aspects. His doctoral thesis, supervised by Prof. Anne-Lise Sibony, examined EU regulation in promoting health within a diverse market.

Vincent Delhomme holds degrees from Sciences Po Paris and the College of Europe.

DOCTOR JEAN-DAVID ZEITOUN

Jean-David Zeitoun, a Paris-based physician and academic, specializes in gastroenterology and clinical epidemiology. He has authored over 120 scientific articles, half published in international journals. Zeitoun is also a Co-Founder and Chief Medical Officer at Inato, a healthcare technology company. His book *La Grande Extension*, exploring the history of human health, has been translated into five languages.

DOCTOR LAURENT CORDONIER

Laurent Cordonier, who holds a PhD in Social Sciences from the University of Lausanne, is the research Director of Fondation Descartes in Paris. His studies focus on online disinformation and the sociocognitive influences on belief systems. He is also an associate researcher at Gemass, Sorbonne University/CNRS. Cordonier's interdisciplinary approach integrates sociology and cognitive sciences. He authored *La nature du social* in 2018 and numerous articles in peer-reviewed journals.

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