PROJECT REPORT

MAPPING SUSTAINABILITY IN SWISS NUTRITIONAL GUIDELINES

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UNIVERSITY OF BASEL U-CHANGE ACKNOWLEDGMENTS



This project "Mapping Sustainability in Swiss Nutritional Guidelines" formed as a student initiative. We gratefully acknowledge the kind support and funding of the project by U-Change (Swiss Academies of Arts and Sciences) and the University of Basel (Sustainability Research Group). We are deeply grateful to Dr. Rony Emmenegger and Dr. Basil Bornemann for their supervision and support at every stage of this journey. Additionally, we would like to thank the numerous individuals for feedback and exchange in the course of this research project. This includes Arne Menn, Lucia Aguirre Sanchez, Yves Gärtner, Paul Burger, Vera Calenbuhr, Karen Cooper, Anita Frehner, Nadine Freuler, Lena Bloemertz, Antonia Kaiser, Fabrice de Clerck, Silvio C. Gabriel, Yvonne Wicki Macus, Dörte Bachmann. Furthermore, we are thanking Maria Tereza de Alencar for her research collaboration in the design and establishment of the project.

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Project Duration: June 2020 - March 2021

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Who is **navigating** our eating ?

After the Green Revolution, modern dietary patterns have been increasingly homogenized. We have lost our natively-driven diet and dispirited our diets. But **what is a diet?** Its origin goes back to the Greek word *diaita* meaning "a way of life" [1]. We can say its modern usage still partakes of the same message. Diet is not restricting food intake or one meal; rather, it is the "way of eating" consisting of other elements relevant to eating. However, the Mcdonalisation of our diet, which is a term made popular by the sociologist Professor George Ritzer [2], did not only affect our mental and physical health but also our planet's.

In recent years, a broad scientific consensus has emerged that the food system is a defining element of the global environmental and broader sustainability challenge [3]. Our modern eating habits support a system that is fundamentally undermining the environment, health and permeating social inequalities. The food governance landscape is multifaceted, consisting of many actors and contested interests. When it comes to consumption, the voices become even more diverse, as diets are highly personal and related to many factors such as culture, affordability, taste, and ecological conditions. As it became clear that **eating habits must urgently be reshaped** as part of a broader socio-ecological transformation towards a sustainable future, there is a need for reliable and clear guidance on how to consume better and respectful for us and our planet's boundaries. But from whom and how?

Nutritional Guidelines (NGs) are one possible tool to enable this change. However, NGs are often built on divergent understandings of what constitutes a "sustainable diet," leading to incongruous recommendations. In this report, we present the accounts of five nutritional guidelines in the context of Switzerland. We analyzed on what notion of sustainability the guidelines are built by unpacking them through five categories: Environment, Social, Economics, Governance, and Health. With this research, we aim to build a dialogue around diverging understandings of sustainability within nutritional guidelines. We argue for a common framing of sustainability regarding food, which supports harmonized action within nutritional guidelines and behavioral change at the consumer level.

Nutritional Guidelines

Nutritional Guidelines are general principles or pieces of advice that intend to shape the eating habits of a target population. We refer to Nutritional Guidelines as an umbrella term, which is inspired by different discourses within the nutrition and food sector and can take various forms such as dietary guidelines, reports, recommendations, and food-related sustainability reports. Established by different stakeholders such as state, business, or civil society, these guidelines help people **navigate** within an increasingly complex food system. These "stakeholders" are actors with a part in shaping food-related behavior through the production of norms, knowledge, frameworks, and so on. Accordingly, their dietary guidelines are informative statements that can inform decisions and lead to desired actions such as healthy and sustainable eating.

Given the role of stakeholders in influencing diets, it is therefore important to emphasize the need for coordinated and shared narratives among different levels of governance [5, 6], as there is currently a difference between integrating sustainability into existing guidelines. Governance, especially governance in the name of social change, often requires telling a new public story or adapting an old one [7]. Thus, within this framework, the research is not explicitly about recommendations for sustainable diets. Rather, it examines the extent to which sustainability is adapted into the "old story" of nutrition guidelines, i.e., the standard nutrition policies, recommendations, and action plans of these selected stakeholders.

Box 1. Our recommendations for future action areas of the Nutritional Guidelines:

- Navigate the divergences in an explicit manner when developing or implementing sustainable Nutritional Guidelines
- A holistic and comprehensive approach towards sustainable-diets; consequently to be sponsored by Nutritional Guidelines and support the transition towards sustainable food systems
- All actors within the food sector need to **widen their perspective** with relation to sustainable-diet

How do these stakeholders communicate their nutritional recommendations?

Food-based Dietary Guidelines (FBDGs) are "political, government-endorsed documents intended to provide context-specific recommendations and advice on healthy diets and lifestyles" [8] (p. 2). They are tailored to each country's context, especially considering the local, cultural idiosyncrasies, socioeconomic, and ecological conditions and consequently reflect the knowledge about nutrition and eating habits of a country [9]. Most recently, the potential of FBDGs to address the multiple challenges of sustainability in the context of food systems has attracted increased interest and highlighted need to improve and strengthen the composition of FBDGs and their respective agents [10].

Food is known to impact the environment significantly, yet little attention has long been paid to the development of policy responses [11]. As a result, very few countries include sustainability considerations in their official FBDGs, and the majority of the existing ones are neither healthy nor environmentally sustainable [8]. This is demonstrated by a recent study by Springmann et. al (2020), which shed light on the mismatches between the national FBDGs and recognized health and environmental targets. The study reviewed 85 countries' federal guidelines and analyzed whether they align with the global targets such as Paris Agreement, Non-Communicable Diseases (NCD) Agenda, Aichi Biodiversity Targets, and SDG targets on water and nutrient pollution. The mind-boggling results showed that, even if these guidelines are pursued, only two countries (Indonesia, Sierra Leone) fulfilled all the targets [8].

Box 2. Sustainability within FBDGs

FBDGs are subject to criticism on various levels, as most fail to address sustainability concerning diets and eating habits. At present, there are exemplar FBDGs that integrated some aspects of sustainability into their recommendations. Brazil brushed up its dietary guideline in 2014 according to the socio-cultural dynamics and highlighted messages such as to eat with family or friends to increase the pleasure of food [13]. Building the guideline was also worth noting, as it is prepared through participatory mechanisms and consultation across sectors. On the other hand, Qatar offers eco-friendly recommendations in its FBDG published in 2015, such as reducing waste by planning meals and shopping in advance and emphasizing a plant-based diet subscribing to their low emissions [14].



That is problematic on various levels, as FBDGs are an indispensable component of food policy and represent a **point of contact** to consult how to shape eating habits [8]. Whilst most people might not directly follow FBDGs, the impact in society goes beyond an individual consumer. Public institutions like schools and hospitals are guided by the recommendations to a certain extent, and the level of compliance can vary between countries. For example, in some countries, the implementation of the FBDGs include food labeling according to criteria guided by FBDGs as well as coverage of FBDGs in mandatory home economics lessons as part of health education [10]. Thus, governments must regularly revise them with the latest scientific evidence to account for changes in the population's dietary patterns and health status. Additionally, for the understanding of the general public, the recommendations and information should be understandable and based on realistic grounds; if not, it will undermine their practical nature of these guidelines [12]. If FBDGs do not bring themselves up-to-date with the current sustainability objectives, the country's food policy, and consumption habits will inevitably get impacted.

Nutritional Guidelines are key to support the establishment of a holistic and shared understanding around what comprises a sustainable diet.

The point of departure of our analysis is to recognize the sole focus on health aspects in national FBDGs, ignoring other vital elements of diets. Our study challenges this singlecentered view and encourages examining the various forms of nutrition-related statements by different actors within the landscape (Scheme 1). Following this approach supports the fact that the food system is interconnected through several actors and requires putting a multi-colored conceptual lens.

The following questions set a basis for our research project:

- What are the influential Nutritional Guidelines in Switzerland?
- What are the **key priorities** within Nutritional Guidelines?
- What are the **coherences and contradictions** arising from the Nutritional Guidelines in relation to the sustainable-diet dimensions?

SUSTAINABLE DIET CATEGORIES



How do we define sustainability?

Sustainability is an inherently normative and complex notion that can have diverse meanings. That applies to the meaning of 'sustainable diets' as well and calls for clarification. Our sustainability definition is based on the oft-cited Brundtland Report, which cast a spotlight on the link between environmental change and the issues related to human development. Brundtland's triangle model is based on the social, economic and environmental dimensions of sustainable development. The three dimensions illuminate fundamental aspects of sustainable development. However, they only marginally capture two other aspects that we consider central to nutrition. The food being consumed, in addition to the three other sustainability aspects, must also be health-enhancing, and be embedded in a governance system that successfully steers the involvement of various actors in a complex landscape. As sustainable diets need to meet these needs, we suggest adding two additional dimensions: Health and Governance. All five dimensions provide an overarching research framework to support a vision for sustainability in which **economic prosperity**, **social cohesion**, **environmental conservation**, **accountable governance**, and **human health** go hand in hand and are reinforcing one another.



A sustainable-diet should have minimal or no serious impacts on natural resources, biodiversity, the Earth's climate, life on land and in water, and generate no food waste.

It is well-documented that our planet's health is hugely distressed by multiple human drivers. One of the major one being our prevalent food system accounts for 21-37% of total anthropogenic greenhouse gases (GHG) emissions [15]. Although the entire food system, from agriculture to production and distribution, cooking, and food waste, is part of the problem, agriculture itself has the greatest impact [6]. The question is whether we can continue to eat the way we do and stay within the ecological limits. Since we cannot achieve this by continuing with the prevalent eating habits and its supporting food systems, there is a pressing tran-sition needed that is healthy diets from sustai-nable food systems.

Table 1. Codes of Environment Category

C1.1. Climate Change
C1.2. Biodiversity
C1.3. Land Use
C1.4. Water Use
C1.5. Soil
C1.6. Animal Agriculture
C1.7. Origin
C1.8. Food Waste
C1.9. Energy Use
C1.10. Aquatic Ecosystem



A sustainable-diet should be culturally appropriate, enjoyed in personal and social spheres, without harming labor or animal rights.

Food is an inherent and habitual part of us that we might neglect to notice its firm embeddedness in our social context and relations. An individual's diet might mirror one's identity, cultural traditions, and taste [6]. How and with whom we choose to eat shapes our food choices. Our norms and religious beliefs can frame what is appropriate for us. Presently, it is also becoming crucial that the food we consume is ethically made while empowering fair trading practices, animal welfare, as well as equality of sexes. Table 2. Codes of Social Category

C2.1. Community
C2.2. Culture
C2.3. Pleasure
C2.4. Animal Welfare
C2.5. Ethical Buying
C2.6. Gender Equality



A sustainable-diet should be affordable, secure a nutritious diet, facilitate the enhancement of human welfare, and supported by sustainable production practices.

Food is distributed essentially via the market; thus, it is essential to consider diet choices through the lens of cost and affordability. There are many discrepancies within the food system, which causes distorted prices of food. As a person's budget limits the selection within a basket, the available cheaper foods might heavily promote dangerous eating habits. On the other side, farmers who cultivated the food might not get a decent livelihood in return. Therefore, the food should reflect the true cost of its value [6]. While considering these factors, agricultural practices must become more productive through novel innovations to feed the ever-growing population. Table 3. Codes of Economics Category

C3.1. Affordability
C3.2. Cost
C3.3. Labor Rights
C3.4. Sustainable Production Patterns
C3.5. Technology and Innovation



A sustainable-diet should be nutritious, support physical, mental, and social well-being, and decrease the possibility of disease.

Food and eating are one of the most basic survival needs of a human body, yet our prevalent food system endangers our health. Despite improved lives of humans, 41 million lives are lost each year to non-communicable diseases (NCDs), such as cancer, diabetes, and cardiovascular diseases [16]. These dietary problems are related to the overabundance of food, processed food, and changing lifestyles. Inadequate intake causes undernutrition, while increased consumption of processed food increases the chances of NCDs [16].

Table 4. Codes of Health Category

C4.1. Well-being
C4.2. Fruits and Vegetables
C4.3. Plant-based Protein
C4.4. Animal-based Protein
C4.5. Dairy Products
C4.6. Whole Grains
C4.7. Tubers or Starchy Vegetables
C4.8. Liquids (Unsweetened Drinks)
C4.9. Sweets, Salty Snacks and Alcoholic
Drinks



A sustainable-diet should entail a science-based and transparent food environment, be available and accessible, produce equal benefits free of compromises, and supporting a collective goal of sustainable food system.

Governance is a central domain in the transformation towards sustainable food systems, given that an effective shift requires the concerted action of all parties. Good governance mechanisms can facilitate decision-making processes and structures among different actors within the food system [17]. Few challenges arise from these capacities, such as contested interests and aims due to diverse actors and complex and uncertain dynamics do
 Table 5. Codes of Governance Category

C5.1. Certifications and Standards
C5.2. Transparency
C5.3. Regulation
C5.4. Food Security
C5.5. Justice
C5.6. Education
C5.7. Directives
C5.8. Science

minating the global order. Growing population with rising income levels makes the challenge of food security even more urgent. Are we going to be able to feed the 10 billion people in 2050? Policy enabling environments, transparent and science-based processes, and education will heavily influence the pace and specific nature of the nutritional guidelines.



The inclusion of all five categories makes it possible to project a "sustainable food system" that balances economic growth, environmental sustainability, social inclusion, health, and The report highlights the complexity of governance. individual, often competing integrating or conflicting statements and priorities. How should economic growth, environmental sustainability, social inclusion, health, and governance best be balanced? Therefore, it is of utmost importance to first assess the NGs in terms of their priorities and decipher possible interrelationships or contradictions between them in order to highlight potential trade-offs and synergies. Accordingly, this research can pave the way for future research focusing on theses resulting trade-offs and synergies.

Methodology

The method of analysis used is classified as content analysis, which is defined as: "a family of research techniques for drawing systematic, credible, or valid and replicable inferences from texts and other forms of communication" [18] (p. The study 7). employed the qualitative approach of content analysis to examine the accounts of the nutritional guidelines. To conduct qualitative content analysis, the phenomena to be studied are outlined under investigation based on our primary research question "How are the Nutritional Guidelines approaching sustainability?" which is "sustainability" by means of dimensionalization. In this way, the analysis is facilitated, primarily due to the different contextual setting of the guidelines. After forming the five main categories, the themes were segmented into subcategories using inductive reasoning, in which a conclusion is drawn from the data collected in a way that is not predetermined.

The subcategories, referred to as **codes** in this analysis, aim to summarize the major themes that frequently emerge and surround the main category. The code consists of an interpretive action in which we ask the question, "To what extent is this theme expressed within the guideline?" This leads to transforming the characteristics of the text, in this case it's expressiveness, into a numerical value. The scaling method includes three indicators ranging from zero (0), not present, to two (2), generous presence of this characteristic (Table 6). Each scale indicates the meaningfulness of a text within the overall writing. In the end, this process helps translate each guideline into a spider web by reducing each dimension to a single value. In addition to the analysis of the text, an exchange with the various stakeholders took place in the form of interviews and/or correspondence on the selection of appropriate and representative guidelines. This enabled a contextualization that goes beyond the content of the guidelines.

Table 6. Scaling System

Definition
absence of the feature
few statements about the feature
clear clarification of the feature

Stakeholder Profiles

In order to achieve substantial changes towards healthy and sustainable diets, developing guidelines should be done by considering the food system in its entirety, taking into account the key stakeholders and their interconnectedness. Therefore, multistakeholder mapping pinpoints relevant sectors that need to be engaged to implement change across the food system. We defined a **stakeholder** as "an organization which is engaged in the area of nutrition and food sector and developing statements to inform on better consumption." They produce and disseminate knowledge through their nutritional guidelines about food and nutrition. In this research, we have identified five stakeholders in total to investigate, four being based within Switzerland and one international organization; they represent exemplary snapshots within a more complex landscape (Scheme 1). The selection includes a civil society organization, a non-profit science-based international organization, the Swiss Government, and two companies from different private sectors. The prerequisite for the selection is that the stakeholder publicly displays a form of guideline or recommendation – not older than 2015 – that can be analyzed. The emphasis was placed on ensuring diversity in relation to the field of activity and area of influence. Not surprisingly, the context of these guidelines might not be uniform and lead to varying diet stories.



Scheme 1. Stakeholder Landscape along with their guidelines within the food system.

The food system consists of a complex web of activities involving many actors. In the represented landscape, every stakeholder carries their guidelines on their shoulders, but also gets influenced by other guidelines. This creates a mutually reinforcing dynamic process in which each guideline adds another hue to the overall picture.

To facilitate the path towards healthier and more sustainable food consumption, the challenge is to engage the private sector, civil society, and consumers in discussions about sustainable diets [19]. The question for us is; whether actors in what concerns Switzerland incorporate sustainability aspects into its nutritional guidelines.

GOVERNMENT

Schweizerische Eidgenossenschaft



Schweizerische Eidgenossenschaft Confédération suisse Confederazione Svizzera Confederaziun svizra Switzerland is a semi-direct democratic federal republic. Indeed, one of the unique aspects of the Swiss constitution is the number of decisions citizens must make through referendums and initiatives. Sovereign power ultimately rests with the people, who vote on proposed legislation several times a year. Thus, citizens can control their government and laws through various forums of popular action. In addition, the country's linguistic and geographic diversity plays a major role. With four national languages and geographical differences, the Swiss Government uses federalism to facilitate coexistence [20].

Selected Guidelines:

- Swiss Food Pyramid 2016 (Schweizerische Gesellschaft für Ernährung)
- Swiss Nutrition Policy 2017 2024 (Federal Department of Home Affairs FDHA)
- Der Optimale Teller 2020 (Schweizerische Gesellschaft für Ernährung)

Within the Swiss Government, the Federal Food Safety and Veterinary Office are responsible for nutritional recommendations and information. In 1998, Switzerland published its first FBDG and it was followed by two more updated versions until 2011. The Swiss Nutrition Pyramid and the Swiss Food Plate were created by the Swiss Nutrition Society (Box 3) and are listed on the website of the Swiss Government as official information material on nutrition. The Swiss Nutrition Society is an organization that provides science-based and professionally independent nutrition information and disseminates Swiss nutrition recommendations. In addition, the Federal Food Safety and Veterinary Office published in 2017 the official Swiss Nutrition Strategy for the period 2017-2024. These three documents together represent the Swiss Government in the project.



The nutritional guidelines of the Swiss Government approach sustainability by focusing mainly on the health aspects of a diet and government accountability.

The analysis shows that the Swiss Government appears to put a strong focus on the health aspect when it comes to nutrition recommendations. As shown in Figure 1, Health is the largest category with 62%, followed by Governance with 27%. Obviously, this does not leave much room for the other three categories, all below 10%. Notably, the government profile seems to give a low priority to the environment category, and not addressing ecological considerations. Thereby, the government stakeholder profile reflects Springmann et al. findings that the majority of food based dietary guidelines do not address environmental considerations [8].

Fig. 2 Government Health



Looking more closely at the category of Health (Fig. 2), the focus is on the general **well-being** of citizens, and in particular the prevention of disease. This is because serious health problems such as noncommunicable diseases and obesity are the result of an unbalanced diet. Inadequate consumption of fruits and vegetables, and excessive consumption of high-energy foods

Fig. 1 Government Profile



such as fast food and snacks that contain large amounts of fat and/or sugar are particularly problematic for health. They strongly emphasize that high-energy foods should be consumed only occasionally, in small portions, and in combination with salad or fruit. Accordingly, the code for sweets, salty snacks, and alcoholic drinks is strongly emphasized at 13%. The Swiss government recommends an intake of 100-120 g/day of animal-based protein (9%) or an alternative protein source. This is in the range of the WHO recommendations of a healthy animal protein intake with less than 150 g/day [22], the Government recommendations would be considered a healthy amount of animal protein. Though, by combining different types of protein and animal-based protein into one health aspect, it becomes clear that the Swiss government neglects the environmental impact of animal protein in its recommendations and mostly considers the health aspect. Plant-based proteins (15%) earns a decent amount of space, and it is connected to sustainability at one time

as "sustainable eating habits comprise the preference of plant-based foods" [21] (p.3). It is recommended to eat vegetarian several days a week, even if you are a mixed dietarian. Specific, easy alternatives to animal products are offered, providing a simple dietary replacement for daily meat consumption.

The Swiss Government is the single stakeholder that discusses the impact of health care costs related to diet and wellness. Health care costs in Switzerland are rising. In 2013, they totaled 70 billion and rose to 80 billion in 2018, with about 80% of the costs caused by noncommunicable diseases (e.g., cancer, diabetes, and cardiovascular disease) [23]. Therefore, within the Economics category (Fig. 3), although only 3.8% mentioned overall, 50% are related to the code costs. This can be linked to the government's strong emphasis on well-being to help people reduce disease through a healthy diet.

Fig. 3 Government Economics





The Environment category (Fig. 4) accounts for only 1.1%. This reveals that the Swiss Government does not consider the significant negative environmental impacts of food in its guidelines. This is problematic on several levels, but particularly for the implications of the Swiss Food Pyramid, which functions as the official FBDG of Switzerland. This is because the FBDG is the central point for nutrition guidance and

Take away:

26].

The Swiss guidelines fail to guide the population toward more environmentally friendly eating patterns.

thus a starting point for implementing sustainable nutrition within a country [24, 25,

On the other hand, category Governance (Fig. 5) has a share of 27%, which shows that the Swiss Government seems to acknowledge its responsibility as a state within the decision-making processes of its citizens. Coordination at the national and international level and strengthening nutrition

GOVERNMENT

Origin 67%
 Food Waste 33%

literacy is a priority, so **directives** and **education** play a central role within the Governance category, each with a share of 25%.

Fig. 5 Government Governance



Some action areas related to directives are networking nutritional stakeholders, utilizing synergy and coordinating activities, and engagement in international WHO and EU bodies. Moreover, it is crucial for the government that the Swiss population are able to make informed food choices.

Although 70% of the Swiss population are attentive to what they eat, the menuCH findings reveal that many are not following or are not even aware of the dietary recommendations [27]. Recognizing this mismatch, the government wants to strengthen "nutritional literacy" through awareness-raising and ensuring accessible and clear information [27] (p. 7). At 22%, regulation holds an essential function. Nevertheless, most policies and measures focus on improving health and well-being, especially on the prevention and control of NCDs. Regarding sustainable development in the food system, no policies are mentioned, which explains the low share of the Environmental category as a whole.

Take away:

A healthy diet and lifestyle can prevent diseases and thus reduce healthcare costs in the long term.

Box 3.

The Optimal Plate:



Swiss Food Pyramid:



Fig 6. Government Social





Nestlé is a multinational food and drink company that has a 150-year history in Switzerland and it is present within 13 cantons. It is ranked by Forbes as the largest food company in the world in 2020 and is the largest industrial company in Switzerland [28][29]. The company has a diverse brand portfolio that made its place in Swiss culinary culture and aims to offer tastier and healthier food products to consumers.

Selected Guidelines:

- Nestlés Net Zero Roadmap 2020
- Nestlé in der Schweiz 2019
- The Balanced Plate 2017

In 2017, Nestlé developed balanced plate models for different dietary patterns. For the purpose of this analysis, we selected the most applicable plate, which is focused on average adults. Other guidelines included are an outline report that covers the year 2019 at a glance of Nestlé Switzerland and a recent report published at the end of 2020 that introduces Nestlé's net-zero roadmap. These three guidelines encapsulate Nestlé's nutritional recommendations and will represent the private sector throughout the project. Nestlé is a direct-to-consumer business, therefore has the power to affect consumer behavior and trends.



Nestlé's nutrition guidelines approach sustainability by putting the climate implications of the agricultural system into light, while demanding ambitious government policies and improved production processes.

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Fig. 7 Nestlé Profile



As a whole, the Swiss food giant's guidelines are dominated by the category Environment, amounting to 54%, as seen in Figure 7. In recent years, Nestlé increased its voice on the environmental footprint of agriculture and directed its resources on climate mitigation projects and R&D. Following categories are Economics by 20% and Governance by 17%. The category of Social is noted the lowest similar to other stakeholders.

"Good food depends on diverse and quality ingredients, so protecting the ecosystems where they grow is vital to our long-term success." Net Zero Roadmap, 2020

After a comprehensive review of its end-toend operations, Nestlé brought forward eight key actions to halve its GHG emissions by 2030 and achieve net-zero by 2050 at latest (Box 4). These actions are displaying climate change as the leading code (33%), which is supported predominantly by origin and land use to an equal extent (16%). The company took its 2018 emissions - 92 million tones - as a baseline to measure its progress. As almost two-thirds of the company's emissions come from agriculture, the core solutions cluster around regenerative agriculture and reforestation. Furthermore, origin reveals itself mainly on the supply chain side, where the company's 95% GHG emis-sions come from. Thus, Nestlé takes a "life cycle approach" and emphasizes product emissions from farm-to-fork in its guidelines.



Box 4. Nestlés Net Zero Roadmap.

- 1) sourcing ingredients sustainably
- 2) transforming product portfolio
- 3) evolving packaging
- 4) using renewable energy to manufacture
- 5) driving toward cleaner logistics
- 6) removing carbon from the atmosphere
- 7) moving towards carbon-neutral brands
- 8) using their voice to galvanize action.

Dairy products are core to Nestlé's product portfolio, thus having the head position in the health category (Fig. 9). The dairy sector has a considerable effect on climate change due to GHG emissions, primarily methane from the digestion of dairy cows. Recognizing their impact, Nestlé attracts attention to its climatefriendly milk pilot project funded in a publicprivate partnership with the Federal Office for Agriculture. This project is pledged to sustainable and resource-efficient Swiss dairy farming by various approaches such as longer-lived cows and feed additives. According to Nestlé: "If all cows in Switzerland were kept in accordance with the standards of this program, the resulting reduction in CO2 emissions would correspond to a total of 8500 car journeys around the world." Once more, Nestlé's principal focus is on climate change because even when they indicate animal welfare, it is mentioned only as a derivative of achieving greenhouse gas reductions. That is reflected in its profile through displaying animal welfare by only 12%.

Besides the focus on dairy products, Nestlé supports a balanced diet and a healthy lifestyle. With the Balanced Plate, Nestlé introduces a brief and practical guideline on how to eat. The visual plate is divided into four parts: fruits, vegetables, sources of protein and cereals, and starchy carbohydrates. Following the table, it is recommended daily to eat three portions of vegetables, two portions of fruit, three portions of cereals and starchy carbohydrates, three portions of dairy products, and one portion of meat, fish, eggs, or tofu.

Certifications and **standards**, as well as transparency, are crucial features highlighted in Nestlé's guidelines (Fig. 10). The way to create





trust with customers is essential for Nestlé's business, and in the current environment, the consumers are not only interested in what they eat but also how they are produced. Nestlé briefly mentions the importance of the dietary shift towards plant-based diets and highlights its efforts to reduce the environmental impact of the product portfolio in parallel to communicate it transparently to the consumers. The company believes the direct engagement with consumers will increase the demand for the lower carbon products and, in turn, will help them to achieve their targets. It is crucial how Nestlé communicates its impacts to the consumers and incentivizes sustainable consumption within its guidelines. However, Nestlé repeatedly emphasizes that they can be fully accountable as a company if the government sets the appropriate ground rules, thus abdicating a large part of their respo-

Fig. 10. Nestlé Governance



Fig. 11 Nestlé Economics

nsibility. There is, therefore, a risk of creating a chain of liability that begins with consumers passing on responsibility to Nestlé and Nestlé passing it on to the government.

Nestlé directs its focus within the Economics towards sustainable production category patterns (52%), exploring the product emissions along the value chain from the suppliers to the consumers (Fig. 11). This quest backed with new **technologies** is and innovations (40%), as becomes evident from the close-by occupation in the chart. In 2019, the company made 976 Mio. CHF investments in R&D. An example noted is the R&D support to suppliers in order to increase the efficiency of the dairy farms, such as improved manure management and pilots of net-zero farms. Furthermore, labor rights have to be an interest to Nestlé, as it is a prevalent employer with 9666 employees in Switzerland. Nestlé acknowledges its responsibility as an employer in its guidelines and briefly remarks on its initiatives for good working conditions and learning opportunities for its employees.

Within the Social side, Nestlé is vocal about **gender equality** (Fig. 12). In Switzerland, the proportion of women in the top management is 20%, and it is aimed to increase to 30% by 2022. Nestlé has been a member of Advance, a Swiss business association that actively promotes equal opportunities and career development for women and men. Additionally, Nestlé is supportive to forge resilient relationships with local and farming **communities** within its guidelines.







World Wide Fund for Nature (WWF) is a globally renowned, largest independent conservation organization, and WWF Switzerland is a leading part of this global network. WWF is the largest environmental organization in Switzerland and well configured through its cantonal sections. Regarding our project's aim, WWF is a vital stakeholder as, since 2009, it has been at the front stages concerning sustainable dietary guidelines and modeling [30].

Selected Guidelines:

- Bending the Curve: The Restorative Power of Planet-Based Diets (2020)
- WWF Faktenblatt Ernährung: Umweltgerechessen - der Erde zuliebe (2019)

From the numerous diverse resources and collaborations of WWF, we selected two nutritional guidelines, one being international and the other Swiss, which display together the civil society stakeholder profile. In 2019, WWF Switzerland has produced a guideline in the format of a fact sheet to explain environmentally friendly eating habits. Later in 2020, WWF International launched the Bending the Curve report together with an online platform called Planet Based Diets. Besides this, WWF Switzerland brought out several practical products such as a food label guide, footprint calculator, and food industry ratings.

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WWF's nutrition guidelines approach sustainability by focusing heavily on the environmental impacts of the food system, as well as government accountability and human health.

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Overall, Figure 13 shows that WWF guidelines' primary focus is on the environmental implications of dietary choices, which accounts for half of the content. This result is not surprising as WWF is a conversation organization with its activities concentrated on nature-based solutions. Governance is taking close to quarter of space within the guideline, while health has slightly lower references. Recognizing its global presence, it is worthwhile that WWF makes room for the decisionmaking processes and provides road maps, international and national scales. WWF has endorsed the self-evident connection between diet and health and defined it in moderate amounts. The economic and social categories account for little space with short substantiation.



Fig. 13 WWF Profile



The most mentioned topic concerns land use within the Environment category, amounting to 22% of the total (Fig. 14). The land represents the birthplace of food, and without its services, there is no possibility to accommodate food elsewhere. Frequently it is forgotten that land is a limited resource; thus, its usage demands careful consideration. WWF acknowledges this importance and emphasizes land use highly in its identified five strategic actions that dietary shifts can persuade (Box 5). It appears that all the action items have a direct link to land use and make it the critical theme of the guideline. It is stressed that it is necessary to hinder the expansion of new agricultural lands by sacrificing natural habitats.

Box 5. WWF's actions for dietary shifts.

1) reversing biodiversity loss, **2)** living within the global carbon budget for food, **3)** feeding humanity on existing cropland, **4)** achieving negative emissions, and **5)** optimizing crop yields

The other well-defined environmental categories are **climate change**, **biodiver-sity**, and **soil**, respectively 19%, 13%, and 13%. These codes are highly relevant to land use and interlinked with each other. The guidelines offer various information on the food system's culpableness, such as it being responsible for 27% GHG emissions, 70% of freshwater withdrawals, and the main driver of biodiversity loss and deforestation.

The main engine of land conversion and biodiversity loss is repeatedly linked to red meat and dairy consumption. That explains the forefront position of the animal-based protein and dairy products, amounting to 47% of the Health category (Fig. 15). WWF introduces a diet concept named planetbased diet, which is defined as a "win-win consumption patterns that are high on human health benefits and low on environmental impacts" [31] (p. 6). Adopting the planet-based diet will lead to positive health performances in all countries, especially premature mortality reduction. The well-being feature is navigating the discourse greatly. Particularly, overconsumption of any food group is not favored within the recommendations, as it harms people's health and exploits the finite natural resources.

WWF states that their aim is to translate global recommendations on more healthy and sustainable diets into individual countries' shifts. That makes the **directives** the most-substantiated code by 35% in the Governance category (Fig. 16). The guideline performs this translation by con-

Fig 15. WWF Health



curring the significance of NDGs and indicates them as "important tools for changing food systems," which should bridge the gap between global guidelines and local contexts [31] (p. 10). Additionally, WWF promotes the consumption of planet-based diets as a "springboard" to achieve the aspiring goals of Nationally Determined Contributions (NDCs), Post-2020 Global Biodiversity Framework, and SDGs.

Fig. 16 WWF Governance



Food security is another vital aspect linked directly to the third strategic action to feed humanity on existing cropland. This action becomes hugely challenging considering the population is expected to grow by 2 billion people by 2050. It is imperative that everyone in the world has reliable access to wholesome and sufficient food. On another note. certifications and standards earn a little place within guidelines. By only 2%, WWF stresses the overfishing problem, which is the most critical factor in destroying aquatic ecosystems. It recommends not eating fish as an "everyday delicacy," and if eaten, to procure fish products with Marine Stewardship Label (MSC) or within domestic or organic fish farms [32] (p. 4).

The Social category pales into insignificance compared to other dimensions throughout the guidelines (Fig. 17). It is recognized that the translation to the national context cannot be achieved through a single approach and adaptation to different **cultures** by the use of localized information. Additionally, WWF caters to readers with some crucial tips regarding **animal welfare** and **ethical buying**. It encourages supporting fair trade and taking notice of species-appropriate animal husbandry.

Fig. 17 WWF Social







Even though the category Economics documented in minor amounts, sustainable production patterns stands out as a worthy aspect (Fig. 18). How food is produced is crucial when it comes to respecting planetary boundaries. This feature is mentioned mainly along with food loss and waste and presented as complementary action items to dietary change. However, as the report's primary focus is on dietary change, the mentioned two aspects are not expounded. Technology and innovation came forward together with strategic action four. WWF put forward bioenergy combined with carbon capture and storage (BECCS) as an example of technological possibilities to achieve negative emissions. Together with BECCS, reforestation is suggested to store negative emissions. Other economical elements such as labor rights, cost, and affordability are weakly mentioned in the guidelines.



SV Group Switzerland is an innovative catering and hotel management group, showing the most meals served in the group's community catering division [33]. The company's history goes back a hundred years. It was founded in 1914 as a non-profit organization, "Schweizerischer Soldatenhilfsverein," with the original goal to provide Swiss soldiers with inexpensive and balanced food without alcohol [34]. This origin probably results in the catering company's significant commitment to a balanced and healthy diet that leads them today. The SV Group's main shareholder is the SV Foundation, which, as a majority shareholder, oversees its economic, social, and ecological responsibility.

Selected Guidelines:

- SV Restaurant Kundenbroschüre (2018)
- Nachhaltigkeitsbericht (2020)

The SV Sustainability Report 2020 discloses the company's sustainability activities and addresses topics relevant to sustainable nutrition, guided by a range of SDGs. The customer brochure gives a broader insight into the company's areas, from concrete recipes to the logistics concept; here, the perspective is further expanded to encompass what is included in diets.



SV Group Switzerland's nutrition guidelines approach sustainability by addressing all categories consistently, with a particular focus on the environment.



The SV Group Switzerland's analysis reveals a primary focus on the Environment category with 32%, accompanied by Governance with 24% and Health with 18%. Overall, SV Group's profile is reasonably even, covering all five categories with at least 10%, thus differentiating them from the other stakeholders (Fig. 19).

Fig. 19. SV Group Overview



The origin (49%) of the food used in their products is consistently addressed within the Environment category (Fig. 20) since regionality and seasonality play a significant role. The company uses vegetables grown in Switzerland and follows the seasonal calendar to reduce their environmental impact. Around 80% of the products they use are produced in Switzerland, and they even advertise with the new term "climate vegetables" [35] (p. 8). To ensure that climate-friendly Swiss vegetables are offered in the colder months of the year, they purchase vegetables from greenhouses heated with geothermal energy, grown 100% without insecticides and pesticides, and irrigated with collected rainwater, thus saving over 80% of CO2 emissions.

This effort shows that they are keeping an eye on their **energy use** (9%). **Climate change** (20%) acts as an overarching umbrella in their guidelines. In 2012, SV Group launched the ONE TWO WE sustainability program with various climatefriendly catering measures to reduce CO2 emissions. To reduce their emissions, they apply the climate protection lever in two places: firstly, in their operational processes and logistics, and secondly, in their choice of food. For example, the company consistently reduces air cargo and grows crops in climate-friendly greenhouses.





"What tastes best - we can probably all agree on this - are seasonal and regional vegetables and fruits."

Within the Health category (Fig. 21), animalbased protein and fruits and vegetables are the most emphasized codes with 29% each. They primarily focus on animal products like meat and dairy (17%) and on fruits and vegetables in their guidelines. A connection can be made here to the prioritization of climate change, as SV strongly emphasizes in its guidelines that reduced meat consumption and increased consumption of vegetables contribute to a climate-friendly diet. Therefore, SV Group fosters a diverse range of vegetarian and vegan menus and a diverse selection of vegetables and fruits. In this way, their consumers can take responsibility and have the option to decide for themselves how much they want to contribute to climate protection with their diet. This helping hand is also reflected in their transparent (12%) approach of the "glass shopping cart," where consumers can follow the entire path of the food used throughout to its producers [35] (p. 8).

Fig. 21. SV Group Health





International agendas such as the SDG's are directives (21%) issued to induce change. The company places importance on directives by directly linking and applying specific SDGs such as SDG 2 Zero Hunger and SDG 12 Responsible Consumption and Production to fair trade products. Due to SV Group's great emphasis on the origin of their products, certifications and standards is the code with the highest share within the Government category with 38% (Fig. 22). Labels such as IP-Fair-Trade SUISSE. various labels, the MSC/ASC certificate, and animal welfare lab-

Fig. 22. SV Group Governance

els such as BTS and RAUS support the provided food's origin and give them credibility with their customers. Fair-trade labels promote workers' rights, health care, and environmentally friendly production. SV cites several concrete examples, such as the Max

Havelaar label, and thereby position themself

very concretely on this subject.

Accordingly, animal welfare appears to be another essential point for the company, amounting to 48% in the Social category (Fig. 23). They provide concrete measures and examples for improving animal welfare within their guidelines, which distinguishes them from the other stakeholders who, besides WWF, do not elaborate much on this point. Overall, the social component plays an essential role in conveying the SV Group's recommendations. Food is a form of pleasure (20%) from which positive feelings arise and has the ability to create **communities** (14%). Sustainable eating is considered an essential value for the company, and food that is sustainably produced tastes good and is balanced offers a holistic approach. Education (14%) is an essential tool for sustainable dietary change from their perspective, so training chefs to prepare vegetarian and vegan food is vital to provide the necessary tools.

Sustainable Production Patterns 33%
Technology and Innovation 33%
Labour Rights 15%
Cost 15%

Affordability 4%

Though small, the Economics category, at 10%, occupies a place in SV Group's profile in contrast to most other stakeholders (Fig. 24). The **innovative** (33%) optimization of processes through sound analyses and the resulting measures help the company work lean and efficiently. This innovative approach leads to **sustainable production patterns** (33%), which bundle their resources from production through purchasing to disposal to reduce the environmental impact along the value chain holistically.

"Sustainability includes the dimensions of innovation, it involves daring to take steps. You have to try out, learn and thus take innovation further. "

> Silvio C. Gabriel Board of Directors Chairman SV Group





EAT is a non-profit, science-based platform dedicated to addressing global food-related challenges. It is an Oslobased foundation established by the Stordalen Foundation, Stockholm Resilience Centre, and the Wellcome Trust. Following holistic and practical approaches, EAT bridges between diverse sectors and disciplines and promotes fair and sustainable solutions. In the analysis, EAT-Lancet's widely-known integrated global framework and analysis is considered pertinent to advance Switzerland's work on nutritional guidelines.

Selected Guidelines:

- Food Planet Health Healthy Diets from Sustainable Food Systems
- **Diets a for Better Future:** Rebooting and Reimaging Healthy and Sustainable Food Systems in the G20

Food Planet Health is a summary report based on the paper published by the EAT-Lancet Commission, which brought together 37 world-leading scientists from 16 countries with various scientific disciplines. The report's findings provide the first comprehensive scientific targets for a healthy diet from sustainable food systems that will feed nearly 10 billion people by 2050. Diets for a Better Future exhibits the role of national dietary guidelines in G20 countries and investigates the potentials for GHG reduction by the shift of healthy and sustainable diets. Both reports ensure that the information given is backed by solid science. Particularly, the EAT-Lancet Commission benefits from its framework of six planetary boundaries that global food production should adhere to sustain the Earth system.

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EAT's nutrition guidelines approach sustainability by focusing on the planetary and health components of the food system to a similar extent and supporting their messages through a governance framework consistent with the SDGs.

The analysis of EAT guidelines reveals that Environment and Health categories are embraced at an equal level by 32% (Fig. 25). Governance follows them by slightly lower by 29%. That is not surprising as one guideline is concentrated on generating a planetary health diet, while another analyzes the current food consumption patterns and the efficacy of national dietary guidelines in G20 countries. Social and Economics categories amount together only 7% of the content, respectively 5% and 2%.



The guidelines sufficiently acknowledge the negative environmental impacts of the current food system and recommend three core actions to tackle this challenge. The proposed actions are a **global shift towards healthy diets**, **sustainable food production practices**, and **reduced food loss and waste**. The analysis revealed that **climate change** is the predominant variable acting as an overarching umbrella for the other environmental indicators. As it can be seen from the main actions, food waste is the second main code corresponding to 13% of the environmental category, however, without carrying much substantiation besides the emphasis of halving it. The other crucial codes following are **land use** (12%), **biodiversity** (11%), and **soil** (11%). These features are considered mostly as tools to be sustainably managed to reduce GHG emissions. Realizing these targets requires addressing them simultaneously to create sustainable practices in the food system without further damaging our climate.





EAT's guidelines bring to light how the world is off course from meeting global nutrition targets. To optimize health within environmental limits, the Commission introduces a planetary health diet concept that is a "global reference diet for adults" (Box 6) [36]. In doing so, EAT links the concept of health with environmental sustainability and takes a decisive step away from the conservative understanding of human health. Within the recommendations, the spotlight resides in building up a diet rich in plants and low in animal-based foods, with the objective being the reduction of diet-related diseases. That is reflected in Figure 25 with the lead role of codes animal-based protein (18%), wellbeing (17%), and fruits and vegetables (16%). The organization highlights the diversity of food groups as central to human well-being and keeps tangible recommendations flexible and compatible with diverse audiences.

Fig. 27. EAT Health



Box 6. Planetary health plate



The planetary health diet is for an intake of 2500 kcals per day, whilst acknowledging the variations based on age, gender, and physical activity. Half of the plate is reserved for fruits and vegetables. The other half reflects the shift from refined grains to whole grains, moderate amounts of dairy, and increased consumption of nuts and legumes. Sugar and unsaturated oils consumption must be limited.

picture is resembling The Governance WWF's, preceded by directives with 41% and followed by food security and science (Fig. 28). EAT highlights the cruciality of directives such as FBDGs and considers them a central element for changing diets and the global food system. It is recognized that if no strict and collaborative action is taken regarding the unsustainable food system, international agreements like the United Nations SDGs and Paris Agreement will be not achieved. The lack of widespread change is attributed to the absence of globally agreed scientific targets as international policies significantly influence climate change mitigation practices.

EAT developed the first universal scientific goals to address this deficit and emphasized the aspect of **science** highly by 22%. The Commission has integrated the scientific objectives into a common framework. Concerning food security, EAT heavily stresses the challenge of feeding nearly ten billion people by 2050 with planetary health diets.

Fig. 28. EAT Governance



The Social category is limited to the themes of culture and animal welfare (Fig. 29). The planetary health diet is compatible with various traditional diets because of its flexibility. Since the audience is global, it is critical not to neglect the reality of cultural diversity and regional differences. However, other social indicators such as ethical purchasing, gender equality, or enjoyment are overlooked. The shortcoming of the social aspects throughout the guidelines results in the absence of other thematically related codes. For instance, certifications and standards from the Governance category and labor rights from the Economy category remain unaddressed. Both topics relate directly to ethical purchasing, which is likewise neglected in the guidelines.



Sustainable production patterns is the highest rated code within the Economics category and is closely connected to **technological innovations** (Fig. 30). That resonates heavily within their strategy of sustainably intensifying food production to increase high-quality output. This goal is supported with system innovation and optimizations such as fertilizer and water use efficiency, recycling of phosphorus, redistribution of global use of nitrogen and phosphorus.





Synthesis

Actors	Stakeholder	Main Message	Focus	Actions/Recommendations
Government	Swiss Confederation	Ensure physical and mental well-being	Pleasure; Cost; Well-being; Plant-based Protein; Education; Directives	-Strengthen nutrition literacy (put knowledge into practice) -Improve the framework conditions (make healthy choices easier) -Involve the food industry (encourage manufacturers and suppliers to make a contribution)
Food Company (private sector)	Nestlé	Reach net-zero by 2050	Climate Change; Gender Equality; Sus. Prod. Patterns; Dairy Products; Certifications and Standards	-Source sustainable ingredients -Transform product portfolio -Evolve packaging -Use renewable energy -Cleaner logistics -Remove carbon -Carbon-neutral brands -Galvanize action
Civil Society	WWF	Adopt a planet- based diet	Land Use; Culture; Sust. Prod. Patterns; Animal-based Protein; Directives	-Reverse biodiversity loss -Live within the global carbon budget for food -Feed humanity on existing cropland -Achieve negative emissions -Improve water and fertilizer use
Food Catering (private sector)	SV Group Switzerland	Make sustainable food pleasurable	Origin; Animal Welfare; Animal- based Protein; Fruits and Vegetables; Certifications and Standards	-Holistic approach of sustainable and healthy food -Offer consumers the choice of how much to contribute to climate protection with their diet
International Organization	EAT	Transform to a planetary health diet	Climate Change; Culture; Sust. Prod. Patterns; Animal-based Protein; Directives	-International and national commitment to shift toward healthy diets -Reorient agricultural priorities -Sustainably intensify food production -Strong and coordinated governance of land and oceans -At least halve food losses and waste

Collecting the key elements throughout the analysis, we can gain the following picture for the selected stakeholders' Nutritional Guidelines (Table 7). As seen in the table, some messages are overlapping but also have variations in focal points.



Fig. 31. Mapping Sustainability in Swiss Nutritional Guidelines

By focusing on one category rather than recognizing all topics as important, most recommendations fail to map the complexity and interconnectedness of the diets in a comprehensive manner. The mapping built in this analysis could be used as a heuristic evaluation tool to guide future generation of guidelines and depict the strengths and weaknesses within it. We do not claim that a sustainable nutrition guideline must cover all dimensions and characteristics to exactly the same extent, nor is this practical, since NGs address different target groups. Nevertheless, we assume that an exemplar Sustainable Nutritional Guideline should seek to address identified five categories and elaborate all in a decent scope and question the actual interrelationships between different objectives. Thereby the guideline would cover the recognized core sustainability issues.

Different scopes of inclusion are noticeable regarding the Environment category, which does not reflect a shared concern between the stakeholders (Fig. 32). Concurrently, we can see over-, decent-, and understatements. The Government is clearly overlooking ecological considerations within their instructions. Nestlé and WWF catch the attention because half of their entire profile dedicated to environmental features. is However, that might lead to the negligence of the other categories. Lastly, EAT and SV Group yield a similar amount of composition.



Fig. 32. Environment Category

Besides the Government, all stakeholders cover almost all the codes within the Environment category. A common element within the guidelines is identifying climate change, mainly in terms of GHG reduction, as a target variable and the other codes as an influence variable. Accordingly, the coverage of climate change, land use, biodiversity, and soil established together, and guidelines satisfy the reader by providing sufficient elaboration on the subject matter.

guidelines aimed explicitly In the at Switzerland, there is a pattern of including the environmental impact of food origin, and this is not evident compared to guidelines directed at an international audience (e.g., Nestlé's Net Zero Roadmap or EAT's Food Planet Health). Additionally, different aspects of origin are covered, on the one hand, seasonality and regionality of food and, on the other hand, supply chains for sourcing and production of food. For example, WWF's Swiss-based guideline elaborates on domestic buying and seasonal food, whereas its international guideline focuses on the supply chain aspect of origin.

The assessment also revealed another valuable insight with regard to animal husbandry. All the stakeholders miss or disregard the triad linkage between animalbased food and animal agriculture practices and its influence on climate change [6]. We observed high inclusion of animal-based foods together with climate change, but animal agriculture, defined as the practice of breeding animals for the production of animal products is rarely embedded in the equation [38]. Notably, the reduction of meat, which is most often pronounced in the guidelines, must thus be complemented by a corresponding adaptation of agricultural practices in order to address the issue of sustainability. This raises the question: Why is the apparent link between animal agriculture and climate change not included?

As mentioned above, the most prominent contrast stems from the Swiss Government side. Its guidelines substantially disregard the effects of food choices on the environment and only briefly mention to decrease food waste and opt for regional food. Swiss poor Government's coverage of the environmental aspects of nutrition is problematic, as they are a key vehicle to systems within attain food planetary boundaries. These findings call for another invitation to reshape the Swiss FBDG and other Nutritional Guidelines according to the latest environmental targets. Considering their influence on the other nutritional guidelines and ultimately on eating habits (Scheme 1), the transformation should be done in an urgent and comprehensive manner.

Overall, the Health category reflects a similar picture to Environment, in which category is covered in a varied way between the stakeholders (Fig. 33). Nestlé and WWF stand out by having scant information on healthrelated aspects, which is concerning due to their sphere of influence in Switzerland and internationally. Contrastingly, the Government and EAT highlight greatly this category.

The negative environmental and health impacts of animal products are widely recognized [6]. This is reflected in most of the profiles, as there is much emphasis on animal-based foods and their negative contribution to the well-being and climate change. In particular, EAT, WWF, and SV are vocal about the required transition from animal-based to plant-based foods. All guide-

75% 50% 25% 0% Government Neste W^{MF} Cylcroup EA

Fig. 33. Health Category

lines emphasize the intake of more plantbased foods and fewer animal-based foods on a regular basis. However, the reasons for this transition are divided. All consider it healthier, and most stakeholders additionally as a more environmentally friendly alternative. Despite this realization, recommendations differ on the definition of what a reduced amount of animal products actually means (Box 7). An additional distinction must be made between the benchmark that is acceptable for health and a benchmark that is acceptable for the environment.

Food groups are highlighted differently depending on their sphere of influence within the stakeholder landscape (Scheme 1). Nestlé is the largest milk producer in Switzerland, and its focus within its guidelines is on dairy products. Internationally well-connected EAT and WWF target animal-based proteins, as their priorities concern respectively human and planetary health. Animal proteins, especially red meat, are the most significant contributors to environmental degradation

Box 7. Swiss Governments communication of animal-based protein intake.

Some recommendations still include a rather high intake of animal protein compared to internationally accepted guidelines for the consumption of animal products in connection with their environmental impact. EAT recommends a range of maximum 25 - 58 g/day of animal-based protein, depending on the animal source, while the Swiss government for example recommends an intake of 100-120 g/day of animal protein or an alternative protein source. Which results in increasing GHG emission from the agricultural sector by nearly 50%. Whereas the WHO sets the guideline for animal protein with regard to a healthy diet at less than 150 g/day, which is less than 30% of the diet. In this range, the government recommendations would be considered a healthy amount of animal protein.

and are known to impact human health when consumed in large quantities negatively. Through its catering services, SV strives to provide its customers with a healthy and environmentally friendly diet and, therefore, focuses on the recognized groups of animal protein and fruits and vegetables. The government emphasizes plant-based foods, reflecting its goal of achieving well-being for its citizens. We can conclude that the sector and the actor's vision influence the focus and weight of the recommendations.



At a distant glance, we can notice the majority present a harmonious picture by providing generous room to the Governance category (Fig. 34). That makes it the only category reflected coherently between all the stakeholders, despite some differences in the topics covered. Altogether, the guidelines demand attention for steering instruments and identify them as necessary, echoing our framework of including the governance dimension in sustainability discourse concerning diets.

There seem to be two different focuses in terms of governing acts: directives or regulations. Regulations are authoritative mandatory rules, whereas directives are incentives that guide towards the desired goal. While EAT, WWF, and SV Group choose to highlight international policies such as the SDGs, Nestlé chooses to call for policy action from the government to transform industries.

Fig. 34. Governance Category

A contrasting point appears in the inclusion of transparency. The Government, WWF, and EAT have not indicated this feature, whereas private sector representatives pointed it out in their statements. We can link this to their similar emphasis on certifications and standards. While Nestlé is calling for adopting international transparent standards, SV Group uses it to acquire credibility on the market.

In a general sense, food security is indicated as well, but asymmetrically. The central challenge of food policy in the twenty-first century is to ensure fair and healthy nutrition for huge populations while maintaining the ecosystem [11]. Thus, a conflict arises when the modern food system emphasizes the need to increase food production to feed the population but is counterbalanced by the question of sustainability. EAT and WWF particularly discuss this aspect, but it is hardly mentioned by the Government and Nestlé, while none in SV Group.

Keeping in mind that some individual features are underrepresented, most stakeholders cover an already satisfying amount of elements related to Governance. We believe the fundamental shift towards sustainable diets and supporting food systems will be achieved by coordinating many different actors in parallel. Thus, it is crucial to build transparent, science-based information mechanisms such as Nutritional Guidelines and promote education to help people make informed decisions around their food choices.



Fig. 35. Social Category

Apart from the SV Group, all other stakeholders are unconcerned by the social aspects of nutritional recommendations in the overall picture (Fig. 35). Zooming into individual levels, the guidelines point to different features for explaining the category in question and creates a contradictory picture: Nestlé puts the attention on gender equality, while the Government stresses the pleasure side, WWF refers to culture, and EAT and SV Group highlights animal welfare.

Against this backdrop, we suggest framing the Social category in Nutritional Guidelines in more detail, along with providing scope for more features rather than one. The acceptability of different diets, norms, tradition, and livelihood all play into the food choices of people all around the globe. Similar to the social side, the Economics category is overwhelmingly in low tunes within the guidelines (Fig. 36). Nestlé is the only stakeholder to cover economic dimension to a satisfactory amount, despite encompassing not all the factors. Besides low coverage, SV and WWF engage all the economic aspects in one way or another.

Sustainable production patterns and technology innovation are recognized as crucial factors for food-related shifts as they mainly claimed the front seat. Intuitively, this coherence makes sense as these two features enforce each other greatly.

On the one hand, Nestlé is the only one not referring to the affordability side of diets, which is problematic considering their influence on the market shelves. On the other hand, EAT is the one that does not touch on the cost side, which is one of the most important determinants of food access [6]. That leaves us with a rather heterogeneous picture when considering the overall affordability of ensuring healthy diets, health care costs, and assurance of wellbeing. In light of these, we can conclude that nutritional guidelines should balance out the economic focus and give more weight from the technical-production side to the consumer and workers' rights.



Fig. 36. Economics Category

On another note, cost and affordability are included rather diversely and without effective formulation. These two factors are crucial determining factors for diet choice, given that food resources are primarily distributed through the market. The SOFI 2020 Report describes the cost as "what people have to pay to secure a specific diet" and affordability as "the cost of the diet relative to income" [15]. **Table 8.** Main Coherences and Contradictions. Summary of where the Nutritional Guidelines follow a similar path or diverge within five sustainable-diet categories.

Category	Coherences	Contradictions
Environment	Except for the Government, the common feature is climate change. Supporting variables are land-use, biodiversity and soil to achieve the goal of GHG reduction.	Government confronts all other stakeholders by neglecting environmental aspects to a great extent. Guidelines directed to international
	Despite animal-based products are clearly linked to climate change, animal agriculture is not included in this equation.	or domestic audiences differ with regards to food origin.
Social	Single feature weak focus, instead on including several social aspects.	Differing features selected for the focus.
Economics	Focus more on technical production side rather than consumer or worker realities.	Cost and affordability aspects are varied.
	Private sector includes labor rights consistent with certifications & standards.	
Health	Reduction of animal-based protein, especially meat.	Diverting reasons for the reduction: health and/ or environmental aspects.
	Increase fruits and vegetables as well as plant-based protein.	Focus of food groups are diverging.
Governance	Most harmonious category	Food security is raised only by international organization and civil
	Two options of common approach of governing are adopted: either directives or regulation.	society, while neglected by others. Transparency only recognized adequately by private sector, link to certifications and standards

Conclusion

In this project, we dived into the world of Nutritional Guidelines, which allowed us a better understanding of how and to what extent different stakeholders are communicating a sustainable-diet. During this process, we started with the question of the word sustainability itself, where clarification and some caution is needed, as it is sometimes used as an abbreviation for environmental issues, although it contains a broader intellectual meaning that has become increasingly significant with the Multi-General Perspective Brundtland Report [30].

NGs can provide more holistic sustainability principles for how to eat, buy, and cook that address not just environmental aspects of the crisis of the industrial food system, but also the economic, social, and cultural ones. As could be seen, all types of NGs can be a key vehicle to promote and assist healthy, accessible, culturally appropriate, and economically decent food for the population. Though, it is a challenge to develop these guidelines as they are often politicized and controversial due to their interdisciplinary nature [30]. Our findings corroborated this and showed that the selected stakeholders failed to take a holistic view of sustainable diet in their guidelines. Divergent remarks emerged from the dimensions of sustainability, leading to the different priorities in the guidelines. Food catering company SV Group has achieved the most comprehensive representation of all dimensions, providing a more holistic understanding of sustainable nutrition.

We are on a perilous journey and need to use every tool available at our disposal to solve the climate crisis. To move forward, it is necessary that Nutritional Guidelines take a new and courageous course, **mindful of plane**tary and humanistic consequences.

NGS ARE ESSENTIAL ELEMENTS OF PUBLIC POLICY AND SOUND TOOLS TO ALIGN GLOBAL EATING PATTERNS WITHIN PLANETARY BOUNDARIES. WE RECOMMEND EXPLICITLY NAVIGATING THE DIVERGENCES WHEN DEVELOPING OR IMPLEMENTING NGS IN ORDER TO ACHIEVE A HOLISTIC AND COMPREHENSIVE APPROACH TOWARDS SUSTAINABLE-DIETS.

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