


IMPACT OF INCORPORATING PLANT-BASED ALTERNATIVES IN THE DIET

Chairs: **Prof. Em. Ian Rowland** (Reading University)

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A global analysis of Food Based Dietary Guidelines on plant-based meat and dairy alternatives

– **Anna-Lena Klapp**

University of Göttingen, Germany

A comprehensive analysis of plant-based dairy alternatives in Europe and their role in a sustainable diet

– **Elphee Medici**

Nutritionist, Nutrition & Sustainable Diets

Communications Consultant, Nutrilicious, London, UK

Evaluation of plant-based dairy analogues on the Swedish market: FOP and NRF index

– **Dr. Hanieh Moshtaghian**

RISE, Sweden

Opportunities and challenges for scaling plant-based meat and dairy alternatives as a part of sustainable and healthy diets

– **Dagmar Brekelmans**

WBCSD, Plant & Protein Diversification workstream, The Netherlands

A global analysis of Food Based Dietary Guidelines on plant-based meat and dairy alternative

Speaker: Anna-Lena Klapp

University of Göttingen, Germany

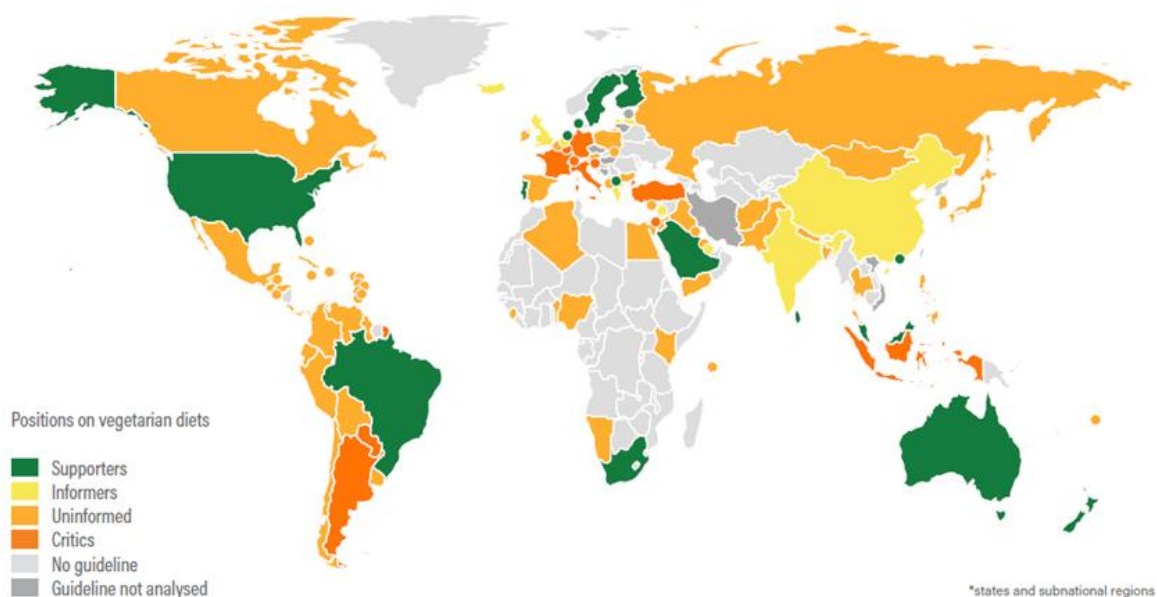
- Most dietary guidelines worldwide do not provide information that cover the broad spectrum of plant-based diets.
- Nearly half (45%) of all dietary guideline texts mention plant-based alternatives to meat or animal milk. Only 15% and 11% of the guideline graphics (food pyramids, plates, etc.) show plant-based meat and plant-based milk alternatives respectively.
- Dietary guidelines should balance the ethical, ecological, religious, and economic aspects that play a role in people's food choice.

Discussing plant-based diets and substitutions for animal-based foods in food-based dietary guidelines (FBDGs) can be a key step in making

dietary recommendations more sustainable and healthy, as well as more inclusive. This talk presents the latest results of the most comprehensive cross-country FBDG analysis on plant-based diets and plant-based alternatives to milk, dairy products, and meat.

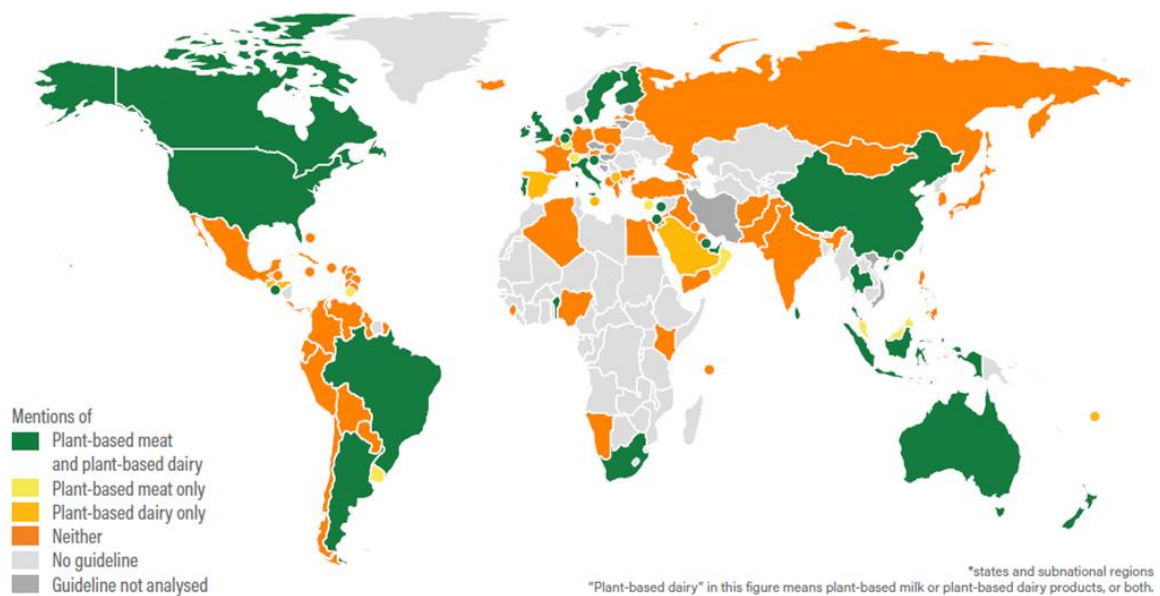
95 guidelines and 100 corresponding countries were assessed, using an exploratory sequential mixed method. Furthermore, the Balanced Food Choice Index (BFCI) was constructed, which measures the extent to which FBDGs provide recommendations that cover the broad spectrum of plant-based diets. In order to explore the correlations between FBDGs' recommendations and ecological and economic country characteristics, ordinary least squares regression was used.

WORLD MAP OF 100 COUNTRIES* AND THEIR POSITIONS ON VEGETARIAN DIETS IN NATIONAL DIETARY GUIDELINES



Adapted from Klapp et al. 2022

WORLD MAP OF 100 COUNTRIES* AND THEIR MENTION OF PLANT-BASED ALTERNATIVES IN NATIONAL DIETARY GUIDELINES



Adapted from Klapp et al. 2022

It was found that most countries do not provide information that cover the broad spectrum of plant-based diets, indicated by the mean score of the BFCI (33.58 out of 100 points). A total of 38 guidelines (40%) contain a position on vegetarian diets. Nearly half (45%) of all FBDGs already mention plant-based alternatives to meat or animal milk. The regressions showed that **the BFCI correlates positively with countries' ecological efforts and negatively with the importance of animal-based products in their economy.**

This study demonstrates a considerable information insufficiency in current FBDGs worldwide. FBDGs should provide recommendations for the broad spectrum of plant-based diets and balance the ethical, ecological, religious, and economic aspects that play a role in people's food choice.



Klapp, A.-L., Feil, N., & Risius, A. **A global analysis of National Dietary Guidelines on plant-based diets and substitutions for animal-based foods.** Current Developments in Nutrition, 2022; 6(11). doi:10.1093/cdn/nzac144

A comprehensive analysis of plant-based dairy alternatives (PBDA) in Europe and their role in a sustainable diet

Speaker: Elphee Medici

Nutritionist, Nutrition & Sustainable Diets Communications Consultant, Nutrilicious, London, UK

The need to shift towards healthful plant-based diets has never been more urgent for human and planetary health. PBDA are now mainstream and feature in a number of European food-based dietary guidelines (FBDG). As their popularity grows, their nutritional adequacy as dairy substitutes has come under scrutiny.

Our first study analysed the nutritional profiles of leading European PBDA in comparison to their dairy counterparts and our second study assessed the nutritional and environmental implications of PBDA within sustainable diets for healthy individuals.

309 unflavoured PBDA were examined: 249 plant-based drinks (PBD) and 60 plant-based yogurt alternatives (PBAY). Excluding coconut varieties, **PBDA were low in saturated fat (<1%)**. 70% were unsweetened, with total sugar levels comparable to dairy except for rice drinks which had significantly higher naturally occurring sugar levels. **With the exception of soya drinks, PBDA contained significantly less protein than dairy**. Due to regulatory constraints, organic PBDA did not provide any appreciable quantities of micronutrients. Non-organic PBDA are pre-dominantly fortified with calcium (76%), vitamin D (66%), and vitamin B12 (60%), with fewer fortified with vitamin B2 and only a handful with iodine (11%). PBAY were less frequently fortified than PBD. **PBD generally align nutritionally with dairy milk**, except for iodine fortification, which becomes relevant only in regions where dairy

serves as an iodine source through cattle feed fortification;

PBDA possess a favourable macronutrient profile, despite lower protein levels, which can be offset by other protein-rich foods in a **mixed diet and in context of nitrogen balance** dependent on amino acid intake over a 24-hour period, and not individual foods or meals. Fortified unflavoured PBDA align with FBDG, however, it would be beneficial to rectify the current inconsistency of micronutrient fortification. Consumers choosing organic PBDA as dairy replacements should be educated about alternative sources of key micronutrients.

In our 2nd study, we highlight the environmental advantages of soya, rice, and oat PBD. In comparison to dairy, European **PBD exhibit 59–71% lower GHGe, at least 77% reduced land use, and over 50% less eutrophication**. For water use, **soya and oat PBD had a 99% lower water footprint**, whereas rice drinks consume more water than dairy. Additionally, we explored PBDA's role within EAT Lancet Planetary Health diet, showing that **replacing 250 mL of dairy with fortified soya or oat drinks does not compromise the nutritional profile** and marginally reduces its environmental footprint.

Our publications strongly support the inclusion of fortified unflavoured PBDA in environmentally sustainable dietary guidelines for healthy population.

Medici, E., Craig, W. J., Rowland, I., **A comprehensive analysis of the nutritional composition of plant-based drinks and yogurt alternatives in Europe**. *Nutrients*. 2023; 15(15), 3415. doi:10.3390/nu15153415



Craig, W. J., Messina, V., Rowland, I., Frankowska, A., Bradbury, J., Smetana, S., Medici, E. (2023). **Plant-based dairy alternatives contribute to a healthy and sustainable diet**. *Nutrients*. 2023; 15(15), 3393. doi:10.3390/nu15153393

EVALUATION OF PLANT-BASED DAIRY ANALOGUES ON THE SWEDISH MARKET: FOP AND NRF

Speaker: Dr. Hanieh Moshtaghia

RISE, Sweden

The demand for plant-based dairy analogues is increasing. Therefore, it is important to investigate the nutritional quality of these food products.

This study aimed to assess the nutritional quality of plant-based dairy analogues in the Swedish market.

The nutritional data for plant-based drink (n=73), yoghurt (n=41), cheese (n=36), cream (n=22), fat spread (n=27) and ice cream (n=23) analogues were collected from the manufacturers' websites.

The nutritional quality of these food items was assessed against the Keyhole and NutriScore criteria.

Furthermore, the Nutrient Rich Food index (NRF 11.3) per portion was calculated for plant-based analogues of milk (n=15), yoghurt (n=7), cheese (n=7), cream (n=3), fat spread (n=7) and ice cream (n=6) using data from the Swedish Food Composition Database and were compared to corresponding dairy products.

In addition, the difference between organic and non-organic plant-based milk analogues was assessed.

Among plant-based milk analogues on the Swedish market, 16% met the Keyhole criteria, and 45% were classified as NutriScore B, but none were classified as NutriScore A.

Only 2% of plant-based yoghurt analogues were eligible for the Keyhole; nevertheless, 68% of them were categorised as NutriScore A and B.

None of the plant-based cheese, cream, and ice cream analogues, and 37% of the plant-based fat spreads were eligible for Keyhole.

None of the plant-based cheese, fat spreads and ice cream analogues were eligible for NutriScore A or B, but 32% of plant-based cream analogues were in the NutriScore B category.

The median (min, max) of NRF 11.3 for plant-based dairy analogues and dairy products (based on the Swedish Food Composition Database) is shown in Figure 1.

There was no statistically significant difference between plant-based dairy analogues and corresponding dairy products except for the cheese and ice cream group (P-value < 0.05).

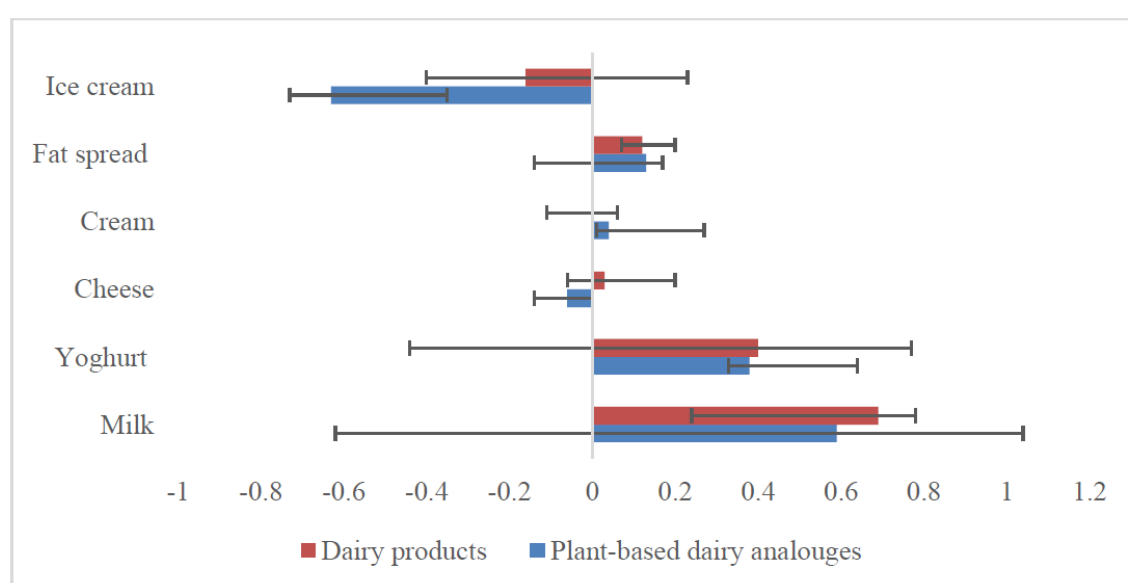


Figure 1. Median (min-max) NRF11.3 per portion for plant-based dairy analogues and corresponding dairy products.

The median (min, max) of NRF 11.3 for organic and non-organic plant-based milk analogues was 0.34 (0.32, 0.36) and 0.65 (-0.62, 1.04), respectively, and no statistically significant difference between these two groups was observed (P-value > 0.05).

In conclusion, findings varied depending on the nutrition indicator. Nevertheless, results indicate that plant-based milk and yoghurt analogues had higher nutritional quality compared to plant-based cheese, cream and ice cream, and plant-based cheese and ice cream analogues were less nutritionally rich than other plant-based dairy groups. According to the findings of NRF 11.3, plant-based dairy analogues can have similar nutritional quality to corresponding dairy products if fortified.

OPPORTUNITIES AND CHALLENGES FOR SCALING PLANT-BASED MEAT AND ALTERNATIVES AS A PART OF SUSTAINABLE AND HEALTHY DIETS

Speaker : Dagmar Brekelmans

WBCSD, Plant & Protein Diversification workstream, The Netherlands

The global agri-food system has a tremendous impact on climate, nature, nutrition and equity, and is currently depleting soils, contributing significantly to GHG emissions, and failing to adequately nourish the global population. Animal-based products have an outsized footprint, and in turn the World Business Council for Sustainable Development (WBCSD) has identified **the shift towards more plant-forward diets as one of the necessary levers for a sustainable food system transformation.**

WBCSD convened food system stakeholders in a series of dialogues to explore the opportunities, challenges and next steps to scale meat and dairy analogues. Representatives from agri-food industry; nutrition and environmental non-profits; civil society; academia and more shared perspectives on the nutrition and health impacts of meat and dairy analogues as well as the production system that supplies said products at scale.

Four action areas to enable the sustainable scaling of analogue products emerged from our report: including (1) strengthen the **data-backed evidence and narrative on the impacts of meat and dairy analogues**, (2) ensure a **just transition for consumers and agri-food workers in the shift to meat and dairy analogues**, (3) progress **behavior change for consumers and companies** towards

the incorporation of analogues, and (4) establish **innovative business models** to help drive the transition. The paper outlines the role for stakeholders such as investors, governments, private sector, chefs, farmers, and WBCSD.

This presentation from WBCSD aims to highlight learnings from the dialogues and WBCSD's work to-date, shedding light on opportunities and challenges for scaling plant-based meat and dairy alternatives as a part of sustainable and healthy diets.

3 take-home messages:

- **Facilitating the transition towards plant-forward diets (including meat and dairy analogues) will require large-scale action from all food system stakeholders.**
- **Ensuring continued inclusive dialogue, just transition for farmers, and the development of diverse, culturally relevant meat and dairy analogue products will be critical.**
- **WBCSD is continuing to work on the sustainable protein transition through a myriad of projects and collaborations. Please reach out to explore partnership.**



Meat & Dairy Analogues: Opportunities, Challenges and next Steps. WBCSD, September 2023, www.wbcd.org/Programs/Food-and-Nature/Food-Land-Use/FReSH/Plant-and-Protein-Diversification/Resources/Meat-dairy-analogues-Opportunities-challenges-and-next-steps. Accessed 25 Oct. 2023

ALPRO FOUNDATION

Alpro Foundation was founded 25 years ago as an independent scientific platform with the mission to support scientific research on plant-based nutrition and to increase knowledge and awareness of the link between diet, health and sustainability.

Our scientific advisory board is made up of leading international academic professionals with expertise in nutrition, health and environment. They advise us so that we can ensure the scientific credibility of the activities of Alpro Foundation.

Our main activities are focussed on:

- **Education**
 - o We develop a wealth of educational tools with the latest scientific insights
 - o We facilitate scientific conferences and webinars for nutrition and health care professionals.
- **Research**
 - o We celebrate peer-reviewed papers with awards for young scientists
 - o We support academics and scientists with research grants to enlarge the understanding of plant-based diets.

More information on:



Alpro Foundation website
www.alprofoundation.org



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