

This is a self-archived version of an original article. This version may differ from the original in pagination and typographic details.

Author(s): Kortetmäki, Teea

Title: Why do local plant proteins not take off? : Sustainability rationalities in public catering

Year: 2023

Version: Published version

Copyright: © 2023 The Authors. Published by RC40.

Rights: CC BY 4.0

Rights url: <https://creativecommons.org/licenses/by/4.0/>

Please cite the original version:

Kortetmäki, T. (2023). Why do local plant proteins not take off? : Sustainability rationalities in public catering. *International Journal of Sociology of Agriculture and Food*, 29(1), 25-43.
<https://doi.org/10.48416/ijsaf.v29i1.487>



Why do local plant proteins not take off? Sustainability rationalities in public catering

Paper first received: 09 June 2022; Accepted: 22 April 2023; Published in final form: 30 April 2023
<https://doi.org/10.48416/ijaf.v29i1.487>

Teea KORTETMÄKI¹

Abstract

This study examines the potential of local plant proteins in promoting sustainable dietary transition in public catering and, simultaneously, helping rural regions find sustainable livelihoods in the future. Environmental and health reasons call for a transition to more plant-based diets in Western countries. This poses a livelihood challenge for many rural/semi-rural regions that are currently livestock-dominated. Local plant protein crops could be a 'win-win' solution, both for promoting dietary transition and for supporting local rural economies – presently two conflicting objectives in regions where animal production prevails. This study is based on a development project in which local public catering actors undertook to increase the use of local plant proteins. It analyses public actors' rationalities that explain actions and inactions for sustainability transition and the positioning of plant proteins therein. Results demonstrate how the dominant catering rationalities, and mismatches between regime and niche actor rationalities, hinder the mainstreaming of local plant proteins. The discussion reflects upon ways to overcome these barriers.

Significant reductions in the climatic and land use impacts of modern food systems necessitate a transition to more plant-based diets and reduced meat consumption, which would also benefit public health (de Boer and Aiking 2019; Willett et al., 2019). Research has identified the prospects of and barriers to a dietary

¹ University of Jyväskylä, Finland
Corresponding author: Teea Kortetmäki, teea.kortetmaki@jyu.fi

Bibliographical notes

Teea Kortetmäki (PhD) works at the School of Resource Wisdom, University of Jyväskylä. Her main research interests include just sustainability transitions in food systems, environmental and food justice, and food ethics.

ACKNOWLEDGEMENTS

The author thanks Tiina Silvasti, Ville Tikka, Marileena Mäkelä, and the reviewers for valuable feedback and Emma Kynkäänniemi for all the discussions during the development project.

Introduction

Significant reductions in the climatic and land use impacts of modern food systems necessitate a transition to more plant-based diets and reduced meat consumption, which would also benefit public health (de Boer and Aiking 2019; Willett et al., 2019). Research has identified the prospects of and barriers to a dietary transition at the individual level (Niva, Vainio and Jallinoja 2017; Austgulen et al., 2018; Kaljonen et al., 2019). The ineffectiveness of steering consumers by information campaigns or soft nudging has created interest in the role of organisational (public) food system actors in promoting transition. Related research has been framed in terms both of sustainable procurement (e.g., Smith et al., 2016; Sonnino 2009) and of promoting environmentally sustainable diets via public catering (Florén, Amani and Davis 2017; Wahlen, Heiskanen and Aalto 2012; Colombo et al., 2020).

One unstudied aspect in this context lies in the tensions between different sustainability objectives, which may even suggest opposite transition pathways (Kortetmäki 2019) and are of concern to rural livelihoods. For example, local food is commonly perceived as evidently sustainable and just (e.g. Autio et al., 2013; Gottlieb and Joshi 2013). However, animal-based production predominates in many modern food systems, comprising nearly or approximately half of the value of agri-food based GDP in the European Union, the United States, and Australia. This situation generates tension between promoting sustainability by supporting the existing local production, and promoting a dietary transition. The latter reduces the consumption of products that presently form the cornerstone of regional food systems and may increase the use of non-local, even imported, foods (Kortetmäki 2019). Food chains constitute a significant building block in the development of rural areas struggling with the continued withdrawal of capital and decreased distribution of added value to primary producers (Marsden et al., 2000).

The production and use of local plant proteins could alleviate the tension and create ‘win-win’ solutions by providing a way to simultaneously promote local rural livelihoods and dietary transition. Local plant proteins could support values associated with locality and food justice, even food autonomy,¹ as well as potential for added value through short supply chains (Marsden et al., 2000), while promoting decarbonisation and public health (Willett et al., 2019; de Boer and Aiking 2019). This potential has turned attention to the prospects of ‘re-launching’ the currently marginal domestic and local plant protein food crops in public catering (e.g., Balázs et al., 2021; Lascialfari et al., 2019; Magrini et al., 2021). Local plant proteins could help semi-/rural communities respond to food system regeneration demands in ways that benefit sustainable livelihoods and the viability of rural communities (cf. Marsden et al., 2000). However, unlocking such potential requires that lock-ins in local plant protein production and consumption be overcome (Balázs et al., 2021; Magrini et al., 2021; Paloviita 2021).

This research focuses on the role of public catering as a promising avenue for overcoming the aforementioned lock-ins (Paloviita 2021). Catering can create high-volume demand for new products and novel value chains, and transform eating practices by introducing sustainable choices and creating food environments that support change (Wahlen, Heiskanen and Aalto 2012; Colombo et al., 2020; Niva, Vainio and Jallinoja 2017). The focus on catering also answers to calls for examining the role of non-market actors in sustainability transitions and the spatial contexts of transitions (Lawhon and Murphy 2012), and understanding the public-private dynamics in food system transitions (Marsden 2013). Furthermore, results bear relevance beyond public catering. First, they can illuminate public-institutional rationalities for sustainability action more generally. Second, as public catering needs to justify its activities in ways that a majority of policymakers and taxpayers accept (Schedler 2003), their reasons ‘mirror’ the prevalent socio-cultural valuations and conventions of appropriateness in food practices. Third, the affordability standards of public catering reflect mainstream consumer viewpoints (the importance of price) better than the willing-to-pay niche consumers featured in

¹ While food autonomy discourse is active in various countries and is posited as central for sustainability and justice, discourses in Finland rarely refer to food autonomy. Instead, they stick to the (related) notions of self-sufficiency and supply security. The development project was carried out in 2018–2019. The war in Ukraine in 2022 might have influenced related views and articulations.



many transition studies. As one of the catering actors pointed out: a product that passes catering standards can triumph in mainstream markets too. Thus, study results are also valuable for understanding the potential of local plant proteins for dietary transition more generally.

Finland, where the case study is located, is a flagship country in public catering. Like Sweden, it has long served free, nutritionally wholesome and warm school meals (Peltola et al., 2020; Colombo et al., 2020). Finland provides free school meals for all pupils in basic education (aged 7–16) and upper secondary education: roughly c 900,000 meals overall every school day. Finnish public catering also handles a majority of pre-school, hospital, and elderly catering, and sells lunch for municipal workers. Lessons learned therein are highly relevant to large-scale catering generally, including private student and staff canteens (many of which are publicly subsidised) that similarly aim at providing low-cost yet satisfying and wholesome meals for the masses. Finland is representative of Western dietary patterns and modern food systems: animal-based production comprises almost half of the total production of the Finnish food industry (Finnish Food and Drink Industries Federation 2022).

Could local plant proteins provide ‘win-win’ solutions, promoting both local livelihoods and dietary transition simultaneously, in semi-/rural areas? This research aimed to understand the potential of local plant proteins in promoting dietary transition alongside sustainable local livelihood sources in the future.² It took place within the context of a development project that promoted food system sustainability in a Finnish semi-rural, livestock-dominated region. In the following section I introduce the theoretical-conceptual background for the study, the Weberian framework of institutional rationalities. This is followed by the project description, an explanation of the data and methods, and the presentation of the results. The main results show that the dominant regime rationalities create several barriers to the mainstreaming of local plant proteins and produce a diagnostic framing where sustainability is more a matter of geographical, rather than dietary, transition. Rationality mismatches, in turn, hamper successful interactions between local plant protein actors and public organisations. Finally, I reflect upon solutions to the identified barriers to local plant protein use.

Rationalities and sustainability transitions

Food system sustainability transitions are studied in the fast-evolving field of sustainability transition studies. In this field, transitions are often considered as resulting from multilevel interactions within and between the exogenous socio-techno-political factors, the regime (the mainstream institutional actors and practices), and innovative and radical niche actors (Geels and Schot 2007). Transitions can come about through multiple pathways (Geels 2014; Geels and Schot 2007). Incumbent regime actors may transform the system, while retaining their position, by changing their activities in response to exogenous criticism or policy changes, or by adopting novelties from the niche cumulatively, for economic or functional reasons. Incumbent regime actors may also get replaced because they lose their legitimacy due to the exogenous criticism or, in market conditions, by losing the competition to the emerging niche actors. Demands for food system transformations comprise a major exogenous pressure on the regime (mainstream) institutional actors (Marsden 2013, 295). Low-carbon transition studies show that actors’ responses to transition pressures depend on how they perceive the problem; resistance in various forms is a common response (Geels 2014).

Dietary transition is a critical aspect of food system transition (de Boer and Aiking 2019; Willett et al., 2019), for which plant-based proteins represent the key niche (Morris et al., 2014; Lonkila and Kaljonen 2022). Research on food system sustainability transitions has focused primarily on global and national change mechanisms, and on alternative food networks as niches, while meso-scale change mechanisms have been understudied (Lamine et al., 2019). Yet understanding the responses of regime actors to transition pressures requires us to look at meso-scale actors at their level of operational environment, where the implementation

² Crop rotation with legumes was excluded from this study as irrelevant for dietary transition and public catering contexts, although it is relevant for agroecological transitions. Another excluded topic is the transformative capacity of current livestock producers who would not all benefit from dietary transition.

of sustainability actions materialises or fails (e.g., Lonkila and Kaljonen 2022; Lamine et al., 2019). Dietary transition marks a system-wide transition that will materialise only if it is implemented by various regime actors. Institutional catering represents one of the key regime actors as an established, relatively stable institution with specific regulations, professional networks, practices, and training systems.

Weberian rationalities and organisational change

Max Weber introduced rationalities when he sought to explain different development pathways and the distinct features of the life spheres of Western civilization as compared to others (Weber 1958; 2019; Kalberg 2011). Rationalities provide an analytical lens for understanding the regularities of institutional and organisational actors (Townley 2002; Fuenfschilling and Truffer 2014), including responses to transition pressures. Rationalities are regularities of thinking and ordering that aim at mastering reality and making particularised events and fragments of life into meaningful wholes to organise and justify action (Kalberg 2011:16–17).³ Rationalities also determine what counts as ‘proper’ justification for actions (Watson 2003). Institutional rules and practices invent rationalities as institutional logics; thus, rationalities also influence the likelihood and contents of institutional actions for sustainability (Fuenfschilling and Truffer 2014).

Rationalities are rational only in relation to particular reference points or values (e.g., Weber 1946: 331–340, 544–554) that may appear as self-evident at present yet are mutable over time. Studying competing rationalities and their interplay illustrates how the dominant rationalities may become destabilised (Townley 2002: 164) and where the key opportunities for endogenous regime transitions reside.

Rationalities offer an interesting lens for analysing public actors in sustainability transitions. Public actors, using taxpayers’ money, need constantly to justify their actions and use of public resources. To articulate acceptable reasons for their activities or for changing them, actors must consider the prevalent rules and assumptions in their society, in the regional and national contexts, while also demonstrating sensitivity to the emerging exogenous pressures. This forces public actors to navigate between competing objectives (‘reflexive rationality’, Alrøe et al., 2017).

Rationalities exist and are reproduced through social action. Weber (2019: 99ff) describes such action as comprising four ideal types (real-world actions rarely represent only one type): traditional; affective; value rational; and instrumentally rational. Traditional actions are guided by habituation, and affective actions by emotions, whereas the other two types of action are guided by value and purposive rationality. While tradition-related and affective factors are highly relevant for individuals’ food choices (e.g., Niva, Vainio and Jallinoja 2017), public actors can hardly appeal to emotions or ‘non-rational traditions’. In modern societies, public catering needs to justify its operations in terms of different rationalities. While the twofold distinction of value and instrumental rationalities (in the above-described action typology) has been commonly applied in research, it dismisses other aspects of rationality that are highly relevant for institutional actors. The fourfold account developed by Stephen Kalberg (2011) is thus more apt for analysing institutional actors. This fourfold typology has not been applied to food system studies before.

The four ideal types of Weberian rationalities (Kalberg 2011:18–26) are: practical; substantive; theoretical; and formal. Practical rationality (also means-end or instrumental rationality) refers to pragmatic actions dealing with the challenges of daily reality to meet goals with the most efficient means. Substantive or value rationality (hereafter value rationality) refers to constellations of normative values and belief systems, including conceptions of good and right. Theoretical rationality represents belief-cognitive and often abstracted knowledge about the reality. Formal rationality denotes the sphere of legal and bureaucratic, ‘impersonal’ rules that organise reality. Practical and value rationalities directly link to the Weberian types of action. Theoretical rationalities link to action indirectly, as the study will demonstrate. Formal rationalities link to action both directly

³Weber did not systematise his account very clearly. Thus, I rely on Kalberg’s more nuanced typology instead of a relatively common ‘instrumental vs. value rationality’ typology.



and indirectly. While rationalities are rational only in relation to certain (historical and contextual) reference points and are thereby mutable, they change neither easily nor quickly. This is because of their importance for mastering the shared understanding of the reality of the given society and historical time.

Data and methods

Case description and action research approach

This case study examines a 15-month development project (in 2018–2019) ‘Protein Silicon Valley’, funded by the Finnish Innovation Fund and managed by Emma Kynkäänniemi. The project was designed to promote regional food system sustainability and to nurture collaborative experimentation to find uses for local plant proteins.⁴ It also sought to foster new business models such as collaborative product development between catering and food producers. Experiments included: testing local plant protein products in catering; developing related recipes in both public catering and large-scale catering education; and marketing products and raising awareness in the region.

The project engaged actors in primary production, small-scale processing, marketing, catering, restaurants, education, and retail. Experiments constituting the development project were planned in collaboration with them. The research process run in parallel was designed by the researcher; it involved actors as informants but not in more engaging ways, except for the focal actors who were also involved in reviewing rationality summaries (see Data collection and analysis).

The project was located in a Finnish region with c. 275,000 inhabitants and 23 municipal units: one bigger city (c. 150,000 residents) surrounded by predominantly rural or semi-rural (intermediate) municipalities with significant agricultural activity. The population demographics represent the Finnish average. The region’s main economic activities comprise services and forestry-based industry. The number of farms is c. 2,500 and is declining, while farm sizes are increasing. Primary production accounts for 5 % of employment in the region (mostly outside the city area). Beef and dairy production generate over 80 % of agricultural income. Plant protein experiments engaged public catering in three municipalities (3,000–25,000 residents), as well as other actors from around the region.⁵ The public catering actors engaged represented food services managed directly by the municipality. This is a typical management method in smaller municipalities whereas in bigger cities public corporations are common.

The research approach was interpretive action research: a reflective and emergent form of research that utilises local knowledge and capacity-building to endorse transformations, and that focuses on how actors perceive, interpret, and react to events (Stringer 2013). Action research fits well for event-focused research that reveals the everyday frictions hindering sustainability transitions (Kaljonen et al., 2019). The development project determined the emergence of events that generated research data, which were then enriched with additional interviews. Action researcher is not a distant observer (Stringer 2013); I participated in experiments and collaborated closely with the project coordinator. This implies a dual role: being critical of the existing discourses, practices, and power relations, while encouraging the project goals. I reflected my role and its implications on the analysis throughout the project. The designated coordinator allowed me to focus on asking and wondering instead of facilitating action or initiating events: I was a ‘curious sidekick’. The coordinator was also a key informant, and our discussions were influential to the analysis. She also read and commented this manuscript (but did not consider herself as a co-author). The inclusion of actors’ voices in the research was strengthened by iterative reflection with the key actors and individual interviews, ensuring that central actors from group meetings had a possibility to speak with their own voice. Iterative reflection

⁴ The project also aimed to increase the use of local freshwater fish. I excluded fish here because local, sustainable and safe freshwater fish are neither broadly available nor typically an option to agricultural actors.

⁵ The project engaged five municipalities (and involved individuals from other municipalities) but not all tried plant proteins. Bigger city actors acted as informants but did not participate in the project that focused on semi-rural municipalities to address rural development and engage new actors. Most prior food sustainability experiments in the region had been urban.

also involved additional involvement of people who had shown interest in the research process. The focal plant protein actors and the most active catering personnel also commented my initial summaries of their rationalities to ensure that the summaries successfully captured their views.

Data collection and analysis

The data were collected from informants (Table 1) throughout the project events (Table 2). Events, totalling 33, included experiment planning meetings, funding application meetings, the experiments themselves (mainly in schools), and informal exchanges. They were complemented with thematic individual and focus group interviews. Of all these events, 24 were recorded (c. 30 hours) and transcribed verbatim. Field notes covered the whole project via on-the-spot and recollective reflection (c. 85 pages in total). Informants (N=42, Table 1) comprised two groups. Closest informants engaged directly in the project, while external informants were chosen to enrich data by broadening understanding about the context of research; for example, city-based informants were experienced in sustainability experiments. Engaged informants represented diverse categories yet, in practice, project meetings often became discussions with the catering and plant protein actors, project coordinator, and myself. Municipal officers drew back from the discussions after the initial steps and commented the experiments supportively but did not want to get actively involved. Thus, the analysis included diverse voices, although the voices of the catering and plant protein actors were emphasised.

Table 1. Informants.

Actor category	N	Comments
Informants who engaged in the development project		
Project coordinator	1	Collaborated closely with the researcher; mutual discussions influenced field notes.
Public catering personnel in managerial positions	6	
Public catering personnel in other positions	4	
Municipal officers	4	
Public catering educators	2	
Plant protein producers	3	All were also involved in supply chains (innovation, processing, marketing).
Plant protein actors who were not producers	4	Involved in product development, processing, marketing, and sales.
Non-municipal catering personnel, managerial positions	2	One private sector representative and one national public catering representative.
Informants who did not engage in the project (additional interviews)		
Catering managers and personnel from other cities with experience of similar projects	6	Participated in focus group interviews; one was interviewed individually.
Education sector actors	5	Actors' institutions run local food projects; interviewed in focus groups.
Students interested in sustainable proteins	5	Participated in two focus group interviews.
Two researchers from the author's department participated in three interview events (synergistic interviews) but were not included as informants.		

**Table 2. Project events that generated research data.**

	Event type	Informants (N)	Additional remarks
	Counting activity as a research event implies that at least the coordinator or the author was present; actors also continued project activities on their own.		
1	Start meeting with plant protein actors and previous regional food project coordinators	7	
2	Start meeting with (other) plant protein actors	2	Not recorded, informant wish
3	Focus group interview	2	Public catering
4	Planning meeting, municipality D	3	
5	Planning meeting, municipality B	3	
6	Planning meeting, municipality C	2	
7	Focus group interview	4	
8	Individual interview	1	City catering actor
9	Planning meeting with national catering actors	2	
10	Planning meeting on plant protein experiments and funding prospects	5	
11	Planning meeting, municipality A	4	
12	Planning meeting on plant protein development and funding applications	6	Not recorded (technical issues)
13	Sustainability education and plant protein-based lunch theme day in municipality C school	2	Not recorded (event type made field notes more feasible)
14	Planning meeting, municipality B	4	
15	Planning meeting, municipality A	1	
16	Recipe competition for faba bean use	1	Not recordable
17	Recipe development meeting with catering education personnel and plant protein actors	3	
18	Sustainability education and bean-based theme day, municipality A	2	Not recorded (event type made field notes more feasible)
19	Planning meeting with plant protein actors about production and product development	5	
20	Meeting between plant protein actors and development funders	4	Not recorded (informant wish)
21	Wrap-up with plant protein actors about the first half of the project	4	
22	Discussion with a plant protein farmer about topical issues	1	Not recorded (an unplanned phone call)
23	Discussion with a plant protein entrepreneur about marketing	1	Not recorded (an unplanned phone call)
24	Tasting event for school kids in the municipality B school	3*	*Catering students and teacher; children were not approached as research subjects

25	Planning meeting with plant protein actors, 'autumn kickstart'	5	
26	Meeting with municipality D actors, post-experiment reflections	2	Not recorded (informant wish)
27	Individual interview	1	Hemp food actor
28	Individual interview	1	Hemp food actor
29	Individual interview	1	Hemp food actor
30	Individual interview	1	Hemp food actor
31	Focus group interview	3	Public catering
32	Interview: Project end reflections	1	Faba bean actor
33	Interview: Project end reflections	3	Hemp food actor

Action research influences data generation but does not predetermine analytical methods. The analysis was done as abductive content analysis. This process began with content-driven thematic coding to allow the informants to speak, and the data were read with sensitivity to any topics raised by them. Coding followed the process described by Guest, MacQueen and Namey (2014) and yielded 72 codes. Then, in abductive content analysis, the codes were organised and grouped using the analytic framework of Weberian rationalities (Kalberg 2011). Abductive analysis allows for the emergence of categories and explanations, also from theory, which help to interpret the rich data and find linkages between different themes. The major themes unfolding were organised under four rationalities: formal (governance); practical (daily work); value-related; and theoretical (knowledge). Synthesis and grouping of the codes were utilised to see how different actors combined different rationalities, creating constellations of ideal types that illustrate how actors perceive the local plant proteins within the context of sustainability transitions. The comparison between ideal types and actors' ideal type constellations resembles a Weberian comparative approach generally yet deviates from the initial Weberian comparative-historical methodology. This is because I aim not to explain diversity in large-scale historical unfoldings but in how certain partial solutions to contemporary problems are perceived as more or less viable. My intention is thus modest compared to large-scale Weberian studies, yet the Weberian conceptual apparatuses have proved valuable in inquiries of this sort (e.g. Alrøe et al., 2017; Townley 2002). The validity and reliability of the analysis was increased by using multiple data sources, complementing meetings-based data with semi-structured interviews, and asking key project participants to review the first rationality summaries (following Guest, MacQueen and Namey 2014) before further analysis. Finally, the project coordinator also commented this manuscript with a specific request to check whether my representation of the project events, arising tensions, and related discussions seemed appropriate.

Unfolding the project: constant positive interest but no take-off

The project aimed to kickstart the mainstreaming of local plant proteins in the regional food system. Faba bean and hemp were chosen as targeted crops because they were already cultivated in the region, even though they were still marginal newcomers: plant protein production was only emerging and there were no conventional crops or established producers.⁶ The project began with planning meetings with non-municipal actors and plant protein producers, followed by municipality visits that launched the co-planning and conducting of experiments with public catering. One of the hemp actors frequently joined municipal meetings, bringing along ever-evolving product samples. Faba bean actors, in contrast, wanted to do marketing on their own.

The atmosphere in meetings was generally positive and interested. Catering actors in three municipalities chose to work with plant proteins. In municipality A, three school classes (pupils aged 9–10) visited the bean producer to learn about farming, and school served chili con(/sin) carne with local beans the same day. Catering also tested hemp in several recipes and served hemp seeds as garnish. In municipality B, children aged 6–9 tasted three dishes with hemp, designed and prepared by mass catering students. In municipality C, pupils

⁶ Pea was also cultivated, but for feed.



had food sustainability education (by the project coordinator) and the school served faba bean macaroni casserole the same day. In addition to these experiments, the coordinator promoted product awareness via the media, exhibitions, and a household recipe competition. Experiments ended in a positive spirit: hundreds of people had tasted local plant proteins and some even gave positive feedback. However, the subsequent discussions about scaling up product use were not conclusive and yielded no plans. During the two-year follow-up, local plant proteins showed no signs of entering the mainstream, neither in catering nor in retail. In the three municipalities, faba bean and hemp became used in a few vegetarian ('alternative') dishes and hemp seeds found their way to the garnish selection. Despite positive buzz, no take-off happened. Research results, illuminating why this was the case, are presented next and the main findings are summarised in Table 3.

Results

Formal rationalities: vagueness prevents action

Formal rationalities refer primarily to the regulative dimensions of action-guiding principles (Kalberg 2011). They set the limits for permissible ways to achieve ends by, for example, budget limitations and rules (related to competitive tendering and food safety), and by determining formal objectives for the legitimate use of public money. Formal rationalities surfaced in discussions as 'the backbone', the ultimate rationale, for justifying public in-/action for sustainability. They came from multiple sources. International regulations steer public procurement; local rules may add to, but not contradict, them. National statutes determine the purposes of school catering: to 'support learning, satisfaction with school, food competence and the development of a food sense ... [and] children's coping skills and growth' (NNC 2017:9). Catering actors were strongly influenced by the last statutory purpose, to feed children, which is historically the first and primary objective of the school meal institution. National school meal recommendations advised a reduction of red meat and a daily vegetarian option for everyone, or one fully vegetarian day weekly (NNC 2017:35). Municipalities funded public catering and could provide additional sustainability objectives. Only two out of the region's 23 municipalities mentioned dietary transition-related goals in their strategic documents regarding public catering. Nine municipalities mentioned local food and eight mentioned food waste reduction. In project meetings, municipal officers frequently emphasised the benefits of local food procurement in the regional economy, and saw locality as the key to sustainability.

The flexibility of public catering regulations leaves room for the implementation of own visions (Grivins et al., 2018). However, this did not catalyse action. As catering actors adhered to an institutional hierarchy, the municipal interpretations of sustainability were the main influencer of the contents of sustainability work in catering – with the exception of two proactive catering managers who promoted self-determined objectives. Other catering managers longed for explicit formal support and feared changing practices without formal backing.

'I want clear guidelines, what is the leeway where we can play with the [product] price. I understand that our operations are budget funded. ... I want to cover my back, so that nobody then comes to say that you should not have spent so much.' (Catering manager, municipality D)⁷

Since the municipal objectives did not call for a dietary transition, but emphasised only locality and waste reduction – if any – sustainability measures, there was no formal framework that catering managers could refer to before taking significant actions to introduce plant proteins.

⁷ In citations, letters distinguish municipalities from each other. Municipalities A-C engaged in plant protein experiments. Other municipalities had participants in focus group discussions or engaged in the development project's fish experiments.

Table 3. A summary of catering regime rationalities (ideal types) that drive or hinder dietary transition through the use of local plant proteins.

	Formal rationalities	Practical rationalities	Value rationalities	Theoretical rationalities
Exogenous factors that influence rationalities	Formal environmental action agreements; rural development agreements; performance indicators for public institutions	Effectiveness thinking, imposed by performance indicators, discourages risk-taking and influences diagnostic framing in catering institutions	Competing sustainability values leave room for competing sustainability interpretations; values related to rural development are focal in rural regions	Dominant discourses that reflect common perceptions of environmental impacts
Rationalities: pro geographical transition	Municipality strategies typically do not specify sustainability at all, or specify it as locality and food waste reduction	Achieving the main catering goal effectively favours risk-avoiding sustainability work that retains conventional dishes	Low-processed food is valued highly; values of honesty prevent overcoming prejudices by 'blind serving' plant-based dishes	Domestic and local meat are defined as environmentally sustainable; food waste is defined as very unsustainable
Rationalities: pro dietary transition	National recommendations suggest more plant-based foods in school	-	-	-
Particular mismatches that hamper plant protein use	-	The narrow or misinformed approach of niche actors to food prejudices and usability issues raised by catering actors	The buck-passing of responsibilities to promote transition proactively and to resolve emerging challenges	As definitions of food quality are widely diverse, product development and marketing do not appeal to mainstream interests

Practical rationalities: novelties are a risk for means-end effectiveness

Practical rationalities point out expedient ways to deal with daily challenges (Kalberg 2011) and significantly guide organisational action (Townley 1999). They help to achieve pre-determined ends effectively (instrumentally rational action), implying a certain default resistance to disruptions in routines (Kalberg 2011:19). Catering actors identified their pre-determined ends easily: getting children to eat school meals. Effectiveness refers to expedient ways to maintain or improve customer approval rates within the budgetary and human resource constraints, while responding to the requirements of formal rationalities (nutritional and legislative rules). Because public resources were often scarce, practical rationalities reflected expedient and cost-effective professionalism that was critical for achieving ends. Catering actors appealed to means-end-effectiveness as a reason for not using local plant proteins, arguing that trying prejudice-evoking novel foods could compromise customer approval or require far more resources (work) to ensure approval. This created a barrier to mainstreaming plant proteins, especially local products that do not even try to mimic meat.

'From all serving sites we are informed that this [vegetarian food] is eaten so little [...] So you can say that again, that we must try to increase use of vegetarian food, but then... When the most important thing would be to get children to eat the food that is served.' (Catering manager, municipality B)

Catering actors expressed frustration about children's prejudices stemming from both unfamiliarity and stigmas.⁸ Adults, too, had prejudices. For example, one municipality officer commented that the recent faba bean dish was 'surprisingly good', implying the assumption that bean-based dishes are not that good.

⁸ Unfamiliar products and dishes raise suspicion among some age groups that prefer familiarity. Familiar products, on the other hand, sometimes carry negative labels attached to the assumed properties or stereotypes about their eaters (Markowski and Roxburgh 2019; Peltola et al., 2020).



When value rationalities are present, prejudices are more difficult to address. Some catering actors believed (supported by anecdotal evidence from family occurrences) that many dishes would be liked if they were served without it being mentioned that they were plant-based. However, others considered this deceptive, in conflict with value rationalities, and therefore impracticable in public catering. The problem was wicked: honesty required prejudice-evoking prefixes to be added. City-based informants, however, considered prejudices as a challenge to be resolved. This altered the end guiding their means-end-effectiveness: rather than just getting children to eat, the objective was getting children to eat different foods – which was also one of the objectives in the school meal recommendations (NNC 2017).

Children had vegetarian favourite dishes too: vegetable pancakes/patties and some pureed vegetable soups. Because practical rationalities necessitate streamlined food preparation to keep costs low, building dietary transition on the already liked vegetarian dishes would not help local plant proteins. Only large-scale industrial processes can make pancakes and patties with sufficiently consistent quality and low costs.⁹ Related to streamlined processes, catering experiments with local plant proteins were also confronted with mismatching perceptions of catering and plant protein actors regarding the convenience of local plant proteins (see the food quality section).¹⁰ Ultra-processing could have been the solution but, apparently, was not a desired one.

Plant protein actors underrated prejudices as largely a result of unawareness, which in turn was resolved (in the reflections of plant protein actors) by making all potential customers aware of the new products. However, the witnessing of project events revealed other obstacles. The challenge was also exemplified by the case of stigmatised plant-based foods (Markowski and Roxburgh 2019). Yet the institutional catering educators who involved their students in creating new plant-based dishes reported that students were very excited about trying to make the new products sell. Time will tell whether the new generation of institutional catering personnel will make the difference by bringing their knowledge and enthusiasm to public catering.

Value rationalities: undesired solutions and buck-passing

Value rationalities are action-guiding principles based on values or value clusters (Kalberg 2011:21). Results illuminated connections between value and other rationalities. While values influence practical rationalities by determining the ends worth striving for, achieving value ideals is always restricted by the limitations and scarcity caused by formal rationalities. The analysis identified two themes where value considerations and tensions evoked reluctance to promote dietary transition and/or local plant proteins in public catering: food processing and responsibility attribution. In both cases, values justified the choice by public catering decision makers to steer away from certain activities that could promote dietary transition and the use of local plant proteins.

Children often approve ultra-processed meat alternatives and like plain beans much less. Their tastes reflect the broader trend of plant-based foods that mimic meat to promote convenient dietary transition (Tziva et al., 2020; Lonkila and Kaljonen 2022). Many catering actors expressed disvalue for ultra-processed foods. Disvalue stemmed both from signals from parents and from values of authenticity and ‘real/good food’, even if catering actors admitted that contemporary products were nutritionally adequate. Compared to ultra-processed alternatives, local plant proteins came in more valued forms, un-/low-processed (mainly crushed, shelled, or flaked). However, the un-/low-processed products had greater usability problems and risked customer disapproval. Responding to the pressure for dietary transition generates an unavoidable tension between the values of ‘real/good food’ and the criticality of getting children’s approval; the former is compromised by ultra-processed plant proteins, and the latter by low-processed local plant proteins.

⁹ Human resource (and infrastructural) constraints prevent public caterers from manufacturing patties, balls, or alike in their own kitchens. Operators in big cities often have different opportunities.

¹⁰ Beans were characterised as very simple – ‘just soak and boil’ – and hemp as suitable almost anywhere and therefore easy and handy.

The allocation of responsibilities for transitions is also shaped by norms (Geels and Schot 2007), that is, value rationalities. For local plant proteins, resolving the identified obstacles to their use is critical. However, actors played buck-passing and tended to cast the transition initiatives and problem-solving onto others. Creating demand for new products was not seen as a task of public institutions:

'In the end, it is anyway the market sphere that drives it, as long as (laugh) something is bought ...it does not pay off to produce a product that nobody buys.' (Catering manager, municipality A)

Most interviewed catering actors hoped that others would create 'fool-proof' vegetarian recipes because they perceived recipe development as means-end-ineffective: it is inexpedient to invest time in work that does not directly contribute to feeding children. City catering actors, in contrast, had internalised a proactive role in resolving recipe challenges.¹¹ This was backed by the city's strategic documents that determined sustainability responsibilities to involve dietary transition supporting measures.

The lack of fool-proof recipes was also discussed with the plant protein actors. They acknowledged the problem but delegated its resolution to others, thus passing the buck so to speak. Some appealed to role norms, considering themselves as producers, not recipe consultants. Others reframed the problem by suggesting that solutions only require creative experimenting.

'Spaghetti, macaroni – mix these shelled seeds with them, or with rice. Like this flour, you can add it a bit and it turns out quite good, changes the colour. You just have to toss it a bit everywhere and see what happens (laugh)' (Hemp actor, introducing products to public catering actors)

Catering actors, however, stated that they wanted precise and reliable recipes rather than partial solutions. The lack of 'fool-proof recipes' is a disadvantage for local products compared with ultra-processed products that are more easily applicable to conventional dishes owing to their meat-like characteristics. Un-/low-processed plant proteins would require new thinking.

Theoretical rationalities: defining quality and sustainability

Theoretical rationalities help make sense of the world by providing means for processing and applying factual information (Kalberg 2011:19). They also often ground indicators for organisational objectives (Townley 2002:169). In this respect, results revealed transition-hindering mismatches between the food quality definitions of public catering and plant protein actors. The dominant theoretical rationalities of catering actors also entrench sustainability perceptions where local plant proteins fail to stand out positively.

Food quality comprises all of the following: sensory attributes (texture, appearance, and taste); safety; nutritional value; functionality for preparation; stability (resistance to deterioration); healthiness; and psychological factors such as convenience (Giusti et al., 2008). For catering actors, the objective of getting children to eat made sensory qualities pivotal. They argued that nutritional quality was important only in relation to formal standards, and that national nutrition recommendations could be met with ordinary foods, by just taking care of the minimum thresholds of key nutrients and maximum thresholds of salt and saturated fats. Since catering actors perceived domestic food as 'almost organic' in purity (cf. Mikkola 2009), safety thresholds did not receive much attention.

Catering professionals stated frequently that only the food that is eaten nourishes, thus repeating their statutory objective. Any approval-risking compromise on sensory properties therefore meant a compromise in nutritional qualities. Additionally, functionality and stability are critical qualities for the lengthy cooking and heat storage processes. Several experiments with local plant proteins failed due to quality flaws in sensory properties, functionality, and stability.

Plant protein actors grounded quality definitions more in transformative values and psychological food quali-

¹¹ City actors were, however, reluctant to share their recipes. Contract renewal periods expose them to competition, their own recipes are an asset. This could be overcome by contracts that require or reward 'open access recipes'.



ties. They emphasised purity, freedom from pesticides and other harmful substances, and a maximum of nutrient contents ('the more the better') as quality attributes. Sensory properties were less important:

'I would say environmental and nutritional reasons are equally balanced, and then, well, the taste... Let me say that it comes after these, I have (laugh), for me the values make the food taste (laugh) good. If the food matches those values, it is food after all, eating is a psychological process, so, for me, I have never shunned the taste of hemp.' (Hemp actor, product developer)

Results demonstrate mismatching food quality definitions that hinder local plant protein mainstreaming. Quality attributes valued by product developers are likely to increase price because developers perceive those attributes as worth investing and paying extra for. This worsens the price-quality ratio for users who do not value the same attributes. Emphasis on healthiness and psychological attributes at the cost of sensory and functionality qualities could compromise the product approval for catering.

Environmental sustainability was another topic subject to theoretical rationalities. This manifested in how the actors framed the sustainability challenges at hand. The main finding in this respect is that the studied catering actors framed sustainability mainly as a matter of geographical transition, not of dietary transition. Geographical transition refers to those changes that shift the origins, but not the type, of the procured food. Shifting from imported (and often mass-produced) meat towards domestic or local (and perhaps more sustainably produced) meat is a case in point. While such activities often improve sustainability, they do not sufficiently address the decarbonisation and health concerns that urge dietary transition (e.g., Willett et al., 2019).

In this study, public catering grounded environmental sustainability on three cornerstones: food miles, food origin, and food waste. Dominant cultural norms determined the reference points for comparison: meat was compared to other meat, not to plant proteins. Catering actors related sustainability largely to locality. Public catering actors contrasted domestic meat with Brazilian beef, which, as a reference point, depicted domestic meat as very sustainable. The rationalisation of sustainability via such comparisons benefitted the prevalent animal-based food regime and dietary patterns by portraying domestic and especially local meat as so 'green' that local plant proteins failed to stand out positively. Their 'win-win' potential was not identified because local meat was also perceived as providing the 'win-win' solution by responding to sustainability demands while promoting local rural livelihoods.

Food waste was a big concern for catering actors. They worried that introducing vegetarian dishes would increase waste and thereby undermine sustainability goals. Some had experienced, though, that waste increased only temporarily until consumption stabilised. Related empirical results in the literature vary (see Colombo et al., 2020 vs. Lombardini and Lankoski 2013). I was surprised that none of the actors distinguished waste impact categories, which could help overcome waste-related fears that hamper the use of plant-based products.

Discussion

Diverging rationality clusters

The research question was whether and why (or why not) local plant proteins could provide 'win-win' solutions for semi-/rural public catering actors to meet both the dietary and the livelihood-related sustainability objectives. Rationalities influence how regime actors interpret and respond to sustainability transition pressures, which in turn influence the prospects of local plant proteins being taken up. Public catering and plant protein actors were shown to have divergent rationality clusters. My results highlight three particular rationality clusters that hinder the promotion of dietary transition and local plant proteins via public catering: diagnostic framing; the dominant institutional logic of performance and risk aversion; and mismatches between the rationality clusters of regime and niche actors.

Diagnostic framing. Transition demands can generate differentiated diagnostics among regime actors regarding the problem framing and, consequently, appropriate solutions (Geels 2014). The studied semi-/rural municipal

and catering actors framed sustainability as a matter of geographical transition, rather than dietary transition. This framing is supported by the bundle of their dominant theoretical, practical, and value rationalities. It coheres with environmental impact perceptions that (over)emphasise transportation (shown also in Kause et al., 2019; Austgulen et al., 2018). The geographical transition framing is also means-end-effective for regime actors. It is more consistent (than dietary transition) with their dominant rationalities, which minimises the need to address conflicting rationalities (cf. Townley 2002). Geographical framing leaves intact dominant socio-cultural views where meat is nice, necessary, and normal (Piazza et al., 2015). Plant-based proteins are considered to be an inferior deviation, which also shows in the greater success of those plant protein companies that have made their products and marketing 'meat-like', suited to the values and rules of the existing regime (Lonkila and Kaljonen 2022).

For these reasons, geographical transition framing helps leave traditional and affective social actions untouched. Catering actors, whose primary objective is to feed children and foster feelings of security and care, rather than conflict and contestation, might feel this framing more fitting to their role. Geographical framing is also supportive to the predominant local livelihoods, whereas dietary transition suggests transforming ('curtailing') them, which might face local resistance and undermine the perceived legitimacy of catering activities. This links semi-/rural catering institutions to regional and rural development politics where concerns about livelihoods and 'keeping the countryside alive' influence institutional activities. While the diagnostic framing of plant protein actors was slightly different, they also highlighted the relocalisation of food systems, combined with the ideals of 'pure and healthy' food that is fairer to the environment and people. In other words, plant protein actors did not put the dietary transition framing at the forefront either.

Institutional logic of economic performance and risk aversion. The dominant institutional logic in the studied context is guided by economic performance and, consequently, risk aversion. Performance as economic effectiveness relates to achieving the institution-specific objectives as economically as possible. Catering performance indicators commonly include meal cost and resource loss (food waste), which encourage institutional actors to avoid risk-taking. Mainstreaming local plant proteins in public catering would require development work, experimenting, and risk-taking that goes against the dominant institutional logic. Revising the institutional logic would require the relevant actors to critically re-examine value rationalities and the implications of indicators.

Mismatches that hamper the regime-niche collaboration. Rationality mismatches between the regime and niche actors hamper the mainstreaming of plant proteins. To become a readily perceived sub-solution to transition pressures, plant proteins should appear as relatively compatible with the current regime rather than as a deviation from it (Lonkila and Kaljonen 2022). Diverging rationalities challenge the acceptance and legitimacy of the proposed solutions (Ingram et al., 2015; Kalberg 1980:1170). However, the rationality clusters of the studied plant protein actors differentiated these producers and products from the rationality clusters of local catering actors. Plant protein actors demonstrated divergent value rationalities, in both their action and their product promotion, which did not sell to the regime actors. Other mismatches concerned theoretical and practical rationalities: product quality and usability.

Mismatches are frictions that, from the customer's practical rationality viewpoint, might be best to avoid; it is easier to choose other routes to sustainability than collaboration with actors with highly divergent rationalities. As the more resourced and bigger party, the catering actors are in the position to decide whether regime-niche collaboration is worth the effort. Additionally, the marginal and newcomer position of the plant protein actors may have influenced regime-niche relations and collaboration prospects. The engagement of established, experienced plant protein actors could make some mismatches appear in a different light. Yet, in such cases, they may no longer demonstrate the critical challenge of niche mainstreaming.

Changing rationalities

As institutional theory has shown, changes in rationalities will influence institutional actors' perceptions and



actions (Alrøe et al., 2017; Fuenfschilling and Truffer 2014). The pace and likelihood of rationality changes varies. If the given regime is dominated by a relatively unified set of core rationalities, the resulting stability makes significant changes unlikely (Fuenfschilling & Truffer 2014: 775–776). The results of this study imply that semi-/rural public catering may have just such a relatively stable bundle of core rationalities, which lessens the likelihood of rapid transformative rationality changes.

Results show that the underlying rationalities in public catering trace back to the formal rationalities that determine the statutory objective of catering, performance indicators, and catering resources. Thus, significant changes in public catering will likely require formal rationalities to be revised. National and municipal regulation could clarify sustainability objectives and the importance of dietary transition, which geographical transition can complement but not replace. Formal objectives and performance indicators should be updated to encourage transition activities and experimenting instead of risk avoidance. For example, adjusting food waste amounts with a climatic emissions coefficient¹² would transform the incentives created by the indicator.

Updating actors' environmental knowledge is critical to address unawareness of the climatic impacts of foods, due to which the significance of dietary changes is commonly underestimated (Kause et al., 2019). Theoretical rationalities significantly influence what is known to be low-carbon and healthy, although balancing this knowledge with other rationalities is not self-evident and requires reflexivity (Alrøe et al., 2017). Improved communication about dietary transition for public health reasons (Mason and Lang 2017; Willett et al., 2019) could be valuable since promoting health is a statutory public catering objective.

Socio-cultural change in semi-/rural value rationalities is needed to erase the stigma of vegetarian dishes as 'alternative' and implicitly inferior to meat-including 'normal' dishes. Here the contrast to the urban context was significant: the city-based catering was already normalising vegetarian dishes by presenting them simply as a part of ordinary selection.

Limitations and topics for future research

The main limitation of this study is its semi-/rural focus. Interviews with the city-based informant suggested that urban catering rationalities might differ significantly from rural ones. The city catering had broader objectives, including educational and care-related ones that encouraged solutions which might not always immediately please the customer but were, in the long term, good for them. Urban actors were also happier to use the plant-based meat-like products that fit better in the current dietary regime and enjoy broader customer approval (Lonkila and Kaljonen 2022). We interviewed only a few urban informants and studying the differences between 'urban and rural rationalities' remains a topic for future research. The non-urban focus in this study does nevertheless make an important contribution to dietary transition research dominated by case studies on urban forerunners. Local plant proteins can be more utilisable in smaller semi-/rural catering units with modest demand volumes. This study moreover helps us to understand why dietary transition is slower outside of cities and what needs to be considered in promoting transitions in semi-/rural regions. It is important to create feasible rural development activities that align with the demands for reducing the role of livestock. After all, rural areas are those where agricultural transformations take place and where the challenge of future rural livelihoods is to be resolved.

The findings of this study highlight topics for future research on dietary transition, rationalities, and public catering. Mechanisms that invoke rationality changes in relatively stable and established institutions, such as public catering, should be understood better. Comparative studies between forerunners and non-adopters would help understand which factors promote or hinder change at the organisational level. The interplay between different rationality types would help to further understanding of the dynamics, and disintegration, of relatively sedimented institutional rationalities (cf. Fuenfschilling and Truffer 2014 on Australian urban water sector). Finally, understanding the ways of 'patching up' rationality mismatches between the regime and niche

¹²This would mean that food waste is measured by multiplying the amount of waste with its relative climatic impact (emissions per product-kg).

actors would be important.

Conclusion

This research examined the potential of local plant proteins in public catering to foster dietary transition and sustainable future rural livelihoods simultaneously. The constellation of formal, practical, value, and theoretical rationalities guides public catering actors and their responses to sustainability transition pressures. Rationalities were found to influence perceptions about the appropriateness of local plant proteins as one solution for promoting sustainability. Although local plant proteins could provide win-win solutions to meeting multiple sustainability objectives via public catering in semi-/rural regions, the dominant regime rationalities and rationality mismatches between regime and niche actors hamper this.

Formal rationalities discourage public catering to take sustainability measures that deviate from the dominant perceptions of normal dietary patterns: in other words, sustainability measures are primarily sought from the scope of actions that align with the normalised dietary patterns and do not involve risk-taking. Practical rationalities guide achieving the main objective of catering (making children eat) effectively, which discourages development work, risk-taking, and experimenting with plant-based products that first raise prejudices. In theoretical rationalities on environmental impacts, catering actors overemphasise transport and food waste, downplaying the significance of dietary changes and posing them even as a risk to sustainability (increased food waste). Thus, local plant proteins fail to stand out positively. Finally, diverging food quality definitions among catering and plant protein actors create mismatches in marketing, perceived price-quality ratio, and product development. If the road to mainstream plates is created by making plant proteins fit the dominant regime rules as Lonkila and Kaljonen (2022) suggest, local plant protein actors – if they aim at reaching the mainstream – should change their product development and marketing strategies. Whether this is feasible for small-scale local actors is another question.

The studied semi-/rural public catering actors embrace sustainability but frame it geographically, as a matter of locality. Making local plant proteins appear as a more feasible pro-sustainability solution requires the reframing of sustainability diagnostics in these contexts. This study suggests that changes necessitate strong support at the policy and institutional levels and improved knowledge dissemination. Intermediary actors, such as catering sustainability consultants, could be critical for patching mismatches and disseminating environmental knowledge as well as the 'recipes for success' to harness sustainability transition pressures for the benefit of climate and health, and for securing and promoting local rural livelihoods.



Reference

- Alrøe HF, Sautier M, Legun K, Whitehead J, Noe E, Moller H and Manhire J (2017) Performance versus values in sustainability transformation of food systems. *Sustainability* 9(3): 332.
- Austgulen M, Skuland S, Schjøll A and Alfnes F (2018) Consumer readiness to reduce meat consumption for the purpose of environmental sustainability: insights from Norway. *Sustainability* 10(9): 3058.
- Autio M, Collins R, Wahlen S and Anttila M (2013) Consuming nostalgia? The appreciation of authenticity in local food production. *International Journal of Consumer Studies* 37(5): 564–568.
- Balázs B, Kelemen E and Szakál D (2021) Transitions of Legume-based Agrifood Systems—Stakeholders' view from Hungary. *The International Journal of Sociology of Agriculture and Food* 27(1): 119–140.
- Colombo PE, Patterson E, Lindroos AK, Parlesak A and Schäfer Elinder L (2020) Sustainable and acceptable school meals through optimization analysis: an intervention study. *Nutrition Journal* 19(61): 1–15.
- De Boer J and Aiking H (2019) Strategies towards healthy and sustainable protein consumption: A transition framework at the levels of diets, dishes, and dish ingredients. *Food Quality and Preference* 73: 171–181.
- Finnish Food and Drink Industries Federation (2022) Forkful of facts. Available at: <https://www.etl.fi/en/statistics.html> (accessed 21 January 2023).
- Florén B, Amani P and Davis J (2017) Climate database facilitating climate smart meal planning for the public sector in Sweden. *International Journal on Food System Dynamics* 8(1): 72–80.
- Fuenfschilling L and Truffer B (2014) The structuration of socio-technical regimes—Conceptual foundations from institutional theory. *Research policy* 43(4): 772–791.
- Geels FW (2014) Regime resistance against low-carbon transitions: introducing politics and power into the multi-level perspective. *Theory, culture and society* 31(5): 21–40.
- Geels FW and Schot J (2007) Typology of sociotechnical transition pathways. *Research policy* 36(3): 399–417.
- Giusti AM, Bignetti E and Cannella C (2008) Exploring new frontiers in total food quality definition and assessment: from chemical to neurochemical properties. *Food and Bioprocess Technology* 1(2): 130–142.
- Gottlieb R and Joshi A (2013) *Food justice*. Cambridge, MA: MIT Press.
- Grivins M, Tisenkopfs T, Tikka V and Silvasti T (2018) Manoeuvring between regulations to achieve locally accepted results: Analysis of school meals in Latvia and Finland. *Food Security* 10(6): 1389–1400.
- Guest G, MacQueen KM and Namey E (2014) *Applied thematic analysis*. Thousand Oaks, CA: SAGE Publications.
- Ingram J, Maye D, Kirwan J, Curry N and Kubinakova K (2015) Interactions between niche and regime: an analysis of learning and innovation networks for sustainable agriculture across Europe. *The Journal of Agricultural Education and Extension* 21(1): 55–71.
- Kalberg S (1980) Max Weber's types of rationality: cornerstones for the analysis of rationalization processes in history. *The American Journal of Sociology* 85(5): 1145–1179.
- Kalberg S (2011) *Max Weber's Comparative-Historical Sociology Today: Major Themes, Mode of Causal Analysis, and Applications*. London: Routledge.
- Kaljonen M, Peltola T, Salo M and Furman E (2019) Attentive, speculative experimental research for sustainability transitions: An exploration in sustainable eating. *Journal of Cleaner Production* 206(January): 365–373.
- Kause A, Bruine de Bruin W, Millward-Hopkins J and Olsson H (2019) Public perceptions of how to reduce carbon footprints of consumer food choices. *Environmental Research* 14(11): 114005.

- Kortetmäki T (2019) Tensions between food justice and climate change mitigation. In: Vinnari E and Vinnari M (eds) *Sustainable governance and management of food systems: Ethical perspectives*. Wageningen: Wageningen Academic Publishers, pp.3508–3513.
- Lamine C, Darnhofer I and Marsden T (2019) What enables just sustainability transitions in agrifood systems? An exploration of conceptual approaches using international comparative case studies. *Journal of Rural Studies* 68(May): 144–146.
- Lascialfari M, Magrini MB and Triboulet P (2019) The drivers of product innovations in pulse-based foods: insights from case studies in France, Italy and USA. *Journal of Innovation Economics Management* 28(1): 111–143.
- Lawhon M and Murphy J (2012) Socio-technical regimes and sustainability transitions: Insights from political ecology. *Progress in Human Geography* 36(3): 354–378.
- Lombardini C and Lankoski L (2013) Forced choice restriction in promoting sustainable food consumption: Intended and unintended effects of the mandatory vegetarian day in Helsinki schools. *Journal of Consumer Psychology* 36: 159–178.
- Lonkila A and Kaljonen M (2022) Ontological struggle over new product category: Transition potential of meat alternatives. *Environmental Innovation and Societal Transitions* 42(March): 1–11.
- Magrini MB, Fernandez-Inigo H, Doré A and Pauly O (2021) How institutional food services can contribute to sustainable agrifood systems? Investigating legume-serving, legume-cooking and legume-sourcing through France in 2019. *Review of Agricultural, Food and Environmental Studies* 102: 297–318.
- Markowski KL and Roxburgh S (2019) “If I became a vegan, my family and friends would hate me:” Anticipating vegan stigma as a barrier to plant-based diets. *Appetite* 135(April): 1–9.
- Marsden T (2013) Food systems under pressure: regulatory instabilities and the challenge of sustainable development. In: Spaargaren G, Oosterveer P and Loeber A (eds) *Food Practices in Transition. Changing Food Consumption, Retail and Production in the Age of Reflexive Modernity*. New York: Routledge, pp.291–311.
- Marsden T, Banks J and Bristow G (2000) Food Supply Chain Approaches: Exploring their Role in Rural Development. *Sociologia Ruralis* 40(4): 424–438.
- Mason P and Lang T (2017) *Sustainable diets: how ecological nutrition can transform consumption and the food system*. London and New York: Routledge.
- Mikkola M (2009) Shaping professional identity for sustainability. Evidence in Finnish public catering. *Appetite* 53(1): 56–65.
- Morris C, Kirwan J and Lally R (2014) Less meat initiatives: An initial exploration of a diet-focused social innovation in transitions to a more sustainable regime of meat provisioning. *International Journal of Sociology of Agriculture and Food* 21(2): 189–208.
- Niva M, Vainio A and Jallinoja P (2017) Barriers to increasing plant protein consumption in Western populations. In: Mariotti F (ed) *Vegetarian and plant-based diets in health and disease prevention*. Cambridge, MA: Academic Press, pp.157–171.
- NNC (National Nutritional Council) (2017) *Eating and learning together – recommendations for school meals*. Available at: <http://urn.fi/URN:ISBN:978-952-302-844-9> (accessed 13 January 2023).
- Paloviita A (2021) Developing a matrix framework for protein transition towards more sustainable diets. *British Food Journal* 123(13): 73–87.
- Peltola T, Kaljonen M and Kettunen M (2020) Embodied public experiments on sustainable eating: demonstrating alternative proteins in Finnish schools. *Sustainability: Science, Practice and Policy* 16(1): 184–196.
- Piazza J, Ruby MB, Loughnan S, Luong M, Kulik J, Watkins HM and Seigerman M (2015) Rationalizing meat consumption. The 4Ns. *Appetite* 91(August): 114–128.



- Schedler K (2003) '... and politics?' Public management developments in the light of two rationalities. *Public Management Review* 5(4): 533–550.
- Smith J, Andersson G, Gourlay R, Karner S, Mikkelsen BE, Sonnino R and Barling D (2016) Balancing competing policy demands: the case of sustainable public sector food procurement. *Journal of Cleaner Production* 112(1): 249–256.
- Sonnino R (2009) Quality food, public procurement, and sustainable development: the school meal revolution in Rome. *Environment and Planning A* 41(2): 425–440.
- Stringer E (2013) *Action research*. Thousand Oaks, CA: SAGE Publications.
- Townley B (1999) Practical reason and performance appraisal. *Journal of Management Studies* 36(3): 287–306.
- Townley B (2002) The role of competing rationalities in institutional change. *Academy of Management Journal* 45(1): 163–179.
- Tziva M, Negro SO, Kalfagianni A and Hekkert MP (2020) Understanding the protein transition: The rise of plant-based meat substitutes. *Environmental Innovation and Societal Transitions* 35(June): 217–231.
- Wahlen S, Heiskanen E and Aalto K (2012) Endorsing sustainable food consumption: Prospects from public catering. *Journal of Consumer Policy* 35(1): 7–21.
- Watson V (2003) Conflicting rationalities: implications for planning theory and ethics. *Planning theory and practice* 4(4): 395–407.
- Weber M (1946) Religious Rejections of the World. In: Gerth HH and Mills CW (eds) *From Max Weber: Essays in Sociology*. MLA 9th Edition. New York, NY: Oxford University Press, pp.323–359.
- Weber M (1958) *The Protestant Ethic and the Spirit of Capitalism*. Translated by Parsons T. New York; NY: Scribner's.
- Weber M (2019) *Economy and Society: An outline of interpretive sociology. A new translation*. Oakland, CA: University of California Press.
- Willett W, Rockström J, Loken B, Springmann M, Lang T, Vermeulen S, Garnett T, Tilman D, DeClerck F, Wood A and Jonell M (2019) Food in the Anthropocene: the EAT–Lancet Commission on healthy diets from sustainable food systems. *The Lancet* 2;393(10170): 447–492.