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Just Food for Kids? School Food Management Models and Sustainable Procurement in France and Germany

Birgit Hoinle [1] and **Jocelyn Parot** [2,3]

[1] Department of Societal Transition and Agriculture, University of Hohenheim, Germany
[2] Professorship of Organic Farming, Justus Liebig University Giessen, Germany
[3] URGENCI, France

Correspondence: Birgit Hoinle (birgit.hoinle@uni-hohenheim.de)

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Abstract

Biodiversity loss, climate change, rising indices of food insecurity, and increasing amounts of food waste underscore the need for a transition toward more sustainable and just food systems. Public food procurement can be considered an important leverage point in sustainable transition processes. Based on a conceptual framework that combines sustainability, just transition, and the role of public food procurement, this study focuses on the role of municipalities in France (Normandy and Brittany) and Germany (Bavaria and Baden-Württemberg) and analyzes their sustainability efforts. Seventeen urban and rural municipalities have been selected as they all engage with the issue of sustainable food but employ a variety of different models of school food management. Our methodology is based on a comparative approach, combining literature analysis and qualitative expert interviews with stakeholders from French and German local municipalities. Our analysis focuses on the ecological, economic, and social dimensions of sustainability, including organic share, food waste, local food, accessibility, diversity, education, and participation. Our research aim is to identify potentials and challenges in just food system transitions and appropriate policy measures for promoting sustainable public procurement in school canteens. The results show that direct public management models, that are not externalized through outsourcing to private catering companies, have more potential for defining high organic standards and for integrating local food into regional value chains.

Keywords

food justice; food policy; just transition; local food; organic food; public procurement; school food; sustainability

1. Introduction

The agri-food system contributes up to 30% of global greenhouse emissions (Crippa et al., 2021). Agricultural land degradation, increasing rates of food waste, rising incidences of food poverty, and child obesity in European countries underscore the need for a transition toward more sustainable and just food systems (Kovacs et al., 2020; Scientific Advisory Board on Agricultural Policy, Food and Consumer Health Protection, 2023). Local municipalities are considered important actors in food system transitions (Baldy, 2019). The "strategic role of cities" in developing sustainable and more inclusive food systems is also emphasized in public policy statements such as the Milan Urban Food Policy Pact (2015, p. 1). The reorientation of school food programs to "provide food that is healthy, local and regionally sourced, seasonal and sustainably produced" is one of the main recommendations in this Pact (Milan Urban Food Policy Pact, 2015, p. 4). Thus, due to its high purchasing power and influence on shaping young citizens' food preferences, the sector of public food procurement can be considered an important leverage point in transitions toward sustainable food systems (Andhov et al., 2024, p. 203; Stein et al., 2022). For instance, in Germany, public catering establishments serve 12.4 billion meals every year (Speck et al., 2022, p. 2288). However, in the research on sustainable transitions, the issue of school food is rarely addressed. Sanz Sanz et al. (2022) perceive a research need regarding the development of policy measures and the incorporation of local stakeholders in decision-making on school food policies. With our study, we aim to contribute to this research gap with a comparative approach that analyzes different school food management models in two countries.

In a literature review with a global scope, Molin et al. (2021, p. 15) demonstrate that articles on sustainable public food procurement in Europe focus mainly on ecological sustainability, whereas social sustainability is addressed in studies developed in North and South America. The ecological dimension is mainly addressed through the issues of organic food and food waste (Molin et al., 2021, p. 10), whereas the economic dimension is mostly framed by the inclusion of local farmers in short food supply chains. In our analysis, we address the lack of studies on social sustainability by developing a conceptual framework that integrates all three dimensions of sustainability. For this purpose, we connect the social dimension of sustainability with the concept of just transitions (Swilling, 2020) in order to explore approaches for just and sustainable food in public school food procurement (PSFP). This brings us to our main research question: What are the potentials and challenges of different school food management models and what key policy measures are needed to overcome these challenges in order to promote just and sustainable school food procurement?

To address this question, we conduct a comparative analysis of school food management models in France and Germany. These two countries were selected due to their contrasting procurement approaches. In France, local authorities have a long history of providing school meals, with municipalities responsible for primary school meals, departments for middle school (*collège*) meals, and regions for high school (*lycée*) meals. In contrast, in Germany, school meals have long been considered a family affair and not a responsibility of public authorities. In recent decades, school food provision has largely been outsourced to private catering companies. In some schools, parents have formed non-profit organizations to prepare meals for students based on voluntary work.

Based on the existing scientific literature, our analysis focuses on three types of school food management: (a) direct public management (DPM), (b) externalized private management (EPM), and (c) community management (CM). Seventeen municipalities in the regions of Normandy and Brittany (in France) and

Bavaria and Baden-Württemberg (in Germany) were selected in order to compare management models for promoting just and sustainable school food. Our methodology integrates literature analysis with qualitative expert interviews. In the analysis, we focus on the ecological and economic dimensions of sustainability, including organic share, food waste, and the involvement of regional networks with local farmers, as well as the social dimensions of sustainability, such as accessibility, education, participation, and diversity. Our research aims to identify potentials and challenges for sustainable PSFP and to formulate policy recommendations based on empirical insights.

2. Conceptual Framework

Our conceptual framework combines the approach of just transition with the growing body of literature on PSFP by emphasizing the social dimension of sustainability (see Figure 1).

2.1. Just Transitions

With the Sustainable Development Goals, the United Nations pronounced the need for a transformation toward a more sustainable global development. A growing body of literature on sustainable transitions seeks solutions for global challenges, such as biodiversity loss or increasing social inequalities (Fischer & Newig, 2016; Geels, 2019; Loorbach et al., 2017). However, many of these studies focus mainly on technical solutions and environmental impacts, leaving out social justice aspects. Based on the work of environmental justice scientists and activists (Martínez-Alier et al., 2014), several authors have developed the concept of just transitions in order to emphasize the often neglected social justice dimension within sustainable transitions (Swilling, 2020). However, until now, studies on just transitions have mainly focused on the energy sector (Tribaldos & Kortetmäki, 2022, p. 244). Nevertheless, recent contributions relate the concept of just transitions with issues of food and dietary transitions (Kaljonen et al., 2021; Tschersich & Kok, 2022).

Just transition authors distinguish several dimensions of justice: distributive justice, recognition justice, and procedural justice. Tribaldos and Kortetmäki (2022) have developed a scheme on how to apply just transition principles to the agri-food system. For instance, distributive justice includes the right to food in the sense that the whole population should have access to "sufficient nutritious, adequate and safe food at all times" (Tribaldos & Kortetmäki, 2022, p. 248). Recognition justice embraces the acknowledgment of traditional food knowledge about local food, as well as the recognition of "diverse visions of producing, preparing, and eating food" (Tribaldos & Kortetmäki, 2022, p. 248). Procedural justice involves access to information as a precondition for participation in democratic decision-making processes on the food system (Tribaldos & Kortetmäki, 2022, p. 248). Whereas distributive justice addresses the outcome of just transitions, recognition and procedural justice refer to the process of how social groups can influence decisions on the food system. Thus, all justice dimensions are complementary. The graph in Figure 1 shows how the aspects of just transition interconnect with the sustainability dimensions, especially the social dimension.

The interconnection of just transition with the sustainability dimensions provides a useful conceptual framework for structuring the analysis of the case study.

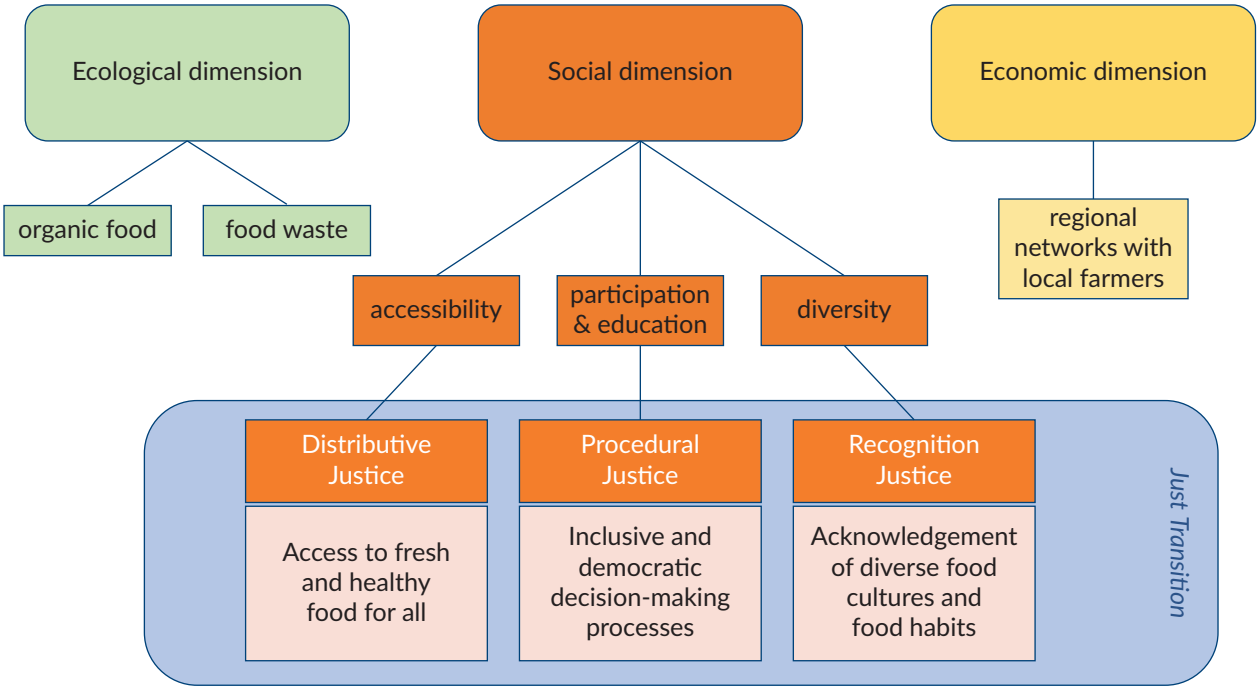

Figure 1. Conceptual framework of just transitions and sustainability dimensions (source: author's own elaboration).

2.2. Sustainable School Food Procurement and Management Models

Public food procurement has been recognized for its potential to contribute to more sustainable food systems (Kujala et al., 2022, p. 3323; Stein et al., 2024). School food procurement, in particular, has been highlighted as an important "driver for food security and nutrition" (Filippini et al., 2018, p. 1). Also, from a public health perspective, schools are seen as an ideal setting to promote healthy eating habits among young generations (Nordgård Vik, 2022, p. 112). Graça et al. (2022) emphasize that school meals have a multi-sectoral influence on society, impacting economic development, social protection, and environmental sustainability (p. 324). In this sense, PSFP could act as a leverage point for transitions to sustainable food systems.

PSFP is organized differently across Europe. For example, Nordic countries, such as Finland, have a statutory free school meal service for all school students. Other countries, such as Italy, stand out through initiatives like the Slow Food and Città del Bio movements, as well as "biodistricts," which promote short food supply chains between farmer cooperatives and canteens (Kraljevic & Zanasi, 2023). Parents participate in school canteen committees, monitoring the service and contributing to decisions regarding school food procurement (Pagliarino et al., 2021, pp. 4–5).

We undertook a qualitative literature analysis to uncover the state of key factors and barriers for more sustainable school meals in recent European scientific publications. This analysis revealed that major barriers are legal constraints and a lack of regional networks, while key factors for sustainable PSFP include cooperation throughout the value chain and motivation of public authorities and kitchen staff. The four most relevant key factors and barriers will be explained in the following paragraphs.

Legal constraints were identified as one of the major barriers. The European competition law 2014/14 (EU, 2014) was introduced to promote free competition across the single European market and to secure equal opportunities for all bidders (non-discrimination norm). In public tenders issued by municipalities to find a catering service for school meals, economic criteria are the most frequently prioritized. Several articles cite the law on public procurement as a major "constraint" for local municipalities (Risku-Norja & Løes, 2017, p. 117). Whereas organic certification can be used as a purchasing criterion, specifying local origin is not permitted due to EU regulations (Schäfer & Haack, 2023, p. 5). Although EU Green Public Procurement guidelines provide some voluntary tools for integrating sustainability criteria, public authorities rarely include them in public tenders due to legal uncertainties (Mengual et al., 2024; Schäfer & Haack, 2023, p. 5). As a result, municipalities are discouraged from procuring food from small-scale local providers. In spite of these restrictions, some municipalities are exploring new procurement strategies to source food from local providers, such as dividing orders into smaller batches or demanding certain local or seasonal varieties (Guillaume et al., 2022; Lassen et al., 2023). However, the application of these strategies requires considerable purchasing expertise, active engagement with potential suppliers, and familiarity with their products (Risku-Norja & Løes, 2017, p. 115).

Another barrier is the absence of regional networks involving organic or small-scale farmers (Hoinle & Klosterkamp, 2023). The lack of processing infrastructure is a crucial constraint. Braun et al. (2018) highlight the situation in the Brandenburg region, where no preprocessing facilities exist, yet school catering services rely heavily on preprocessed food (p. 1). For example, school cooks need a high quantity of already pre-peeled potatoes.

Cooperation throughout the food value chain is a key factor for sustainable school food. To source school meals from local providers, the creation of networks between producers, processors, and canteens is essential. Kraljevic and Zanasi (2023) highlight that direct relationships based on mutual trust between farmers and canteens—called "social proximity"—are crucial for the development of short food supply chains as they reduce transaction costs and allow more transparency about the origin of the products (p. 134). Sanz Sanz et al. (2022) emphasize the possibilities for niche innovations by small and medium enterprises (SMEs) entering the market when school food services were transferred to a central municipal kitchen in Avignon. The canteens formed new partnerships with SMEs, which developed innovative solutions for processing local and fresh fruits and vegetables for the school cooks (Sanz Sanz et al., 2022, p. 10).

A second key factor identified in the literature analysis is the motivation of key actors, namely public officers and kitchen staff. As demand increases for more sustainable and less meat-based dishes, new menu planning strategies become necessary. Graça et al. (2022) describe the need to "improve the nutritional profile and sensory appeal of plant-based meals [and] increase the variety and diversity of plant-based meal options" (p. 329). However, many kitchens face time and economic constraints, with deteriorating working conditions as an increasing number of cooks are employed on a flexible or voluntary basis only. Greater investment in training and qualifications is needed to offer vegetarian dishes that go beyond processed meat substitutes. This need for transformation is underscored by Lopez et al. (2020): "The transformation can only succeed if employees in the out-of-home catering sector are able to prepare tasty, creative and nutritionally complete low-meat or plant-based meals" (p. 12). All in all, decentralized school food provision systems with on-site kitchens in which cooks prepare meals at schools or central kitchens run by municipalities seem to have more flexibility to integrate fresh and sustainable products and to involve staff than systems of externalized provision (Magrini et al., 2021; Sanz Sanz et al., 2022; Smith et al., 2015).

The comparison across Europe shows that management models play a critical role in promoting or hindering sustainability outcomes. There is a clear distinction between municipalities that provide food service through their own kitchens and those that work with an external provider. For this reason, our analysis focuses on three different management models: DPM, EPM, and CM. CM refers to various forms of local non-profit organizations (often founded by parents) that prepare school meals in a self-organized manner.

3. Material and Methods

3.1. Case Study Descriptions

Our methodological approach is based on a comparative analysis between two case studies in France and Germany, chosen because of their contrasting school food procurement approaches; one pursues a more nationally guided model with a strong public administration base, the other is a decentralized approach with a higher level of outsourcing from private providers.

School catering in France was established as a public service before the Second World War (Perignon et al., 2023). There is a long tradition of offering whole-day childcare services, including lunch, at primary schools. Currently, 60% of French students have lunch at school four times a week. Sixty percent of school meals in France are provided by school catering services directly managed by local public authorities under the DPM model (Ministère de l'Agriculture et de la Souveraineté Alimentaire, 2023). The survey report by the Association of Mayors in France indicates that 48% of the local authorities are under the DPM model for their school food management, whereas 35% follow a mixed model and 17% are externalizing school food service to private catering companies (Association des Maires de France, 2024, p. 6). The school food system is characterized by national standards for public canteens. In 2010, the Programme national pour l'alimentation was introduced to encourage the use of local products in both public and private catering. In 2018, the newly adopted national EGalim law on agriculture and food requires all catering services—both public and private—to use at least 50% sustainable or high-quality certified-origin labeled food products, including 20% organic, by 2022 (Sanz Sanz et al., 2022, p. 5). Additionally, all catering services are now required to conduct a food loss and waste (FLW) assessment and to implement a strategy to reduce FLW. The aim is that reducing FLW will lower the volume of food purchased, thus creating financial leeway to procure more costly organic products. This law has applied to schools, universities, public sector institutions, hospitals, and private enterprises since January 2024. There are no penalties for non-compliance, which explains why only 18% of municipalities were meeting the target in 2024 (Association des Maires de France, 2024, p. 4). However, an increasing amount of subsidies is now conditional upon compliance with the law. Managers are required to keep their purchasing data updated in a tracking table, which must be uploaded to a platform managed by the Ministry of Agriculture and Food Sovereignty.

In contrast, 89% of school meals in Germany are provided by private catering companies (Jansen, 2019, p. 70), indicating the prevalence of the EPM model. This is partly due to historical reasons, as food was traditionally seen as a family matter, with children, particularly in Southern Germany, going home at midday for lunch. This tradition has evolved, creating challenges for local municipalities in providing lunch at school, which accounts for the widespread use of externalized services. In response to the lack of school lunch options, several parental initiatives have been established in the past decades, making CM also a common model in Germany. DPM, on the other hand, is relatively rare (with exemptions such as Darmstadt).

National guidelines—such as those provided by the German Society for Nutrition (DGE)—remain voluntary. Due to the federal structure of the education system, the DGE recommendations are only mandatory in five of the 16 federal states (Kuharic & Zander, 2025, p. 127). Sustainability is promoted through various incentives, such as certification or labels. For example, public canteens can obtain DGE certification or the newly established public canteen organic certification. Cities joining the Organic Cities Network (OCN) can demonstrate their commitment to the "Organic City" label, for which no minimum criteria is required (Böhm et al., 2025). The German Food and Nutrition Strategy published in 2024 by the national government sets ambitious goals for improving food quality in school canteens, such as increasing the share of organic and plant-based products, promoting regional networks, reducing food waste, and creating more sustainable food environments. However, these targets are not binding (German Federal Ministry of Food and Agriculture, 2024).

In order to compare the sustainability potentials of the three school food management models (DPM, EM, CM), we selected two federal states in Southern Germany and two regions in Northern France to analyze their advantages and shortcomings. Bavaria and Baden-Württemberg were chosen due to both the challenges posed by the long-term neglect of food as a policy issue, and the growing regional engagement with sustainability initiatives, such as the OCN. In France, the Brittany region was selected because of the presence of a sustainable municipalities network (Bretagne rurale et urbaine pour un développement durable, BRUDED). We also included the neighboring region of Normandy, where one of the authors is an active board member of a municipality-led catering syndicate. We selected municipalities that already show a high level of engagement with increasing the organic and local share of food in schools, ranging from 25% to 100% organic and from 50% to 100% local in the case of France. In Germany, there are no statistics about the organic share in public procurement, only estimates for some cities.

3.2. Methodology

Our approach is based on a transdisciplinary perspective that, as described by Lang et al. (2012), involves co-creative processes with local stakeholders to co-design solutions for real-life sustainability problems. In this study, we analyze the issue of school food from three perspectives: as scientists, as practitioners, and as parents. This multifaceted role provides us with a range of insights into the topic, as well as direct contact with local stakeholders. One of the authors is a municipal council member sitting on the board of an intercommunal school food syndicate, while the other is a member of a Food Policy Council. These positions provide deeper insights, as well as challenges and opportunities, for integrating findings into practical policymaking, in accordance with the transdisciplinary approach.

Our study is based on empirical research in the regions of Brittany and Normandy, as well as the states of Baden-Württemberg and Bavaria. First, we conducted 17 semi-structured interviews with school food managers, including local government employees and municipal council members (see chart of interviewees in the Supplementary Material). We sought interviewees from both rural and urban municipalities that were already engaged in advancing sustainability in school meals. Additionally, we aimed to include representatives from each of the three school food management models. In France, we conducted more interviews (six) with participants from the DPM model, as this model is more prevalent there. Our analysis includes only one interviewee from an EPM model (FR05), although three other French interviewees shared their previous personal experiences with this model. Since the EPM and CM models are more common in

Germany, we selected six interviewees from the EPM model and two from the CM model. In one of the two CM cases, this approach was abandoned due to a lack of public support and the fact that the school transitioned to the EPM model. Therefore, the interview focused on the experiences with both models. In one case we included an interviewee from the region of Southern Hesse (a neighboring region to Baden-Württemberg) due to the difficulty in finding interviewees from a DPM case in Germany. The questionnaire we used, translated into French and German, can be found in the Supplementary Material in its English version.

The second step consisted of a comparative data analysis. We transcribed the interviews using sonix.ai and developed a coding system that integrated the three sustainability dimensions (social, ecological, economic), as well as the three school food management models, with subcodes for their potentials and challenges (see codebook in the Supplementary Material). We specified each sustainability dimension with analytical criteria (subcodes) to gain deeper insights for the comparison. For example, the ecological dimension was subdivided into "food waste" and "organic share." These sustainability criteria were defined according to the system literature analysis of Molin et al. (2021) on sustainability in academic articles about public procurement (see Introduction). Using the conceptual framework (Figure 1), we conducted a comparative analysis of the school food management models to identify their potentials and challenges for promoting more sustainable and just school meals.

4. Empirical Results

The interview results were analyzed across the three dimensions of sustainability. For each of these dimensions, and for each of the school food management models, we present key potentials and challenges. Our aim is to show how school food management models differ in their potential to achieve more sustainable school meals.

4.1. Ecological Dimensions: Organic Share and Food Waste

In France, the EGalim law provides a legal framework regarding two critical aspects of the ecological dimension of sustainability: food waste strategy and the share of organic ingredients. In Germany, there are no mandatory national guidelines. Instead, local authorities can set their own targets if they wish. As a result, any engagement with food waste reduction or promotion of organic food depends on voluntary initiatives led by motivated individuals.

For the DPM model, the primary challenge identified by the French interviewees is the danger of a backlash against the legal framework: Municipalities feel pressured to improve without adequate support, and some are starting to opt out of the EGalim objectives (FR06). Yet, in most of the interviews, the DPM model is described as presenting the best potential in terms of the ecological dimension of sustainability. In this configuration, elected members of the municipal council have direct control of the budget, which is crucial for initiating the transition (FR02, FR04). A similar potential was observed in the only German case of this model (DE01), where a target of achieving 50% organic share was established, following an official resolution by the municipal council. With the involvement of the municipality-owned enterprise EAD (Eigenbetrieb für kommunale Aufgaben und Dienstleistungen), this target has been implemented gradually with a current share of approximately 27.5% (Greiner & Ebert, 2024).

Regarding the EPM model, a common issue is the difficulty in finding catering companies willing to apply for public tenders (DE04, DE07, DE09). School food is not considered a profitable business. This hinders the ability to set high organic standards. As explained by DE04, school head teachers are already busy with other (pedagogical) issues and have very low time capacities to engage with public tender guidelines. Similarly, due to the decentralized administrative structure, it depends on each single school headship, city administration, or the catering company itself, whether food waste measurements are undertaken or not. Therefore, most municipalities have no data at all either about food waste or about the current organic share. The interviews conducted in the French context were consistent in this regard. In particular, the interviewees from a major urban center revealed the contract with a private catering company will soon be broken (FR05 and FR05b). This decision was due to a lack of transparency about product sourcing and repeated failures to implement sustainability measures. In another interview, the emphasis was on the profit-making pressure:

> As a head cook who keeps a budget…what I've only experienced in catering companies is that they give you a bonus if you stick to the budget. And so, to keep within budget, you have to buy at the lowest price…you're provided with a price list with higher-end products, but you know that you're going to come out ahead in terms of costs, right? And so, at the end of the day, if you run out of costs, you get a slap on the wrist, right? (FR08)

As for the potentials, cities involved in the OCN demonstrated efforts to establish higher organic standards (DE02, DE03, DE06). The interviewees mentioned that it is crucial to have a municipal council's decision with concrete targets.

The CM model is challenging to compare, as each association is structured differently depending on local conditions. In one case, a German university town, the kitchen transitioned to organic food some years ago. In another case in a rural Bavarian municipality, according to the interviewee (DE09), parents are not interested in organic food. As this is a very rural region, the interviewee highlighted the potential to source organic ingredients from nearby farmers. In this case, the school moved to the EPM model eight years ago due to a lack of municipal support. Similarly, in the French case, the main challenge for CM was the dependence on municipal support to cover all the costs of going organic (FR07).

According to the interviewees, the CM model often serves small schools that fall below the financial threshold for European-wide public tenders. Therefore, this model has greater flexibility for ordering directly from local producers. During an interview, a cook (DE08) showed their list of regional organic food providers. However, she also noted the difficulty in obtaining processed organic products in large quantities. CM school canteens can adopt creative methods to combat food waste, such as parents who collaborate with the cooking team being allowed to take leftovers home. In one canteen, a "Bunny-App" was developed to inform students about leftovers for their pets (DE08).

4.2. Economic Dimensions: Regional Networks With Local Farmers

A key difference that came up during the interviews was the divergent nuances between the French *local* and the German *Regionalität*. In the French context, the emphasis is on direct relationships with nearby small-scale producers. In Germany, the focus is more on assembling robust value chains in the broader region. There are many conceptual discussions about what exactly *Regionalität* means, whether it is about products coming from the same federal state, from a 100-kilometer radius, or from a small-scale farmer unit (DE06).

In the interviews conducted with actors engaged in a DPM model, the difficulty in complying with strict procurement rules, from both the producers' and the canteens' perspectives, was identified as the major challenge. In France particularly, the rules are considered even stricter for public entities than for private businesses (FR01, FR03, FR04). According to one of the German interviewees, the municipal enterprise allows for more possibilities to source from local producers, but one of the biggest challenges is to get processed regional foods: "It always comes to the same conclusion: We need more processors in this area. There are farmers all around us. The problem is always the intermediary stage" (DE01).

On the other hand, a major potential of the DPM model is the absence of any pressure to make a profit. The financial aim is to achieve a balanced budget (FR01, FR03, FR04, FR08). This provides greater flexibility in working with local and organic producers.

Within the framework of the EPM model, city administrations are responsible for conducting public tenders to select catering companies. This process occurs approximately every five years and, in Bavaria, individual schools manage the tendering themselves. When public tenders exceed a specific threshold, an EU-wide tender is required, in order to guarantee free competition. Interviewees working within the EPM model complain that this makes it impossible to source products from regional suppliers or local farmers.

With outsourced service, there is reduced transparency regarding the origin of the products. Catering companies typically state their commitment to regional and seasonal food on their website, but interviewees report that no concrete information is available (DE07). According to one of the interviewees, this is a structural problem:

> The market is basically still organized on a supra-regional basis. You can change things a bit through small projects in individual product areas. But to change the market as a whole, you basically need a completely different political framework at a different level. (DE03)

Three interviewees reported having been able to integrate "regionality" into public tenders by developing workaround strategies (DE02, DE03, DE06): "We try indirect routes" (DE03). In one case, a public tender description was developed that requires catering companies to offer pedagogical activities (e.g., farm tours or canteen visits; DE02). This implies that the companies and farms should not be more than a one-hour bus ride away. In another case, a city council resolution set a target of 30% organic and regional food in public entities by 2025 (DE06). The interviewee, who is also the OCN coordinator of that municipality, developed a public tender template that includes CO_2 emissions and a 100-kilometer radius. However, additional efforts are necessary: "We do a lot of networking, connecting farmers and canteens. It's crucial to integrate processing structures" (DE06). In this case, new value chains were created between organic potato processors and canteens. Achieving this is only possible through strong personal engagement from public administration employees.

Regarding the CM model, DE09 emphasized that the town has significant potential for developing regional organic value chains. In her view, a DPM model with a municipal enterprise providing food for schools and the local retirement home could strengthen these chains:

> We still have local farmers, dairy farmers…we still have a local butcher. You could strengthen this structure and not leave it to the big farmers, big industry. However, this potential is not being utilized in the current situation as the kitchen gets the food from a big retailer. (DE09)

However, up until now, this potential of integrating local farmers into school food value chains, which is specific to rural areas, remains underexplored in this case.

The interviewees from CM models in both countries stressed the (potential) role of school canteens in supporting local economies, especially in rural areas. The geographical proximity makes it easier for school food managers to build strong long-term connections with local suppliers. This is more challenging for urban school canteens. One interviewee explained how direct relationships can be established for several product groups, including vegetables, dairy products, meat from a local butcher, and corn from a regional mill (DE08). The challenge lies in the logistics. There's a need for digital matching platforms which make it easier to find regional providers. The CM model has significant potential for the integration of seasonal products. For example, one canteen introduced a campaign week focused on seasonal recipes: "It was only possible due to the voluntary work of the parents. The cooking parents spent two hours washing the green cabbage" (DE08). According to the French association's president, whom we interviewed, the key potential of this model lies in the freedom of action:

> Nobody tells us what to do. I mean, of course we have to respect quality, we have controls and all that….But we don't have anyone to tell us who to buy from. So that's really the big advantage in being able to, you know, get carrots from such-and-such a market gardener, or whatever. (FR07)

4.3. Social Dimensions: Accessibility, Participation, Education, Diversity

A key aspect of the social dimension of sustainability is accessibility, which relates to the distributive justice dimension of just transition. In the French cases, income-based pricing models are prevalent, whereas in Germany, families with a low income can apply to receive financial assistance through the national Bildungs- und Teilhabepaket (a general education and inclusion package). If applicants comply with certain social criteria, they receive meals for free or at a significantly reduced price. Generally, municipalities provide subsidies for school catering, but the amount of the subsidy depends on decisions made by the municipality council and on the economic capacities of each city. The just transition dimension of recognition is analyzed by examining whether, and to what extent, the diverse food habits of children from migrant backgrounds are considered in menu planning. The procedural justice dimension is assessed by examining participation and education, such as whether students or parents can express their needs and demands through a school board.

The DPM model appears to facilitate the implementation of a social pricing scheme for canteens, although other models could also support such measures. All of the French DPM models in our sample use social pricing based on parents' incomes. In many cases, the lowest income households even have free access to the canteen. In France, a legal mechanism, called "Cantine à 1 euro," guarantees state support to compensate rural municipalities by offering meals priced at just one euro. In return, the municipality must comply with EGalim rules and, once a year, upload a financial database proving their achievements in a state-managed online platform.

Another potential of the DPM model is the ability to implement various participation mechanisms. This applies at both the school level and the local level. At the school level, for example, "children can efficiently be involved in menu composition, which is a way to cut the distance between them and the central kitchen, but also to educate them about sustainable, seasonal, healthy food" (FR01). At the local level, the elected members of the municipal council are closely involved in governance. For example, the school food management organization where FR01 is working is structured as an intermunicipal syndicate for school food management, each member municipality is represented by two members of its own municipal council. In small municipalities, this structure ensures strong representation for parents. It is noteworthy that this syndicate was initially created as an association (a CM model), before transitioning into a DPM in order to become more professional.

In the German context, there is only one EPM case with strong cooperation with the local Food Policy Council. In this case, members of the city administration participate in the working groups of the Food Policy Council and can seek advice from the Council when developing public tenders or for networking activities. In some cases, schools have school boards ("quality circles") as a means of enhancing participation, in which representatives of pupils, teachers, and catering companies discuss together (DE02). However, "participation" is limited to feedback systems, such as liking or disliking the daily menu with smiley faces, meaning no substantive participation formats are encouraged.

In both the German and French contexts, interviewees in every municipality named at least one pedagogical project about sustainable food. This observation holds true regardless of the management models. However, a structural approach to integrate sustainable food education into the curricula of all schools, "just like maths or German" (DE02), seems to be missing. Here, a crucial challenge expressed is the German multi-level system of political responsibilities. While education is the responsibility of federal entities, the coordination of school social work (e.g., whole-day childcare) and catering organization lie under municipal jurisdiction. Thus, coordinating PSFP and education appears almost impossible within the current political framework.

One of the German schools is situated in a rural area and offers an example of how school food education could be linked to a school garden (DE07). In this case, a teaching assistant leads a working group ("garden club") of students as they cultivate local vegetables and fruits in the garden. The teaching assistant highlights the knowledge that some students with a migration background have from their grandmothers and grandfathers, especially regarding the properties of medicinal herbs. Participants can use a school kitchen for processing the harvest. One of the schools is leading a pedagogical approach aimed at making the farmers and the work behind products more visible via portraits exposed in the canteens (DE06). However, as stated above, these examples depend on the engagement of certain teachers or project managers in individual schools or cities, rather than forming part of a broader, more comprehensive approach.

Regarding the aspect of diversity reflected in menu planning, all German EPM models offer pork-free meal options. For most interviewees, diversity was not seen as a big issue. In the French interviews, school food managers expressed resistance from municipal personnel to adapt to different food habits, as well as a lack of motivation to propose different options beyond the weekly vegetarian meal. Indeed, all the interviewees wanted to set boundaries around the "surge of special diets" (FR01), such as vegetarian, vegan, or halal, because they were concerned by the increased workload needed to plan, prepare, and serve a larger variety of different meals. Others underlined that their cities feature a high percentage of immigrants, which could drive innovative diversification in menu planning (DE03, DE04, FR02, FR06).

Regarding accessibility, the EPM model makes it more difficult for municipalities to influence pricing. Part of the interviewees see themselves as dependent on market dynamics:

> The price trend is getting more and more expensive, where some families say: I have three children, each at school. I have to put each of them in all-day care because both [parents] have to work so that we can afford the rent. And how are we supposed to pay five euros a day for food for three children? It's not possible. (DE04)

Despite existing subsidies, families with several children face a significant financial burden.

The CM model is the most appropriate one to strengthen the procedural justice dimension (participation), but it is highly dependent on the voluntary work of parents. Due to increases in both parents working and after school closures during Covid-19, it has become challenging to find enough volunteers to help in the kitchen. One interviewee reported that there is a slight gender gap in the volunteer workforce, with more mothers and grandmothers involved in the cooking team. Also, the cook highlights that it is "a lot of work" (DE08) to guide volunteers and integrate them into the cooking process. Although the CM model has significant potential for involving students in menu planning and cooking, and integrating their feedback, the interviewees in both countries stated that they abstained from it because it would imply too much work.

The German CM model displays the strongest efforts to integrate dishes from diverse cultural backgrounds into the menu planning. As stated by one interviewee (DE08), a parent with a Moroccan background proposed a recipe with couscous and vegetables from her home region. The cook also expressed openness to aligning menu planning with pedagogical activities about sustainable food. For example, one of the schools participated in the pulse week organized by the Food Policy Council. Additionally, parents' voluntary work helps to keep meal prices very low. The cook emphasized that it was always an important goal of the association "to be able to offer a warm lunch for everyone at a reasonable price. So that it remains affordable for families with several children and more afternoon lessons" (DE08). This shows that the CM model has also strong potential for the recognition and distributive justice aspects.

In Table 1, we summarize the challenges and potentials for each model and for each sustainability dimension. The "+" shows the potentials, whereas "–" stands for the challenges.

5. Discussion

5.1. Key Findings

Our research has highlighted a shared awareness, expressed by all interviewed school canteen managers, of the social importance of common meals, emphasizing the social dimension of sustainability. The interviews revealed a common understanding of all the three dimensions of sustainability. None of the interviewees reduced sustainability to merely certified organic food. The local (in France) or regional (in Germany) aspect of sustainability appears to be taking priority over the ecological dimension, a phenomenon previously described by Morgane Esnault (2023). Additionally, the importance of the social accessibility of food has been emphasized throughout the study, particularly in the current context of rising food prices. This underlines the importance of the interplay between different sustainability dimensions in planning PSFP.

Table 1. Overview of challenges and potentials for each food management model and sustainability dimension.

School Food Management Model	Dimensions of Sustainability					
	Environmental (organic share, FLW)		Economic (local producers, regional value chains)		Social (accessibility, working conditions participation, diversity)	
	+	−	+	−	+	−
DPM model	Elected decision-makers have hands-on control of the purchasing power and can set high organic standards	Risk of backlash from high standard	No need to make profit: more margin for local and organic	Challenge to get processed regional organic food	Social pricing is easy to implement	Public employees' disinterest in adapting to diverse food habits
EPM model	Efficiency in sourcing organic products through existing platforms	Pressure to make profit, lack of transparency. Food waste reduction efforts are voluntarily and often organized as pedagogical projects	Cheaper products due to economies of scales	No integration of local food due to requirements of EU procurement law	Several cases with high engagement with pedagogical projects	Low acceptance rate by pupils
CM model	More space of action for going more organic than required	Often depending on public support to achieve environmental goals	Freedom to use own selection criteria and buy directly from local producers	Dependency on volunteers, non-professionals	Participation and education projects are easier due to the proximity	Limited workforce, voluntary help is often gendered

Source: Authors' own elaboration.

Regarding the just transition dimensions, our empirical insights reveal a great emphasis on "distributive justice" (Tribaldos & Kortetmäki, 2022) in current efforts for sustainable school food procurement. The idea of equal access for every child to healthy, sustainable food is implemented in France through social pricing systems. In Germany, low-income families can receive subsidies for school meals. However, it was shown that municipalities within the EPM model are dependent on finding catering companies when they issue a public tender. As a result, the catering company effectively defines the price, thus limiting accessibility. The dimensions of "recognition justice" and "procedural justice" (Tribaldos & Kortetmäki, 2022) are not pursued to the same extent. This is particularly true of recognition justice, as the food habits of minorities are perceived as an additional burden for staff, rather than something to be valued. Only a few interviewees saw the potential for innovative menu planning through integrating recipes from other cultural backgrounds that, for example, contain pulses as plant-based proteins (Graça et al., 2022; Magrini et al., 2021). Procedural

justice, which involves participatory formats in school food management systems, is also not a high priority. There are formats for participation in decision-making at the local and school levels, but they have been judged very laborious. Even when students do participate in designing meals, there is a general sense of a lack of time, recognition, and energy to adequately address the issue of participation. Only small-scale participatory actions, as part of food education programs, have been successful. However, several studies highlight the potential of involving students in meal preparation as part of a learning process about sustainability and empowering them as active agents of change. As a case study in Finland shows, this involvement requires cooperation between stakeholders to develop a "collaborative pedagogy" (Janhonen et al., 2024). Our findings show that a major constraint is the distance between the kitchen and the schools and the lack of direct connection between the cook and the children. This is a barrier found across the different models, although the DPM and CM models are more often associated with on-site kitchens. Thus, up to this point, school kitchens seem to have limited potential to fulfill overall just transition ideals, but major efforts in terms of the distributive justice dimension can be observed.

Table 2 summarizes the contributions of the three management models to the three dimensions of justice.

Table 2. Potentials and challenges regarding just transition dimensions.

	Distributive Justice	Procedural Justice	Recognition Justice
DPM	Transparency regarding the origin of products and direct partnerships with local producers Social pricing to ensure accessibility of school meals for low-income households	Governance linked to representative democracy: Elected members of the municipal council are the ones making decisions	Lack of motivation by municipality employees to propose culturally diversified meals
EPM	Little or no integration of regional value chains with local farmers Accessibility depends on market dynamics and subsidies that not all municipalities can provide	Limited possibilities regarding participation and education	Usually, pork-free meals offered as minimum tender requirements but no intention to go beyond this
CM	Cheaper meals due to parents' voluntary work High potential for direct partnerships with local producers	More room for maneuver regarding participation and active involvement of pupils and parents	Potential for more cultural diversity in meal composition

Source: Authors' own elaboration.

5.2. Strengths and Limits of the Study

This study contributes to the debate on PSFP due to its comparative perspective and the conceptual development of three school food management models.

As the results show, the DPM model offers great potential for sustainability, especially regarding the establishment of stable and direct partnerships with local producers. The CM model has a significant potential for facilitating greater participation from students and parents and for integrating diversity.

However, its potential is limited by the high level of voluntary engagement required from parents, which often consists of a highly gendered division of labor. It is sometimes perceived as a temporary transition phase from a dysfunctional situation to a more stable model. The EPM model has the potential to establish a high organic share in public tenders, but this potential is limited due to the dependency on market dynamics in a low-paid sector and a lack of transparency about the origin of ingredients. Therefore, although the interviewees recognize that the EPM model can be efficient and provide affordable food due to economies of scale, there remains a tendency towards distrust.

Although the results provide an insightful overview of the potentials and challenges of the different management models, we must acknowledge that the results of our study have limited generalizability: The number of interviews carried out was limited, and the different models were only approximately proportionally represented. Nevertheless, the fact that a significant proportion of the interviewees had experience with more than one of the different models enriched their perspective and allowed them to make well-informed comparisons.

5.3. Possible Measures and Policy Implications

Based on the results of our study, several implications can be deduced in terms of policy measures at different levels to improve sustainability outcomes in school catering. These recommendations are partly connected to the organization models but also go beyond them.

In accordance with the literature analysis in which legal constraints were identified as a barrier (Risku-Norja & Løes, 2017), European procurement law can be considered as a factor inhibiting the integration of regional value chains. One policy recommendation would be a reformulation of procurement law so that food is exempt from the free competition directive. Further, the EU should expand the focus from Green Public Procurement to Sustainable Public Procurement as a more holistic approach to include the promotion of the social and economic sustainability criteria in public procurement (Mengual et al., 2024).

At the national level, the comparison between the two countries indicated that national laws setting minimum standards contribute to better outcomes in terms of ecological sustainability. Whereas in most German cases, there is no data available about the actual amount of organic share and food waste, in France, public entities are required to measure their efforts. Germany's strategy of relying on voluntary initiatives has resulted in the emergence of several local projects promoting organic food, but as they depend on temporary project funding, their long-term impact is very limited. In this sense, the EGalim law could serve as an interesting example for setting binding quality standards instead of voluntary guidelines.

At the regional level, the lack of processing infrastructure and networks between farmers, processors, and canteens was perceived by many interviewees as a crucial barrier. This finding aligns with the literature analysis, which also identified this as a key constraint (Braun et al., 2018). Some municipalities, particularly those that are members of the OCN, are already engaged in offering networking events. Another policy recommendation emerging from the interviews is the installation of a digital matching platform by public authorities in order to facilitate more cooperative networking between canteens, regional (organic) farmers, and processors, such as mills or dairies. One example of such a platform is Agrilocal, provided by many French *départements* (Agrilocal, 2024).

At the local level, the findings show the need for binding political guidelines as a key factor for sustainability improvements, particularly regarding the organic share. Several authors also highlight the key role of local policymakers in fostering sustainable change through municipal decisions (Risku-Norja & Løes, 2017). This could be an official resolution by the municipal council that sets specific targets and timelines. Our study shows that municipalities with such a resolution demonstrate the best sustainability outcomes. Further, funding for staff, measures for monitoring the set goals, and local stakeholder involvement are essential to putting the resolution into practice (Quack & Teufel, 2020).

Education is a cross-cutting issue for policy measures. Instead of a single project depending on engaged individuals, sustainable school food education should be part of a comprehensive pedagogical approach in the curricula. Further, in both countries, there is insufficient training for catering professionals on developing more sustainable menu planning. Several municipalities are already engaged in providing coaching programs for integrating more organic, local, and seasonal ingredients. However, a further policy recommendation would be to expand cooking training programs for innovative menu planning with more plant-based varieties to more target groups, especially to cooks in vocational training and catering professionals. These observations align with the key factor identified in the literature analysis (Lopez et al., 2020): the motivation of cooking staff and corresponding efforts to scale up qualification and training programs. However, given the current shortage of skilled labor in the gastronomy and catering sector (Schäfer & Haack, 2023), this key factor is linked to improvements in working conditions and a greater appreciation of cooking as a profession (Hoinle & Klosterkamp, 2023).

5.4. Unanswered Questions and Future Research

Interviews were conducted with individuals in city administration and municipal policy positions. It is important to stress that all our interviewees were school food managers, whether elected municipal council members, executive board members, or staff. Many of them saw themselves as "transition agents," positioned between the ecological transition policy level, with which they agree, and the grassroots personnel—cooks, kitchen employees, and canteen service staff—who are often described as resistant and yet to be convinced of the benefits of the transition. This underlying social division should not be ignored. Therefore, further research could integrate the perspectives of those working "on the ground," such as kitchen employees or students. In this regard, another unanswered question is how to strengthen procedural justice by involving students and all other stakeholders of the school food value chain in decision-making processes.

Our study revealed some specific advantages and challenges of urban and rural areas regarding sustainability outcomes. Rural communities have more potential to integrate smallholders into value chains (Kraljevic & Zanasi, 2023), although this potential is not always realized as seen in the interview with DE07. Although we included interviewees from rural and urban areas (see Supplementary Material), future studies could analyze more deeply the specific potentials and challenges of urban and rural municipalities in transitions toward sustainable school food.

An issue often raised by interviewees was the aspect of carbon footprint and plant-based dishes in school meals (see also Graça et al., 2022). Future studies could focus on analyzing measures to promote more plant-based school meals in the context of sustainability transitions in PSFP.

Our study revealed a lack of awareness and lack of research regarding the recognition justice dimension. We suggest future studies to deepen the analysis of the diversity aspects of school food, especially in current times of increasing prejudices against migration. The issue of diversity has substantial potential for fostering sustainable school meals. School canteens could integrate knowledge about diverse food habits and recipes to develop innovative menu planning that enhances both procedural and recognition justice, whilst including more sustainable and plant-based dishes. This potential is still underexplored in current research and practice (Hoinle & Klosterkamp, 2023).

6. Conclusion

Our study aimed to explore the potentials and challenges in three school food management models and to identify key policy measures to promote just and sustainable school food procurement. Our analysis showed that the DPM model has a greater scope for improving sustainability outcomes, particularly regarding increasing the organic share, implementing food waste reduction measures, and integrating seasonal, fresh food through direct partnerships with local food providers. Additionally, the DPM model demonstrated greater potential for participation in terms of procedural justice. EPM models are highly dependent on market dynamics and only a few municipalities, with very engaged staff in administration, achieved good outcomes in terms of the organic share. CM models have significant potential for pedagogical approaches involving pupils and integrating diversity in terms of "recognition justice." Yet, they are dependent on parents' voluntary work. The comparison between the two countries indicated that national guidelines defining quality standards are more effective than voluntary incentives. Thus, our policy recommendations highlight, on the one hand, the importance of having concrete guidelines at the national level—or at least at the local level with a municipal council resolution—and, on the other hand, the role of educational approaches in making sustainable food an important issue in school curricula and professional training for cooks.

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Conflict of Interests

The authors declare no conflict of interests.

Supplementary Material

Supplementary material for this article is available online in the format provided by the authors (unedited).

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About the Authors

Birgit Hoinle is a postdoc researcher at the Department of Societal Transition and Agriculture at the University of Hohenheim, Germany. She holds a PhD in geography from the University of Hamburg. Her current research focuses on food justice, urban food policies, and school food. She is an active member of the Food Policy Council Tübingen.

Jocelyn Parot is a researcher at the Justus Liebig University in Giessen and a network coordinator for the international network URGENCI. His areas of expertise are in the sociology of sustainable food systems and short supply chains. He is also serving as an elected member of a municipal council, in charge of school food procurement.