



WORKING PAPER

School Meals Case Study: Denmark

Prepared by the Research Consortium for School Health and Nutrition,
an initiative of the School Meals Coalition

Submitted by:

Bent Egberg Mikkelsen, Professor, University of Copenhagen, Lund University

Betina Bergman Madsen, Chief Procurement Officer, Municipality of Copenhagen

Lone Loklindt, Deputy Mayor, Municipality of Frederiksberg

Casper Madsen, Rector, Læringshuset School

Angela Chang, Assoc Professor, University of Southern Denmark

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Historical background

Denmark is part of the Scandinavian/Nordic region of Europe with an area of 42,926 km² and a population of 5.9 million inhabitants. The main language is Danish, with Faroese, Greenlandic and German as minor languages. English as a second language is widely understood. Denmark is a constitutional monarchy with King Frederik as the newly installed head of state. Denmark operates under a representative parliamentary system with a head of government - the prime minister - and a head of state - the king. The latter's role is only representative and ceremonial in nature. As a country Denmark follows the Nordic model, which is characterized by a relatively high tax level and, at the same time, a high level of government-provided welfare services such as educational services, health care and child care. There is also a strong social security infrastructure with income transfers to retired people, disabled people, the unemployed, and students. As a consequence, Denmark has a relatively large public sector (European Union).

Country profile

Population and economics

Denmark's economy mainly rests on the service sector, which accounts for over three-quarters of employment and total annual value added. The most important sources of income are oil and other energy sources, pharmaceuticals, agricultural products, shipping, and services within the information and technology (IT) industry. The agricultural sector, traditionally Denmark's main industry, today accounts for around 1% of gross domestic product.

Table 1: Key data on population and economic indicators

Total population (2023)	Total number of population aged 5 to 19	Total number of population employed in agriculture sector	Gross Domestic Product per capita (2023)
5.947.000	981.964	4%	68.454 USD

Education

Education begins in public daycare as early as six months and the majority of Danish infants and toddlers attend pre-school day care. These are divided into "vuggestue" nurseries/daycare (0-3 years) and "børnehave" (kindergarten/preschool for children aged 3-6 years). The majority of the day care services are offered by municipalities, but privately organized day care is also offered. Formal schooling begins at the age of six and ends at age sixteen. Danish children attend either one of the close to 1050 public schools (Folkeskolen - people's school) or around 550 private schools (Ministry of Children & Education, 2024). Private schools are traditionally smaller and often practice a particular educational approach. They charge a user fee, whereas the public schools like "Folkeskolen" are tuition-free. All schools must comply with the national government's curriculum – "Fælles Mål (Common Goals)" which sets the basic requirements for primary education. Private schools can be chosen for religious reasons, including Christian,

Jewish, and Muslim schools. Also, English-language international schools, as well as French and German-language schools, are available.

There are two options of secondary education in Denmark: an academic and a vocational/technical pathway. Danish children take a nationwide standardized test that guides their choice of secondary education. After secondary education, Danish youth can choose from a range of options in the third layer of the educational pyramid. At Danish universities, students can get bachelor’s, master’s, and PhD degrees. In parallel, a student can pursue a bachelor’s degree in applied subjects at the university college.

Although public provision of meals at school plays a minor role, food is present to a certain degree in the form of home economics teaching at schools. In addition, there is a growing understanding of the need to integrate and embed food education into the school curriculum.

The concept of “linking Canteen with the Classroom” has been notably implemented in the initiatives like the Copenhagen Food Schools (Prag et al., 2023), the Paradisbakken Food School, the Læringshuset School Food Lab, the Go Cook, SESAM (Chapagain and Mikkelsen, 2023) and other similar projects and programmes that aim to integrate food practise with food literacy training in more holistic ways.

Table 2: Number of children involved in school in Denmark in 2023

Total number of students	Total number of schools	Average class size	Number of children involved in school meals	Percentage of children eligible for free school meals
678.544	1.066	20	65.000	1% ⁱ

Food security, nutrition and health

Food security, nutrition and health are dealt with in the Ministry of Health and the Ministry of Food, Fisheries and Agriculture. The Danish population experiences a high incidence and prevalence of non-communicable diseases. The risk factors and their impact on health outcomes are surveyed at different levels. The Danish Health Authority maintains the National Health Profile (Sundhedsstyrelsen, 2024). Data below are from Danish Health Data Authority (DHDA) and cover school aged children.

- Food insecurity: ND
- Stunting children from 5 to 19 years: ND
- Micronutrient deficiency from 5 to 19 years: ND
- Thinness in children from 5 to 19 years: ND
- Overweight in children from 5 to 19 years: 16.6 %
- Obesity in children from 5 to 19 years: 3.3 %

ⁱ Calculated from Copenhagen and Læsø municipalities. In the first case it covers only free school meal entitlement Internet in case it is free school meals for all. The percentage is calculated as fraction off the number of children involved in school meals in total (column 4)

Design and implementation of the school meal programmes

Description

Over the past 150 years, Denmark's school meals system has undergone significant changes, beginning with limited public intervention, unlike Sweden and Finland. Early efforts focused on providing meals to socially vulnerable children were led by private philanthropic associations. Political debate on school meals emerged in the late 19th century, leading to the first bill on collective school meals in 1899. However, these programmes were largely limited to winter months, and free meals for all children remained a contentious issue. By the 1930s, open-faced sandwiches replaced traditional hot meals, amid opposition arguing that feeding children was a parental responsibility. In 1959, the government abolished the school meals scheme, shifting focus to school milk programmes. Over the last two decades, various initiatives have emerged to promote school food programmes. While no national strategy exists, both the National Food Agency and the Danish Veterinary and Food Administration, along with local organizations, have worked in promoting school food programmes. These new efforts aim to address not only nutrition but also social cohesion, well-being, and local community benefits. School meals programmes in Denmark remain largely unregulated at the national level, with responsibilities left to local municipalities boards, market forces, and parents to provide a lunch pack. In 2009, the Municipality of Copenhagen launched the EAT school meals program with the Administration for Children and Youth. Today, about 15 cities have participated in providing school meals to some public schools. However, the service remains inconsistent and faces various challenges.

Objectives

Since no national School food strategy exists, no formally adopted objectives are in place. It can be speculated, based on insights from local municipal cases described later in this working paper and Annex 2, that the main objective of school- or municipality-organised programmes is to ensure pupils have access to a nutritious lunch option. However, other municipalities take a broader view of objectives and consider additional benefits such as learning environments, enhanced social connectedness at school, the potential to reduce conflict levels, use school meals provision as an opportunity for developing educational initiatives and also opportunities to support local food economies. As such, it seems that a broader understanding of the direct and indirect benefits of school meals programmes has started spreading in recent years. This also means that more stakeholders are engaging in discussions about future school meals programmes.

Coverage

No statistical data is collected on school meals programmes in Denmark. As a result, assessments of the coverage of various meal services must rely on other sources. Based on

insights from the four major Danish web services for school food ordering (Skolemad.dk, Skolemad.nu, God Skolemad and Kanpla), it can be estimated that around 665 schools are offering parent-paid school meals or food service. Together with the 65 schools in Copenhagen (Food Schools and Eat) and the city of Læsø's school meals programmes, it can be estimated that the uptake of school lunches is around 10%. Others bring lunch from home, skip lunch, or leave school grounds to buy food from corner stores, fast food outlets, supermarkets, or minimarkets nearby.

Targeting

In Copenhagen's programme, free school meal entitlement scheme (FSME) has been developed for low-income families where fees are fully or partially waived. The underlying principles and administrative procedures have now been approved in the national school strategy (Fælles Mål). The FSME has not been subject to evaluation or scientific publishing but can be studied from this source: <https://skolemad-klub.kk.dk/>

Implementation

In some cases, meals are prepared by staff at school, while in others, pupils participate in the preparation. Alternatively, meals may be delivered from a central food service unit, which can be municipally or privately owned (appendix 2). Centrally based satellite configurations rely on preparation at a central food service unit, with food delivered either ready-made or semi-prepared. Semi-prepared meals are styled and arranged in a satellite kitchen by students and kitchen staff at the school. These configurations come in two versions: food is either delivered by an institutional municipal food service unit or a private food service operator. In both cases, meals can be consumed in the classroom, a central cafeteria, or a canteen-style arrangement where facilities are available. Centrally based satellite configurations can involve staff, students, teachers, volunteers, or a combination of these.

Decentral configurations, on the other hand, involve schools with their own industrial or semi-industrial food service production units and dedicated staff. These setups may also involve students, teachers, volunteers, or a mix of participants. Decentral configurations require schools to have suitable premises, including food service and sit-down eating facilities. While older schools are less likely to have these, schools built after the 1960s are more likely to include sit-down and food service spaces. An extension of the decentral configuration involves fitting food service spaces with additional facilities that actively involve students in the food production process while serving as a pedagogical tool.

Table 3: Typology of school meals solutions

Central solutions	
Private subcontracting	Central commercial catering solutions offered to schools having only satellite kitchens reception facilities.
Municipal institutional food service units	Central municipal catering solutions provided to schools having only satellite kitchens and reception facilities.
Decentral solutions	
Decentral production configuration	A local food service unit with locally employed staff
Pedagogical integration	A local food service unit adapted and extended with teaching facilities and involvement of pupils in the food service operation
Pedagogical integration and attachment to STEM classes	Alocal food service unit adapted and extended with teaching facilities and involvement of pupils in the food service operation and integration and bridgebuilding to makerspaces and science teaching
Integration of volunteers	Alocal food service unit adapted and extended with teaching facilities and involvement of volunteers in the food service operation
Integration of growing facilities	Alocal food service unit or a centrally based set-up extended with gardening and cultivation

Meal type

School- or municipally organised school meals programmes, where they exist, offer one or more food options. Food sold in of cafeterias, canteens and tuck shops traditionally included products like milk, bread, sandwiches and fruit (Kamuk et al., 2018). However, in recent years, more advanced and prepared foods have been introduced, such as hot and cold meals, including traditional Danish open-faced sandwiches, salads and plated meals. In addition to meal types, publicly organized meal schemes can be categorized according to their preparation and delivery layouts, as described in the implementation section.

Nutritional norms

Denmark has a long tradition if issuing nutritional guidelines for different groups of citizens and public food service categories. Official nutritional guidelines are available from the Danish Veterinary and Food Administration (Fødevarestyrelsen), but they are not mandatory. However, it is estimated that at least some school food providers use these guidelines as inspiration, and they are frequently referenced in the marketing materials. Denmark published its first set of food-based dietary guidelines in the 1970s, and they have been revised several times over the decades. In 2021, the guidelines were revised again to address the climate crisis by focusing on both healthy and climate-friendly food. The underlying scientific foundation for these revisions is outlined in “Guidance for sustainable healthy diets - Scientific background for revising the Danish Food Based Dietary Guidelines “FBDGs”(Lassen et al., 2020). The Official Dietary Guidelines are an example of the Nordic partnership model in action. They were developed by the Ministry of Food, Agriculture and Fisheries in collaboration with the Ministry of Climate, Energy and Utilities, the Danish Health Authority, the National Food Institute at the Technical

University of Denmark (DTU), as well as consumer organizations, non-governmental organizations and, the food and retail industry.

Food procurement

There is no standardised approach to procuring food for the various school meals programmes that exist in Denmark. In some municipalities, such as Copenhagen, procurement policies are in place for different product categories in public institutional foodservice, including meals for young people at school or kindergartens (Mikkelsen & Madsen, 2020). The city has over the past decade developed an ambitious strategy for how to buy its food for different types of institutional catering including school food (Mikkelsen & Madsen, 2021). Copenhagen has opted for onsite kitchens in its 0-6-year institutions and, currently, in one-third of its schools. The city currently offers two options for food at school: the FoodSchool concept and the EAT concept. Both are based on a combined parents and public financing. Both concepts require the parents to pre-order on a digital platform. The chefs are employed by the municipality, and plan the menu independently, with an emphasis on procurement of healthy and sustainable ingredients. Only smaller contracts are signed with providers of ready-made meals. The tenders are guided by a politically determined strategy, including objectives focused on ecology, green transport, reduced packaging, and a more sustainable food system. Tenders are also used to bridge rural and urban areas, and it is used by some municipalities to divide the procurement agreements into smaller agreements, which are more specifically targeted at the needs of the market. A notable example is Copenhagen's potato-kit, which not only included potato delivery but also teaching materials that encouraged pupils to learn how to grow their own potatoes as part of classroom activities.

In some municipalities, food procurement for school foodservice is coordinated through official agreements with the national purchasing body SKI. In most other cases, procurement is handled by commercial food service suppliers responsible for meals delivery to schools. Denmark has a strong tradition of organic food and farming, and procurement for the public sector has been developed over the past more than three decades. In the case of the municipality of Copenhagen, organic food procurement resulted in increasing the amount of organic food in public foodservice. These policies aim to empower municipalities to influence food system sustainability. Given that close to one million meals are served daily in public institutions across Denmark, innovative public procurement is widely support as part of a broader green public procurement strategy. However, since the school food practices are not universal, the role of school food within public food procurement remains limited.

It should further be noted that approximately one-third of the total school meals service volume is operated by private commercial food suppliers, who follow their own non-public procurement strategies. Estimates suggest that if a universal free school meals scheme were to be adopted, the total food procurement volume for public institutional food service would double.

Legal framework and public policy evolution

There is no official legal framework for school meals programmes in Denmark, but the public debate on the issue is highly active. NGOs, political parties, researchers, and politicians at both the local and national levels participate in meetings, political salons, festivals, social media discussions, and written media. Various organisations such as the Danish Dietetic Association, Danish Agriculture & Food Council, Diabetes Association, Børns Vilkår, Radikale Venstre, School Food For All (Skolemad for Alle), have launched specific proposals to develop and implement school meals programmes. At the same time, debates have ongoing about the financing and coverage of school food. For instance, see meetings of the Danish Parliamentⁱⁱ and the World Food Summit.ⁱⁱⁱ The policy evolution reached an all time high in November 2024 when the government decided to adopt a pilot program for next 4 years to promote public food at school.

Costs of implementation

Since there is no national school meals programme, it is not possible to provide exact figures on the cost of implementation. However, based on available web resources and a Delphi-method-inspired survey technique among leading suppliers and school meal planners, it is possible to estimate both the annual running costs and the investment costs for the necessary infrastructure in the form of foodservice facilities.

The estimated production price, which in many cases also constitutes the parental payment, is approximately DKK 45 per meal. This brings the annual running cost of a fully funded national scheme to just over DKK 6 billion (0.8 billion €) annually, excluding additional ongoing costs such as quality assurance, continuing education, continuous innovation, and knowledge dissemination. The one-time investment required for infrastructure (e.g., food service equipment, dining facilities, and potentially new buildings) is estimated at just over DKK 3.6 billion. If costs for other startup needs and central infrastructure are included, the total one-time infrastructure investment rises to DKK 4 billion (0.54 billion €).

In summary, the costs are approximately DKK 6 billion annually for running and DKK 4 billion in one-time infrastructure investments. These figures are based on the assumption that all 97 municipalities will establish one municipal food school (the Madskole concept) while other schools will have to invest in basic food service and sit-down eating facilities. It is further assumed that one-quarter of existing schools (newer schools) already have most of the necessary facilities, while half of the older schools lack suitable premises and will need to make significant investments. Full details of the calculation model are available in Mikkelsen (2024).

ⁱⁱ <https://eventsignup.ku.dk/schoolfoodforthefuture>

ⁱⁱⁱ <https://wfs.dk/side-events/healthy-climate-friendly-school-foods-coming-to-a-place-near-you>

Table 4: Estimated cost of school meals

Number of children	678.544
Average cost of a meal	45 DKK
Cost of raw material	17 DKK
Labour cost, adm. & production costs	28 DKK
Family participation	10 %
City budget per child and meal	0 - 45 DKK ^{iv}
Government budget per child and meal	ND
Number of teaching days in one academic year	200
Number of school meal days in one academic year	200

ND: not determined. DKK: Danish krone (1 DKK = 7.46€ in January 2025).

Figures are estimated based on interviews, ad-hoc queries and open available sources. Please note that there are considerable differences between municipalities. Please refer to appendix 2 for more details on the different city programs.

Financing

All school food programmes organized by schools or municipalities are parent-paid, with one exception – the Læsø municipality programme. The latter made Danish school food history in 2023 by becoming the first to adopt a municipality-funded school food programme for all pupils (Mikkelsen, 2023). In addition, a free school meals entitlement scheme exists. Based on experiences from the municipality of Copenhagen, this scheme can be adopted by other municipalities with paid lunch arrangements to partially or fully waive costs to low-income families. Future school meals programme financing can draw insights from the legal framework of parent-paid lunch arrangements (Ministry of Children and Education, 2024). Under this framework, the standard financing model is approximately 50% funded by the municipality and 50% by parents. However, the administration of parent-paid meals can be burdensome for municipalities. Needless to say, free universal school meals would reduce this administrative burden.

One of the most important outcomes of the discussion on the future financing of school lunches has been that the government has launched a four-year pilot program to promote school food. The pilot program that will provide free school meals is part of Denmark's public 2025 budget was adopted in November 2024. The ruling coalition government along with the parties SF and the Social Liberals (Radikale Venstre) allocated 854 million DKK – around million 115 € - over the next 4 years to a pilot scheme in which existing early mover projects around the country will be tested and in which the knowledge base for school meal programs will be strengthened. The agreement is to include also wellbeing and social aspects of food at school in the development and in the evaluation. As such the approach to food at school is a broad and holistic one.

^{iv} The municipal subsidy varies between 0 and 50%. In some cases, however, with the Free School Meal Entitlement (FSME), the subsidy is 100% with nothing to pay for the family.

Monitoring and evaluation

Danish school food provision is not routinely monitored or evaluated by authorities. However, research projects have been initiated to cover this emerging practice with an aim of measuring the impacts of new programmes. As a result, the current state-of-the-art knowledge that exists about school meals and food at school in Denmark has been collected mainly by researchers. However, it can be anticipated that a nationwide programme for food at school in Denmark would include the establishment of a monitoring and data collection. This system would track Key Performance Indicators, sustainability proxies, and other statistics to evaluate the performance of a nationwide programme.

Lessons learned and best practices

Lessons learned is to a large extent based on pilot projects and best practices developed and tested at school or municipal level over the past 10 – 15 years. In some cases, also private suppliers have been instrumental in developing the best practices. The following gives a brief overview of the municipal actions followed by a description of some of the significant project actions. Since no central authoritative statistics exist the following work-around was made. Actions were searched for through professional networks on social media and through a search on publicly available information. As such the overview does not claim to be exhaustive. Municipality driven actions are in most cases driven by an underlying food & nutrition policy, although not all schools in the school meal active municipalities are necessarily included in an active meal provisioning scheme. In addition to the municipality driven actions, more than 200 schools are covered by some kind of individual school driven solution in most cases organized with a local private or public food service supplier. The latter in most cases draws on the public food service infrastructure that already exist in the municipality and that are supplying food for nursing homes and meals on wheels schemes.

- **Substantial stakeholder support to school food.** Both among pupils and parents there is now a majority in favor of school meals. Six out of ten parents are, according to Cevea think tank (Jensen, 2022), in favor of school meals and free school meals came in on a second place on the Schools Election 2023 (“Skolevalg 23”) – the pupils associations’ self-organized nationwide poll.
- **Broad interest in municipal school food actions.** The overview of municipality driven actions covers 16 municipalities which corresponds to 16% of all Danish municipalities (see in annex 1). However, in terms of municipal schools the sample covers 327 of Denmark’s 1050 municipal schools – or close to one third. The sample is selective in the sense that the search for information has been based on previous knowledge of who is running municipality driven school actions. An extended and adapted snowballing technique approach were followed in which we took as a point of departure the cases that has already been profiled and were public on different physical and social media. We used professional networks and asked key informants about other cases where a given municipality would have a strategy or policy in that domain. It is important to note that in addition a lot of schools are running school based actions. It is also important to note that even if a

municipality has a school meal programme policy it does not necessarily mean that all schools in the municipality are offering school food service.

- **Innovations is driven by diverse project actions.** Innovation and development of local solutions has been taken place in a rather projectivized manner over the past couple of decades. The table in appendix 2 is a non-exhaustive list of some of the actions that has been taken place over the past decades to establish a good evidence base for Danish future school food.
- **Policy and strategy development has been intense.** As one of the outcomes from the current very active debate on the future of Danish school meal programmes, several recommendations have been put forward from different stakeholders, including the Danish Dietetic Association, the political parties Danish Social Liberal Party (RV), Moderates (M) and Alternativet (Å). Recommendations have also been made by Madtanken (Madkulturen, 2024) The Food Tank, the School Food Camp 2024 (Mejeriforeningen, 2024), and the World Food Summit session 2022 on School Food (World Food Summit, 2022) and Skolemad2030 (SchoolFood2030, 2022). The Danish Dietetic Association in cooperation with Agriculture & Food (LF), The Diabetes Association and Danish School Pupils association has put a proposal forward (Kost.dk, 2023).
- **Teacher agreements and eating environments are important.** An ambitious strategy for food at school needs to integrate the teaching profession both when it comes to the integration of food topics in the classroom activities, but also in creating social learning around the lunch break.
- **Pedagogical integration of food topics is key.** Proper integration of food at school into the classroom and the pedagogical learning space is crucial for a future proof “food at school” strategy. Such integration should make sure that not only healthy and sustainable food is served but that healthy and sustainable transition and learning can take place in the minds of the children. An important part of such integration is to link the provision of food to growing and school gardening activities as well as linking food provision to the SDG and science teaching.
- **Food service infrastructure needs development.** Local experiences so far have not identified the one food service configuration that is superior to others. They show that success depends on the local context and is related to the idea of multiple benefits for local stakeholders. Therefore, it is important not to think about one standard configuration but to explore and test different solutions including public provision, commercial provision and public private partnership arrangements.
- **Good eating facilities are scarce.** Getting the most out of an investment in healthy and sustainable food at school for the future depends on seeing the whole picture and creating lunch break environments that secure social interaction and commensality through meal hosts and teacher involvement. Experiences show that a good social atmosphere with teacher supervision and time is crucial to getting the most out of the psycho-social dimensions of school meals. Currently, many schools are without well suited spaces.
- **Labelling schemes and monitoring is in demand.** Experience from the modernization of public food shows that monitoring as well as labelling of sustainability indicators are important. Such labelling should include proxies of climate impact, nutritional indicators,

use of plant foods, procurement of organic foods, degree of seasonality as well as locality and food waste are key to secure public and policy support. Proper monitoring can be done in cooperation with Statistics Denmark and should be done in cooperation between practitioners, policy makers and researchers to secure a firm evidence base.

- **Local community integration and benefits should not be overlooked.** Experiences show that the long-term survival and success of a school meal programme depends on an approach that involves local stakeholders. School feeding is not only a matter of nutritional benefits but also of identifying and utilising the multiple benefits for all stakeholders expanding beyond the school to local community actors. Here the challenge is to create forms of local cooperation for instance through the use of Living Labs and Food Councils that can accommodate this kind of engagement and local policy making.
- **Pupils and parents' involvement and engagement is key.** Pupils and parents are key to the long-term success of an ambitious food at school strategy. An important challenge is therefore to create frameworks and infrastructures that can accommodate this involvement and to make sure that pupils councils are involved. In some cases, the Living Lab and a Community of Practice approach has been used as the foundation, but more work is to be done to create long lasting and solid engagement forums (see instance in item 6).
- **Applying a multistakeholder approach is required.** The new and holistic broad way to look at food at schools and school made programmes has opened up for an interest in identifying the broad range of motivations and benefits as well as the range of local beneficiaries. This can be utilised to create local action groups. The idea is to create a local democratic forum for all voices to be heard in any form that can make the most out of the existing knowledge that already exists and that can add to the more civil benefits for the local food economy.
- **A well-developed financing & payment strategy is necessary.** Experiences show that the uptake of school meals is heavily dependent on who should pay for it the payment. Needless to say, if school meals are made free, this introduces an automatic collectivity and universality. This should be compared to the user participation in parent paid programmes that is normally around 20 to 30%. A universal programme creates multiple benefits, such as large procurement volumes, less food waste, more social cohesion and inclusion of all pupils as well as possibilities for good eating environments. In addition, much less bureaucracy and administration needed.
- **Building on existing body of knowledge is important.** Although no national strategy exists, plenty of local experiences do. Therefore, it is important to take advantage of what is already been done by piloting and further development and evaluation of existing promising cases and include different approaches and solutions. Since the innovation efforts in Denmark fall together with similar efforts in Norway and redesign and rethinking of the Swedish and Finnish cases, it would be straightforward to build on the Nordic Cooperation on School food and to use the food cooperation under the Nordic Council of Ministers as the foundation. There are obvious advantages to be harnessed in creating stronger links to the evidence research base that exists within the framework of the School Meal Coalition.

Challenges

Based on the above findings, the recent years of public debate on school meals and the recent government decision on a pilot program. for school lunches the following challenges can be listed.

Passive feeding or educational integration. An important theme that has been underlined through the data collection for the case study is that pupils' involvement in production and the inclusion of food actions in the pedagogical work in Sustainable Development Goals teaching are important. Such integrations might at the same time contribute to a broader engagement among pupils, teachers and parents. **School meals as a free or tax paid service.** All experience shows that the full benefits of school meals are only achieved when all students eat. Basing schemes on opt-in approaches and payment contributes to increasing stigma and is resource-intensive in terms of administration and payment. On the other hand, experience has also shown that partial user payment can increase support and uptake in some cases.

Developing the evidence base. Ongoing maintenance of the evidence on the effects of school meals is important for the long-term survival of the schemes. With the increased focus that has come on research in the field and the utilization of experiences from international organizations such as the School Meal Coalition, the World Bank, OECD, etc., a broad consensus has emerged that research should focus on the areas where the evidence is weak. Thus, there is good evidence for the nutritional benefits of public-school food and its influence on the nutritional quality of these meals. On the other hand, there is a lack of evidence for well-being, well-being, social cohesion, sense of school communities and for learning outcomes and academic achievement.

School lunches for everyone or for someone. Closely related to the question of financing is the question of school food as a collective or individual approach. In other words, whether everyone participates in the meal or whether participation in the school meal should be an opt-in option. Commensality research clearly shows that clear benefits are achieved when a group of individuals eat together and when this group additionally eats the same meal.

Establishing a quality scheme. An important element is to ensure that stakeholders around the school food can trust the quality of school food. This applies to the nutritional quality, the sustainability related and sensory quality. The debate has shown that there is a need to prepare a quality scheme for nutrient content, for climate impact, for the proportion of organic raw materials, the proportion of plant-based ingredients, the amount of food waste, for the proportion of locally produced food and the seasonality of foods. It would be a help to the municipalities in relation to public health and climate efforts and will help to create confidence among parents.

Advice and guidance of municipalities. Municipalities are the ones that have the local responsibility for school food. Although they already have expertise on running other types of public and institutional catering it is important that the knowledge a know how is upgraded. So far experience has shown numerous examples of failed school meal schemes. The research for this case study has clearly shown that municipalities collectively lack state guidance and advice to a much greater extent than what is currently offered. Such guidance could be done, for example, by establishing continuous collection of evidence and curation and communication of

that through an accessible web service.

Student involvement. Experiences from Denmark and neighbouring Sweden has clearly shown that student involvement development and maintenance of the school made programmes is imperative. This can be addressed through democratic and participatory initiatives, e.g. by using the Living Lab innovation format as well as through involvement in cooking using the foodschool approach.

Gathering of experiences from spearhead municipality. A number of forward-looking municipalities have already been working on pilot projects around school meals for a number of years, including Copenhagen, Frederiksberg, Guldborgsund, Bornholm, Svendborg, Helsingør, Aarhus, Samsø and Læsø. But so far only limited knowledge transfer has been taking place. It seems obvious to get this know how synthesized and communicated to other municipalities.

Statistical monitoring. The data collection has shown that there is a striking lack of useful key figures regarding, for example, the layout of kitchens, operating costs, personal prices, labour costs and other figures. However, the mapping that has been done can be used as a template to systematize the future work and establish a scheme in Statistics Denmark. Setting up such a system will be a great help for future decisions about future school meals, which will naturally involve considerable costs.

Support for international cooperation. School food is an international one, both in terms of the international school food vision and in terms of the opportunities for increased Nordic co-operation. The latter will be particularly obvious, and there is great interest in the other countries in exchanging experiences in school meals and developing a common Nordic charter. This could be done by, for example, establishing a collaboration between the World Food Programme, Madkulturen, the Danish Veterinary and Food Administration's Ministry of Foreign Affairs' sector advisory and relevant universities.

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Corresponding author

Bent Egberg Mikkelsen, UCPH: bemi@ign.ku.dk

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Annexes

Appendix 1

Examples of partnership-oriented actions that have specific food & nutrition-oriented goals and targets are WholeGrain Partnership/Fuldkornspartnerskabet, the Council for Healthy Food/Rådet for Sund Mad, Food partnership for health and climate (Fødevarepartnerskabet for sundhed og klima), and OneThird Thinktank (Partnership against Food Waste). Common to them all is that they are initiated by the public either the Ministry or its agencies and are based on an ambition of broadly representing the stakeholders in the public, the market and the civil society. As such the actions mainly follow a Multi Actor Approach (MAA) and a Nordic partnership oriented approach (Lozano et al., 2008).

Appendix 2 - Methodological notes

The methodology is inspired by the work on the social constitution of organisations and it assumes that the present structure of a socio-technical construct such as a school food system can be understood as a piece of “frozen history”. The present situation and the current version of the construct will naturally rest on the historical development. As such the first step in the case study was to map the history of school food. It at the same time forms a backdrop to understanding why Denmark ended up having no national strategy or plan as opposed to neighboring countries. Since no central statistics for monitoring data exists the mapping was done using a snowball technique. It ended up in 16 cases that was mapped using a non-analytical fact-based descriptive approach. Using the snowballing technique experts from existing practitioner and research networks were identified through social media. Through these contacts new cases were identified. The inclusion criteria to become a case was that the municipality in some way should have a strategy, policy or other activity related to the idea of supporting local schools in providing school food. As such the description does not claim to be exhaustive. However, it claims to be as representative as possible taking the given resources that was available for the case study into account. The next step was to identify the problems in the current state of the art in eating at school. This was done using an adapted text analysis approach in which problems frequently mentioned was identified along with potentials and solutions. This provided a list of problem areas that is listed below. We used a customized textual analysis model to look for both problems and solutions. In addition, we searched for evidence of stakeholders’ engagement in order to create a short list of “perceived benefits for which stakeholders”. As such the empirical foundation is made up by papers, practice reports, public opinion articles and project output.

Based on these different sources a list of nine problems areas that stakeholders find important can be listed, they were: unhealthy eating and high intake of ultra processed food, suboptimal intake of fruit & vegetables, lunch skipping and lunch pack throwing, poor learning climate due to adverse eating patterns, lack of social cohesion due to unorganized meal situations with no teacher involvement, out dated food teaching practices due to lack of modernized food literacy

training materials, lack of growing and cultivation literacy due to food systems alienation and lack of application of whole school approaches and local community involvement.

Copenhagen

Copenhagen Municipality is Denmark's largest municipality (inhabitants: 602.500) with 78 schools and one of more municipalities in the capital region of the country. The municipality has over the past decades experimented with different kinds of school meal programmes including the EAT programme and Food Schools, both concepts launched in 2009 as part of the municipality's ambition to improve the quality of the public meals. For the EAT program a central public food service unit was established, where food is centrally produced and subsequently delivered to 50 local schools. At the schools the food is made ready for serving by a local employee and students in charge. It is reheated and delivered to the classrooms. A website is in operation that allows parents to read about the various menus, organic initiatives, and strategies which the municipality is pursuing. Parents also have to order and pay food for their children over the website. Each school has a part time employee, who together with the 6th graders takes care of preparing and distributing the food received from the central kitchen. The majority of schools do not have a cafeteria or sit-down dining facilities. It is the municipality who outlines the overall framework and principles for the food prepared in the central food service unit. The central kitchen is responsible for training of the local employees in running the decentral school food outlets. A Reduced Rate School Meals Entitlement program has been developed for low-income families and the principle of scheme is available to other municipalities. At 22 schools the municipality operates an advanced version of food at school so-called "Food schools" The goals of Food Schools are local production and substantial involvement of pupils in the preparation and serving process. All food schools have their own semi-industrial kitchen and a dining area.

Frederiksberg

Frederiksberg municipality (inhabitants 105.000) has some experience with municipality wide school food provision system for its 14 schools, however it is currently under revision. A system based on a third-party subcontractor has recently been given up due to a negative bottom line. Thus, a new tender attracted no bids. The municipality is now instead looking for alternatives and is engaged in a different project and with research partners to investigate how a future food at school approach should look like. The municipality is currently testing different solutions and are participating in different research projects related to food at school to gain a good foundation for future decisions.

Gldsaxe

The municipality (inhabitants: 69.700) has recently cancelled an in-house municipality driven school meals service programme for its 11 schools due to lack of financial resources. Instead, it has now established a new system based on a third-party subcontractor. However, complaints have been made due to higher prices that are not affordable for lower income families.

Høje Taastrup

The municipality (inhabitants 50.700) does not routinely offer school meals at its 8 schools. However, at the Læringshuset an experimental school food service programme is being developed based on integration in the pedagogical activities and development of a local school FoodLab. In addition, they participate in the SESAM programme, a research programme that tries to combine school food service and active science-oriented learning about food systems.

Bornholm

The island of Bornholm (inhabitants 39.600) is a so-called regional municipality and has 8 schools. The school food strategy at the island is practiced through the school of Paradisbakken in the town of Nexø. Through a special investment the school has been fitted with a full industrial kitchen, a cafeteria, a greenhouse for learning purposes and other facilities. The school food service programme is based on children's participation and resembles the concept of food schools that is found in Copenhagen. The school has 600 students, and the uptake of school food is currently 50%.

Lolland

Lolland municipality has 40.600 inhabitants approx. 2,300 pupils, 10 schools and village school schemes. After the summer holidays 2024, the number will be reduced to 8 (not including special schools). There is no financial support for school meals from the municipality. There is no overarching policy at municipal level regarding school meals and associated schemes. There have been changing policies in the area since 2008, when subsidies were given for food schemes at all schools until today where there is no financial support. The decision to implement food schemes at the individual schools is made decentralized at the individual schools, based on the schools' own budgets. The school board adopts budgets and accounts. Some schools have had a fruit scheme, but in several cases, it has been stopped either because of waste or finances. Some schools have been registered with the food bank, where they receive products for a fixed annual payment. It is not known which schools have the scheme and which have stopped the scheme due to finances etc. Some schools have breakfast clubs where everyone can get free breakfast, the products come from the food bank. If a school considers that there are resources within its own budget, it has the opportunity to decide for itself whether a canteen with employees should be established, or whether a food stall can be run by the school's oldest students. For instance, the Borgerskolen in Maribo has a canteen with staff.

Guldborgsund

Guldborgsund municipality has 59.766 inhabitants, approx. 4750 pupils in 13 public schools and village school schemes. Further, there are four private schools with a total of approximately 1000 pupils. There is interest but no financial support for school meals from the municipality and no overarching policy at municipal level regarding school meals although there has been made more attempts to develop school meals. The mandate to implement food schemes at the individual schools is in principle made decentralized to the individual schools, based on the schools' own budgets. But in reality, the decision on financing is left to the municipality. Saksøbing School has until recently been running a service with a public kitchen supplier for

their school food stall, but the service has been discontinued for lack of resources. Some schools have had fruit schemes, but most schemes are short-lived and heavily dependent on individuals, who can run them on a regular, if not daily, basis.

Aarhus

Aarhus is Denmark's second largest municipality (inhabitants 336.400) with 48 schools and has adopted a strategy to introduce parent paid school lunch and implementation is expected to begin in 2026. At present a strategy for placement of the foodservice facilities at the local schools is being developed and synchronized with the general maintenance and renewal of the school premises.

Aalborg

The municipality of Aalborg is Denmark's third largest municipality (inhabitants 211.700) and the largest city in the north of Jutland. The municipality of Aalborg has over the past decade been developing experiences within food at school first with focus on organic foods and more recently also climate-friendly food based on a recently adopted food strategy. At some of the 52 schools the municipality has previously been experimenting with school meals provision with inspiration from the LOMA concept.

Samsø

The municipality of Samsø (inhabitants: 3.700) has adopted a parent paid school meals programme in 2023 for the local school and is currently developing the food service infrastructure and logistics-based on existing institutional food service facilities in the municipality. In May 2024 the programme was aborted due to problems with sit-down eating facilities.

Læsø

The school meals scheme in the municipality of Læsø (inhabitants: 1.800) started as a pilot scheme in January 2023 at the local school. It was established on the initiative of the school board and is based on the experiences from the children's house. The school meals scheme is now permanent based on the insights from a pilot scheme that was to run in 2023. The scheme is organized around a local supplier delivery agreement with teachers on a participatory lunch in the communal dining area and a division of the pupils in 2 groups according to age. The goal of the programme is to make sure all pupils get a decent lunch and are as well pre subcontractorpared for the teaching also after the lunch break. The programme includes a "don't leave school during school hours" principle. The programme further aims to strengthen local supply and to benefit the local food economy.

Tønder

The municipality of Tønder with 4 schools spread across 10 registers (inhabitants: 36.000; in the Tønder city: 7.500) has, as one of the first of its kind been having school food on the local government agenda from the last local elections in 2022. The issue is still on the municipal agenda and local schools have been asked to develop and evaluate experiences locally.

Horsens

The municipality of Horsens with 15 schools (inhabitants 63.200) has until recently a municipal coordinated system for school meals offered at the 18 different schools in the municipality. The programme ran from 2018 to the end of 2023 and was outsourced to a private commercial food service operator.

Esbjerg

The municipality of Esbjerg (inhabitants 116.000) is Denmark's sixth largest municipality with 15 schools. It adopts a school meals policy that offers food in various forms at eight of the 25 schools in the municipality. The school meals services are coordinated by the municipality through a common card-based payment system.

Odense

Odense is Denmark's fourth largest municipality (inhabitants 201.000) with 39 schools and has until now only few experiences in municipality organized school food. However, the city has recently adopted a policy to roll out school meals service at more schools and recently a call for tender has been issued. The municipality is now in the process of choosing a private subcontractor to deliver meals.

Svendborg

The Municipality of Svendborg (inhabitants 27.000) operates the LOMA concept in 3 out of 11 municipal schools. It is based on a Whole School Approach coupling food service with pedagogical interventions as well as focus on short locally based supply chains and parent involvement. It used the official Meal Label (Måltidsmærket) issued by the National Food Agency.

Appendix 3

Project	Aim	Year	Link
Generation Healthier Kids	To test different school-based intervention components in PA and healthier eating (Generation Sunde Børn)	2023	https://www.sdu.dk/da/forskning/gsb
Undurn/New Nordic Food4Youth	To develop new ideas and directions for both foodpraxis and curricula in relation to school food and nutrition based on the idea of new nordic food	2007-2008	https://vbn.aau.dk/da/projects/new-nordic-food-for-youth-at-school
Evius	To evaluate interventions towards young people in school food programmes	2009-2010	https://www.capfoods.aau.dk/Kindergarten+%26+schools/evius/
iPOPY	To develop innovative approaches to Public Organic food Procurement for Youth with a focus on public food serving for young people in five European countries	2008-2011	https://www.coreorganic.org/core1/research/projects/ipopy/index.html
Skolemad2030	To exchange ideas in Nordic and international context that can contribute to a shaping of future Danish food at school	2022	https://video.ku.dk/video/79595507/skolemad-2030-vaer-med-til-at
Healthy & Climate Friendly School Food	To to develop and strengthen their evidence and knowledge base for future Danish school food in the context of the World Food summit	2022	https://wfs.dk/side-events/healthy-climate-friendly-school-foods-coming-to-a-place-near-you
EU chorizo	To identify and counteract social norms around food waste. The DK case study focuses on food at school	2023-2025	https://chorizoproject.eu/case-4-school-food-waste-and-relation-with-obesity-and-malnutrition/
EU SESAM	To develop a new type of science based food systems literacy that can be applied in the context of food at school in cooperation with German and Swedish partners	2020-2023	Green food transformation systems: Role of young people in engagement and digital literacy Intellect (intellectdiscover.com)
7 suggestions for School Food	To suggest specific actions that can promote school food in the municipalities (7 FORSLAG TIL SUND OG GRØN MAD I SKOLEN)	2023	chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://diabetes.dk/media/kn0m4e0k/7-forslag-til-sund-og-groen-mad-i-skolen.pdf
Madtanken (The Food Tank)	To create an informal and multi stakeholder forum for exchange of views on school food	2023 -	https://www.madkulturen.dk/madtanken/
The Camp	To bring a multitude of stakeholders together to exchange views on the strategies for future school food	2024	https://mejerimedier.dk/nyheder/mejeriforeningen-slaar-et-slag-skolemad
SELEA	To develop a new type of food systems literacy with special emphasis on science and digital insights that can be applied in the context of food at school in cooperation with Chinese and Brazilian partners	2020 - 2021	https://ign.ku.dk/english/sesam21/GenClimateTrainingAnnounce.pdf
LOMA	To develop new short chain school food service model that integrates learning activities in food at school	2010-2014	https://vbn.aau.dk/da/publications/local-public-food-strategies-as-a-social-innovation-early-insight
OPUS study	To study the nutritional and related benefits of the New Nordic Cuisine including its application in the context of school food	2008 - 2012	https://forskning.ku.dk/soeg/result/?pure=da/publications/design-of-the-opus-school-meal-study/626b2ed4-2810-461c-b7d2-15aeea43b22f.html