Strategic Guide

for Public Sector Food Procurement (PSFP)

STRENGTH 2FOOD

Welcome

For several years awareness has been building of the potential of the public sector to improve a nation's influence on sustainability, nutrition and the economy.

In particular, those involved in the production, procurement, distribution and delivery of meals in the public sector – to schools, care homes, hospitals and prisons – have examined ways in which shared policies and strategies could help drive government commitments to reduce waste, tackle obesity and malnutrition, support local producers and encourage healthy eating.

The combined influence and purchasing power of the sector offers a vital opportunity to dramatically shift outcomes across a range of targets, particularly since public procurement - for all spending, not just catering - accounts for 18-20% of GDP in countries of the Organisation for Economic Co-operation and Development (OECD). EU directives on sustainability and Green Procurement have helped nudge contracting authorities to engage more small firms, social enterprises and employers of disadvantaged groups as suppliers. Nevertheless, budgeting and timescale pressures on public procurement and catering professionals can undermine their intentions to work sustainably, source locally and meet nutrition guidelines. Competing priorities make it challenging to balance all the demands of a contract.

To help practitioners gain a tighter grip on these priorities, building in simple practices which offer the greatest positive impact, research teams in five countries working on the European Union Horizon 2020 project 'Strength2Food' undertook an in-depth investigation of ten primary school meals services, examining their food procurement and catering activities, and measuring their sustainability outcomes. Although modelled on schools catering, the findings reveal good practice models for all those involved in the commissioning, production, procurement and delivery of public sector meals which offer the greatest opportunity to positively impact customer nutrition, local economy and enduring sustainability within the service.

We present those findings here.

Content

Ensuring sustainability in public sector catering

Four pillars underpin sustainability in public sector catering and supply chains: environmental, economic, social and nutritional.

Environmental sustainability concerns the impacts of the catering service and its supply chain on ecosystems and natural resources. Stakeholders should consider the extent of the carbon emissions generated from field to plate and how to reduce them.

Economic sustainability considers the distribution of the catering budget and its effect on recipients. Stakeholders should review whether their budget is spent in a way that maximises its positive economic impact on, for example, the local economy in which the catering service is provided.

Social sustainability examines how the procurement and delivery of the catering service impacts the well-being of those involved throughout its supply chain, as well as its customers and neighbouring communities. Stakeholders should ask: is our service one in which employees and associates feel supported and fulfilled? Do people feel good about coming to work, and have good relations with each other? Is our service one that includes the local community and contributes to the social fabric?

Nutritional sustainability considers the impact the meals service has on the health and dietary well-being of its customers. Stakeholders should examine the nutritional quality of menus and how they promote balanced diets and healthy eating habits. Critically they should also assess how much of the nutritional value of served meals is lost through plate waste.

Strategies and practices that address these four pillars should be built in at all stages of the delivery of meals: from commissioning, through procurement to provision and waste management.

To facilitate this, Strength2Food studied different service models in the UK, Croatia, Greece, Italy and Serbia to examine the impacts of prioritising different sustainability pillars. The results reveal the most effective ways for public sector caterers and their stakeholders to deliver on nutritional, economic, environmental and social commitments.

The research questions long-held beliefs around the impacts of local sourcing and its knock-on effects on the meals served. Does a local supply chain help reduce carbon emissions from lower 'food miles'? Does it build stronger local economies by supporting local businesses, and facilitate better relations between stakeholders, supply chain and customers? And does it deliver fresher, healthier food on the plate?

How can public sector caterers derive the biggest sustainability 'bang for their buck'?

The research questions long-held beliefs around the impacts of local sourcing

Low cost or local?

Strength2Food collected data from two different school meal procurement models in each of the five countries, delivering ten case studies for comparison.

Budgets were an important consideration for all models, but cost was prioritised more in some cases than others.

In each country except Italy, one case study operated according to a mainstream procurement model, where lower cost was a higher priority for contracting authorities (described in the research as 'LOW' cases). The second case in each pair emphasised a local model service (LOC), in which the contract award criteria encouraged local sourcing, and/or in practice featured a larger proportion of local suppliers.

In Italy, where a legislative decree prioritises social, health and environmental criteria in public procurement contracts, the case studies consisted of a LOC-ORG service (with a procurement model mainly prioritising both organic and local products) and an ORG service (with a model mainly focused on organic products).

Data from the case studies was collected between spring 2017 and autumn 2018.
For greater detail on the nature of procurement in each country's case studies, the differences in pricing of meals, as well as specifics on the calculation of carbon footprint, economic and social impacts and attainment of nutrition standards, see Research in detail.

CROATIA

GREECE

ITALY

SERBIA

UNITED KINGDOM

Data was collected from different school meal procurement models

Target Sustainable Waste Management

The research comparisons and conclusions across the five countries show clear actions at all stages of the supply chain that professionals can take to improve the nutritional, economic, environmental and social outcomes of the service.

The recommendations spotlight different levers that service commissioners and contractors can pull to achieve greater impacts across the four pillars.

Target sustainable waste management for greater environmental outcomes

Strength2Food analysis of carbon emissions showed that food waste management at the end of the meal delivery had the biggest single impact on that service's environmental sustainability.

This was clearly demonstrated by the results from Greece.

The study compared CO_2e emissions per average meal in each country's purchasing models, noting the extent of CO_2e generated by the ingredients, the transport of the ingredients and the method of waste disposal of plate waste.

In the Greek models, the single most important contribution to high emissions was their waste disposal method. Here, all food waste was directed to landfill, which has a high carbon burden. For all other services except the Serbian ones (where half of waste went to landfill) food waste was directed to anaerobic digestion, composting or animal feed, all of which are low carbon disposal methods.

Contractors wishing to minimise their environmental impact should pay close attention to the volume of food waste produced and their means of disposal.

Figure: Carbon emissions (kgs CO_2e) for the average meal in the case school meals services, highlighting the contributing of waste disposal to total emissions

The positive environmental impact offered by a service's ability to send food waste to anaerobic digestion is a key lobbying issue for the sector, where inconsistencies exist in the provision of waste services across a country.

Greek waste's big carbon footprint

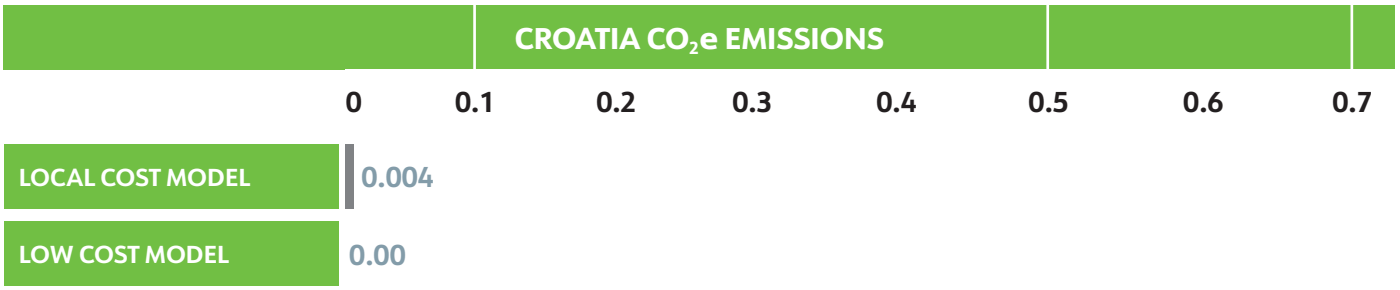
Plate waste is often a big problem in schools catering, though generally less of an issue in procurement and catering services for adults who are usually more able to choose their meals, or more likely to eat food even if it's not their favourite. The country comparisons revealed however that no matter the plate waste levels, it's the method of disposal that has the biggest impact on carbon emissions. The Greek and Italian models had very similar levels of plate waste – both very high – but waste in Italy contributed only around 1% of their CO_2e emissions, whilst in Greece it was 25% or more, due to the waste being sent to landfill. This finding was reinforced by the Serbian models which produced relatively low plate waste but this amounted to around 10% of their emissions because half of the waste went to landfill.

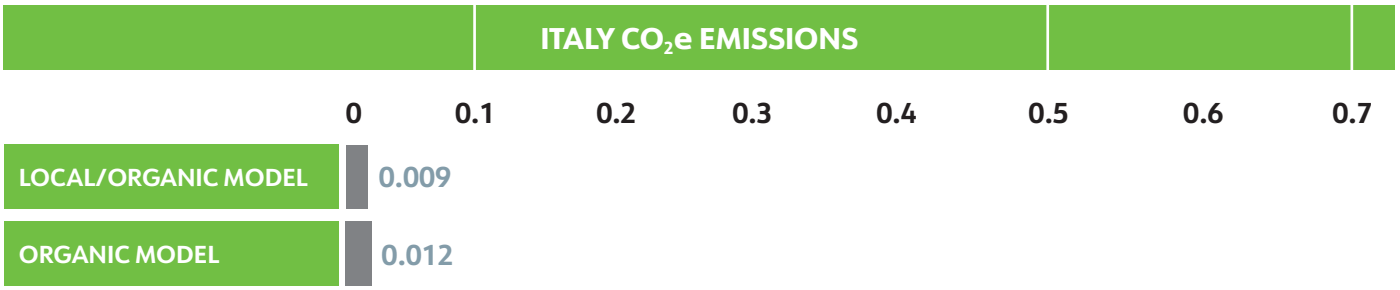
WASTE $C0_2e$ EMISSIONS PER MEAL IN KG

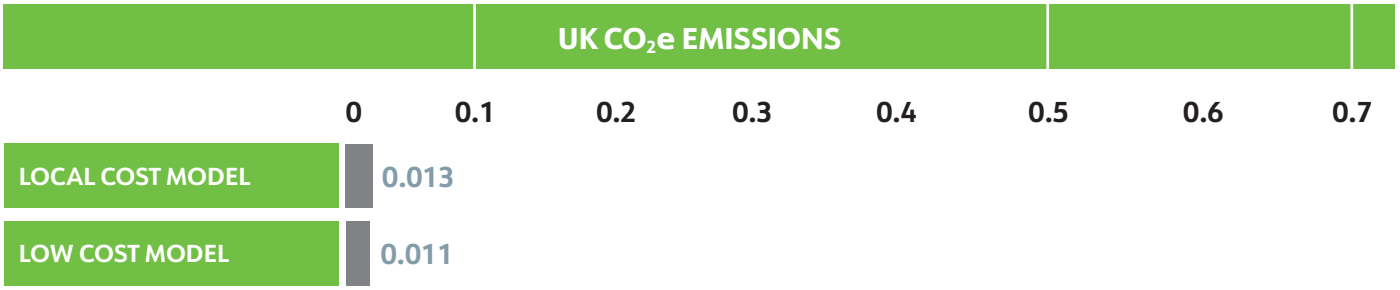
GREEN = FOOD WASTE RECYCLED

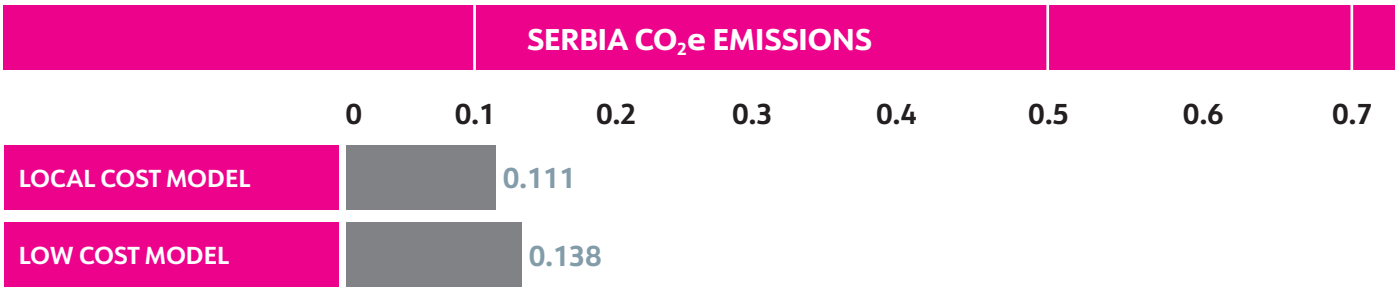
PINK = FOOD WASTE PART RECYCLED/PART LANDFILL

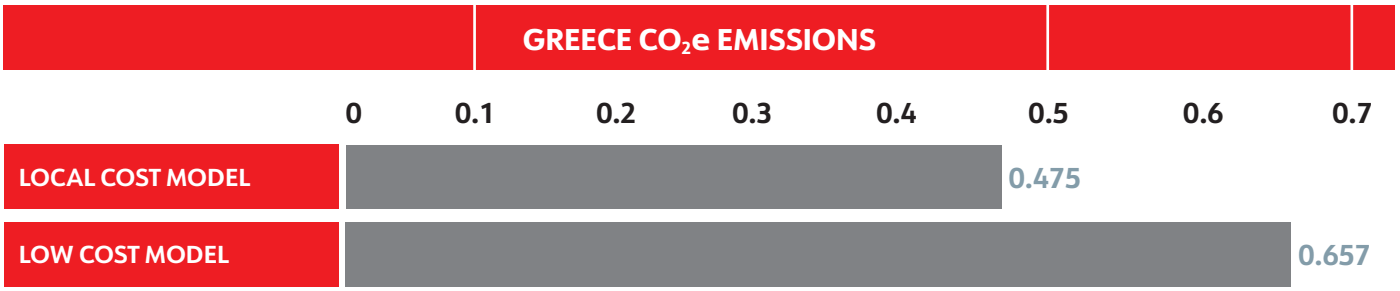
RED = FOOD WASTE TO LANDFILL











Reduce ruminant meat to cut carbon

A further comparison of carbon footprint among the ten case studies revealed that a menu lower in ruminant meat (beef, lamb, goat etc.) and high in fruit and vegetables is one of the most effective ways to improve the environmental sustainability of the service – as well as its nutrition.

In all five countries, researchers compared the CO_2e emissions of the menu's ingredients, their transport and ultimate waste disposal, and noted that differences in the transport-related carbon outputs between a local (LOC) and low cost (LOW) model showed very little variation.

After waste disposal, by far the biggest impact on emissions in case studies was the percentage of fresh meat in the menu, which tended to be lamb and beef. Poultry and pork have lower emissions intensities than ruminant meats - lower even than some processed dairy products – and processed meat products were much more likely to be chicken or pork-based.

On average, Greek and Serbian meals contained high proportions of fresh meat, of which beef was a key ingredient, whilst Italian meals contained high proportions of fresh fruit and vegetables (55% in the LOC-ORG model and 39% in the ORG model). UK meals contained the lowest proportions of fresh fruits and vegetables, at only 18% and 12% LOC and LOW respectively, and the highest proportions of processed (33% and 26%), which included frozen, ready-prepared fruits and vegetables.

Transportation made only a modest contribution to total CO_2e, comprising less than 5% of emissions for the average meal in eight of the case studies.
Transport-related CO_2e was higher in the Greek LOW and Italian LOC-ORG models (at 15% and 18% respectively) where some suppliers were located a considerable distance from the caterers.
In the Italian example, one supplier transported tinned tomatoes over 700 kms, while fresh beef for the Greek LOW model was brought from Bavaria, Germany. Despite these long distances, the contribution of transport to total emissions remained modest and was outweighed by other activities in the chain.

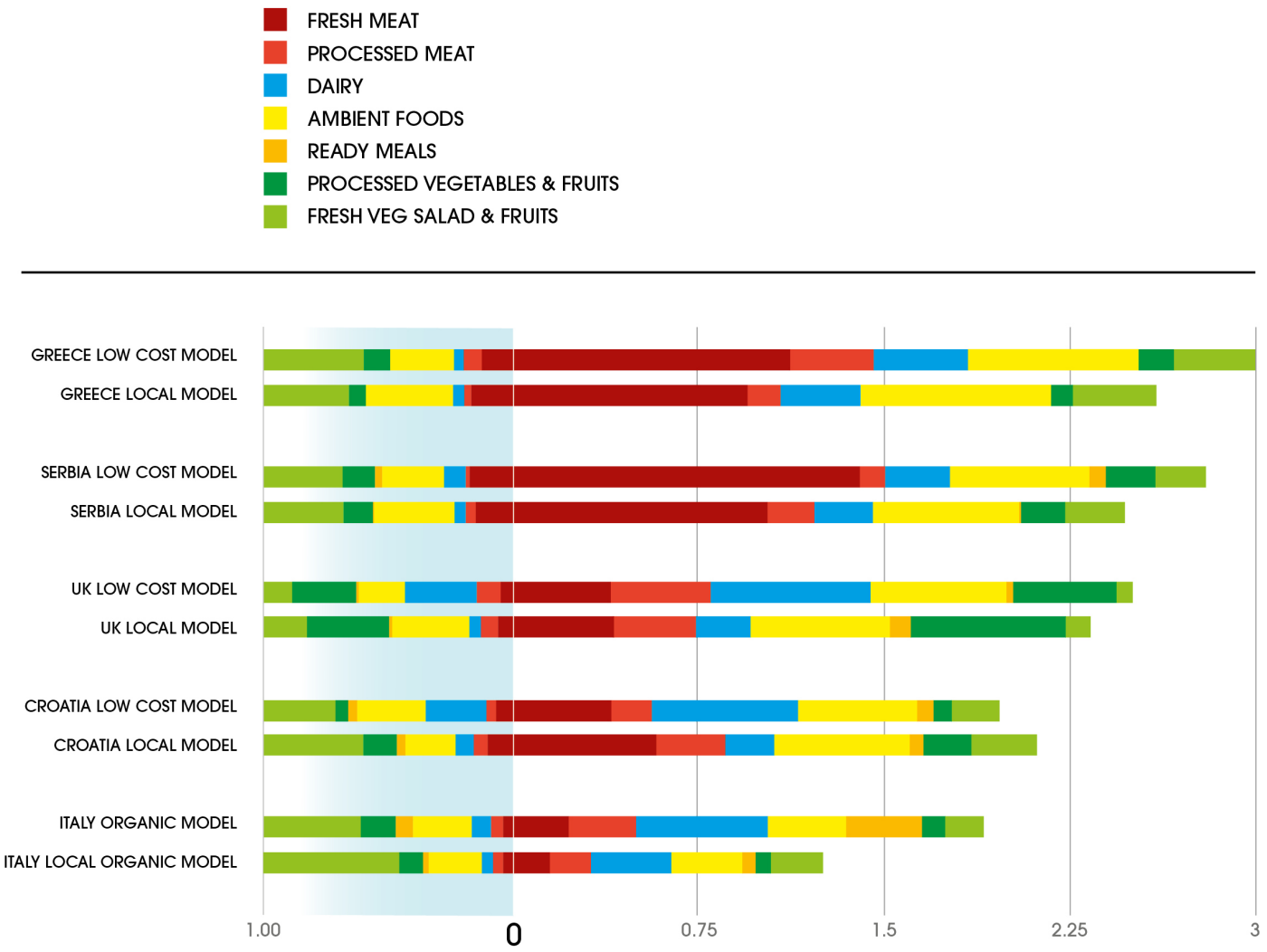
Strong nutritional oversight drives down emissions

Italian menus were subject to a high degree of management of their nutritional composition, with the added unintended impact of lower CO_2e emissions. In both models, set lunch menus are carefully designed and approved by municipal dieticians and are adjusted across the seasons to guarantee the supply of seasonal fruit and vegetables. A canteen commission of parents and teachers meet twice annually to audit and verify the food and school canteen service quality. The lunch consists of a first course of starchy carbs like soup, gnocchi, pasta, and a second course of protein with side veg like fish with salad, chicken with cooked veg plus bread and fruit. Desserts are only served on special occasions and the ORG model only served fruit as a dessert. This regulatory and management regime for nutrition, giving meals with low animal-based foods and high fruit and veg, helped reduce the carbon footprint associated with a higher percentage of meat, in particular ruminant meat, that was evidenced in other countries.

In Italy, policies for child health and nutrition - quite unintentionally - drove the positive environmental outcomes of their meals services.
The supplier-related criteria of the Italian procurement contracts - with specifications for local, organic, typical and traditional products - were less important to the low CO_2e emissions than the menu-related standards which set the balance of food categories, increasing the levels of fresh fruit and vegetables compared to ruminant meat.

Commissioners should consider re-focusing and shifting priorities in how public food procurement contracts are specified and weighted for environmental outcomes. Attention to ingredients and menu design could have a greater impact on CO_2e than transportation.

Food quantities (kg) and carbon emissions (kg CO_2e) for the ten models, per kg



To the left of the '0' marker is the makeup of 1Kg of average meal

To the right of the '0' marker is the equivalent carbon emissions created in CO_2e

Adopt the meal analyser for lower carbon menus

A food impact measurement calculator can help caterers and other professionals understand and shift their behaviours to reduce the carbon footprint of their menu. Developed from this research, the user-friendly calculator, currently in prototype mode, calculates the most effective measures that professionals can take to reduce CO_2e emissions, as well as improving the local economic impact from budget allocation.

Spend local for biggest economic impacts

In all country examples, spending budgets locally – whether by hiring and paying local people, and/ or buying from local suppliers – offered the biggest economic return - or multiplier ratio - for the local economy.

The difference was most remarkable in Serbia, where their LOC model returned the highest multiplier ratio of 2.46, demonstrating that for every €1.00 (or equivalent currency unit) spent from those schools' meals budgets, an additional €1.46 was generated for the local economy.

This compares to the Greek LOW model with a ratio of just 1.59, showing that every €1.00 spent generated just €0.59 of additional value locally.

These effects could be significant for the local economy, particularly if local sourcing is taken up by many stakeholders in the area (e.g. schools, hospitals, care homes, workplace canteens).

In Greece and Serbia the LOC model generated a considerably higher multiplier ratio than the LOW cost model. Where this effect was reversed in Croatia and Italy it was because spend on local staff was much higher in the Croatian LOW example, and in Italy, 'local' spend stretched up to 100km from the municipal centre, meaning a lower spend in the immediate vicinity.

Paying staff a meaningful wage offers big returns locally, even when ingredients suppliers are lower cost and further away. The UK LOW and LOC models had almost identical multipliers because the LOW model spent a bigger proportion of its total budget on employees.

Commissioners and contractors should consider that generating value for the local economy can come not only from supporting local suppliers in a contract, but also from staff expenditure, especially when public sector catering services often have high staff numbers sourced from the local community.

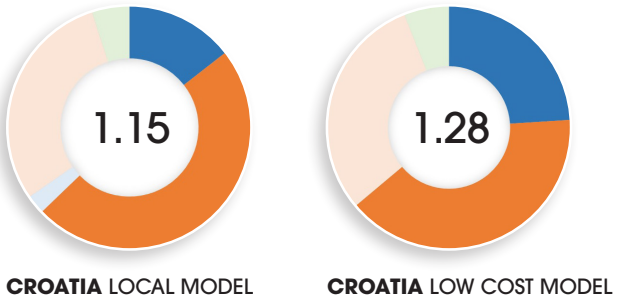
A further learning on the value of spending budgets locally, and the vulnerability of local economies to the agro-food chain fabric that suppliers, caterers and customers are embedded within, came from the Italian LOC -ORG case.

Here, although the intent to spend locally was written into the contract, in practice the catering contractor could source from up to 100km away. In practical terms, because the company was part of a large organisation, it operated supply networks that included many firms with headquarters outside the region. However, as the definition of local in the contract was so wide, the company was not obliged to adjust its established sourcing practices, giving the LOC-ORG model one of the lowest multiplier ratios of the study.

Having clear contract criteria which more closely define the local boundary would help close the gap between ambition and impact in situations like this.

Local Economic Value

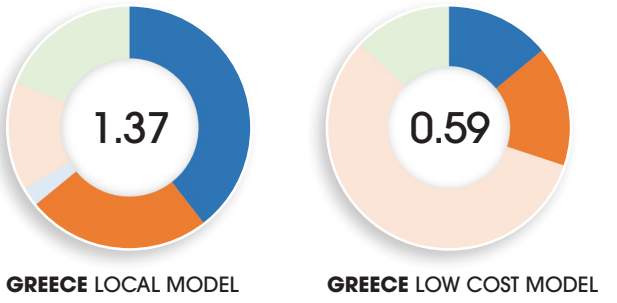
Local Staff | Non-local Staff | Local Suppliers | Non - Local Suppliers | Other direct Costs



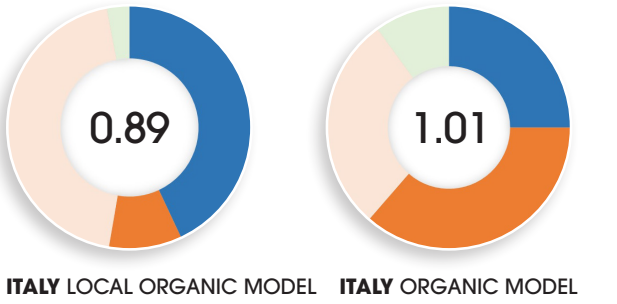
CROATIA LOCAL MODEL | **CROATIA** LOW COST MODEL

The darker segments show money spent locally from catering service budget, on staff and suppliers

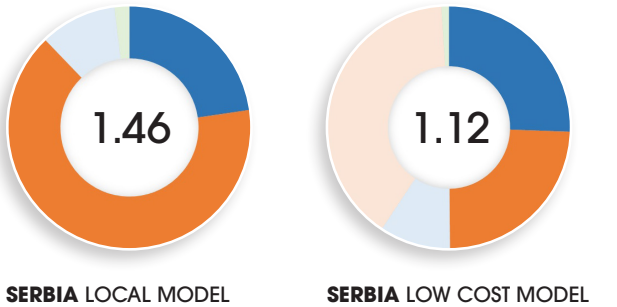
The central figure is **additional money generated for the local economy,** for every Euro spent on the school food service



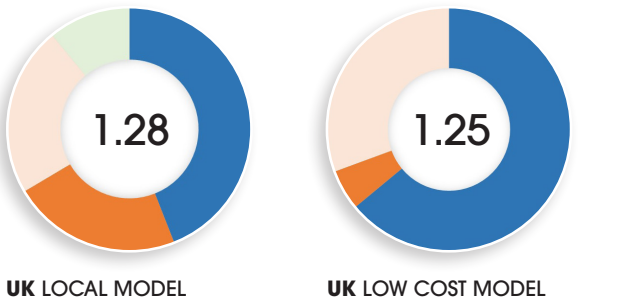
GREECE LOCAL MODEL | **GREECE** LOW COST MODEL



ITALY LOCAL ORGANIC MODEL | **ITALY** ORGANIC MODEL



SERBIA LOCAL MODEL | **SERBIA** LOW COST MODEL



UK LOCAL MODEL | **UK** LOW COST MODEL

Keep it local

In Serbia the geographical radius threshold for comparing the models was a very tight 15km. Despite this, several operations in the LOC model sourced 100% of staff and suppliers from within this boundary. Even the LOW models used a fair number of suppliers and staff from the immediate vicinity. This focus on local spending generated a much higher value to the local economy, showing what can be achieved when contracts specify local sourcing.

Invest in staff for a more successful service

Alongside proper remuneration for employees, investing in staff had further positive impacts for a more successful catering service.

The research showed that social impact around staff training and development was not dependent on the different contract models, but more on the size of the contracting company, and other regional factors.

However, a more connected service where suppliers and contractors worked closely with the schools helped secure positive feedback from staff regarding their working environment and subsequent low staff absence.

Most strikingly, staff had a vital role to play in preventing plate waste, thus ensuring high nutritional outcomes for the children, as well as better cost and environmental outcomes for the service, with less waste sent for processing.

The Croatian LOW model produced the smallest plate waste levels (12%) of any case study. This was largely down to high quality interaction and supervision by catering staff of pupils, encouraging them to finish their meals.

Contractors should note that fully recognising the value of staff for their capacity to implement change to their service, not only through pay but through support and investment in their working environment, and their skills and development, will ultimately enhance the service levels and outcomes across all four pillars of social, environmental, nutritional and economic sustainability.

A fun lunch is a serious business

Croatian meals were sized in the mid-range, but in the LOW model achieved the lowest food waste with children eating an impressive 87% of the food, thanks to a range of interventions. These included kitchen and teaching staff checking children's plates and encouraging them to try foods and finish their meals. Serving healthy meals but including favourites like chocolate cake once a week, teachers eating in the canteen with some sitting with the children, and the canteen having a more spacious and fun layout, and a longer time allowed for eating lunch. All these things combined to help ensure the children got the most nutritional value from their meals and the economic and environmental cost of food waste to the service was reduced.

The right tools for the job

Catering staff need good kitchen and canteen resources to be able to do their jobs properly and make improvements. In Serbian schools, staff often didn't have the storage, utensils or appliances to change their cooking practices or drive menu innovations. Whereas UK LOC model did invest in new equipment, such as kits to make fresh yoghurt on site. This particular shift greatly reduced the amount of single use plastic pots in the schools, as well as meeting nutritional goals. Other practices made possible by investment included using jugs and cups instead of plastic bottles or cartons, and making pizza sauces from scratch with fresh vegetables rather than relying on bought-in sauces.

Strikingly, staff had a vital role to play in preventing plate waste

Nurture relationships along the supply chain

Building stronger connections at all levels of the supply chain enhances multiple aspects of the service.

The research showed that fostering better relationships between local suppliers, contractors, staff and the schools had benefits for all parties.
For the majority of examples, even in contracts that supported local supply chains, relationships were relatively weak, impacting the ability of the meals service to act as a vehicle for stimulating rural development activity.

Opportunities to improve relationships depended on the extent of mixed farming and agrifood processing in the surrounding regions, and the local infrastructures and supporting mechanisms that enabled this.

The Croatian LOC model demonstrated good collaborations between School A (the hub school) and its suppliers, for example the dairy supplier ran a "school milk day" which involved organising a gathering of school children and conducting a tour of the factory for headteachers. The multiproduct supplier also undertook healthy meal promotions. Engagement with local schools was a key part of such activities, including giving presentations and talks to schoolchildren about their businesses, and taking part in educational activities to improve understanding of different foods and where they come from.

This relationship supported a stable procurement process between the suppliers and the school. Contractors should consider enabling and encouraging these relationships. For greater impact on improving rural connectedness, the research showed that contractors should seek to encourage family farms into their supplier network.

When connections are poor, everyone loses. The UK low cost model had no interactive or coordinating activity between the suppliers and no joined-up activity between the suppliers and the schools they provided food to. This was despite suppliers having the resource and ready access to educational materials, and several schools placing priority on food-related issues in the curriculum. The links between the catering service and other food and health activities in the schools were also weak.

The research revealed a huge opportunity for commissioners and contractors to promote stronger integration between suppliers, the meals service, and the schools.

Fostering better relationships between local suppliers, contractors, staff and the schools had benefits for all parties

Rural economies benefit from strong interconnectivity

Research in Greece revealed that rural communities benefited in multiple ways from strong interconnections between schools, contractors and suppliers.

In the city-based LOW model, interactions between members of the supply chain were limited, but in the rural LOC model, relationships were stronger and extended beyond the normal interactions of personnel fulfilling their duties – for example between delivery drivers and kitchen staff.

Although neither model exhibited opportunities for suppliers to participate in school activities, local supply chain members did have additional service-based relations (e.g. the LOC baker ran a retail shop visited by staff from other LOC suppliers, while LOC Caterer ran a kitchen/restaurant where employees could socialise after work). A greater community ethos was therefore found to exist in this locality, in part as a result of the LOC procurement model.

Close contacts are a win-win

In the UK local model, smaller suppliers offered strong communication and a high degree of flexibility in their relationships with the catering company and schools. Headteachers maintained a connection with their caterers and the local school meals service promoted the benefits of maintaining these relationships, which particularly benefited rural schools. The focus on local suppliers and the presence of mixed farming in the region facilitated these connections. Suppliers were invested in their customers, for example the supplying grocer has a company ethos of supporting the local economy, businesses and the community, as well as making sustainability improvements. Some years ago, it played a proactive part in improving the efficiency of deliveries to schools by acting as an intermediary in the distribution of local eggs, milk and bread. This helped those small producers get involved in supplying schools, without taking on the burden of a procurement contract themselves. Similarly, a local farm supplier has a business orientation towards supplying locally and embedding itself in the community. When it began supplying local schools it experienced a small growth in new business as parents came to browse the butchery and shop after children talked about the farm, having enjoyed the meat in their lunches.

In the rural models [supply chain] relationships were stronger and extended

Partnership working improves sustainability outcomes

Italian models revealed the positive impacts suppliers could have on supporting local producers, and benefiting schools when they were more involved and invested in the chain.

In the LOC-ORG model, strong relations between the catering firm and its suppliers helped support menu development, food quality and origin assurance. The relationship also enabled educational initiatives including farm visits, food culture and health classes for parents and children.

The catering firm in the ORG model was very active in social connectedness, including spearheading an initiative to bring local trout to the school menu, as well as introducing the children to the tastes/cultural knowledge of the region.

In Serbia, local authorities and beekeeper associations organised 'honey breakfasts' in partnership with schools and pre-schools, to educate children about the importance of eating breakfast and the place of honey in a healthy diet.

A school/supplier two-way bonus

In Serbia, a large wholesaler added value to local schools by engaging with their charitable activities, including donating food and providing educational packages for primary school children. It also ran a charitable foundation which financed educational projects for local schools. Schools that built a trusted relationship with suppliers were more likely to keep that relationship for future contracts.

In Serbia local authorities and beekeeper associations organised ‘honey breakfasts’

Review menus to maximise nutritional impacts

The research analysed the percentage of the sampled daily menus that met national standards - or were excessive or deficient compared to those standards - for the provision of energy (calories), and five selected macronutrients. More information can be found in Research in detail (p28-31).

The research revealed considerable variation in the extent to which sampled menus met national standards. Whilst the vast majority complied with standards for protein and fibre (with the exception of Croatian cases for fibre), quite large proportions of the menus were either deficient or excessive in provision of energy, carbohydrates, total fat and saturated fat. Most of the Greek and Serbian sampled menus contained excessive total fat and insufficient carbohydrates, while in the UK, large proportions were high in total fat, saturated fat and carbohydrates. Of all the cases, the Italian menus performed best.

Whether the contract models were low cost or local had little impact on the nutritional balance of the menus. Instead the strongest driver of nutritional quality was having robust, well-resourced regimes for implementing nutritional standards, including the involvement of professional nutritionists in menu design.

These policies and practices supported the more nutritionally balanced menus of the Italian meal services, but were lacking in other cases, like Croatia, resulting in weak compliance in those menus despite the existence of a national standards framework for their school meals.

A combined effort, at both national policy and local service delivery levels, is needed for positive nutritional outcomes. Commissioners and contractors should examine their menus for compliance and work with nutritionists to maximise nutritional sustainability in their menu design.

The research revealed considerable variation in the extent to which sampled menus met national standards

Involve customers in menu selection to reduce plate waste

Nutritional impact is more accurately estimated when the nutritional losses from plate waste are also taken into account. Based on waste collected from a sample of 179 lunchtime services across the 10 case studies, the average rate of plate waste was just under 30% of the weight of each served meal.

Fruits, vegetables and starchy foods were the most wasted items, suggesting the actual intakes of fibre, energy and carbohydrates were lower than intended via the planned quantities. Whilst generally troubling, this outcome is of particular concern where menus were already not meeting daily nutrition recommendations.

Since plate waste represented approximately one quarter of the total cost of the food purchased, and a similar proportion of embodied carbon emissions, this had additional negative impacts on budget as well as environmental considerations.

Although working with professionals to design a highly nutritious menu is important, customer preferences also need to be considered to help reduce waste and ensure meals are more likely to be eaten.

However, it's important to note that even if the school meals example showed that the children were more likely to waste their vegetables and fruit, the researchers found it was important still to include them to improve nutritional outcomes overall, and for educational purposes, than to leave them out to reduce food waste.

Contractors have an armoury of actions they can take to increase meal uptake including improving the dining environment, offering free taster sessions, hosting competitions that encourage customers to design meals, themed dining events and so on. The Strength2Food research showed that catering staff interactions with pupils were also critical in reducing plate waste, as was monitoring food waste over time, particularly if children were involved.

Best meal does not equal best uptake

In Italy, 70% of all food served to children is local, organic, typical or traditional, with an accompanying cost premium. Yet the Italian ORG meals service - with its low carbon, nutritionally balanced menus sourced from organic and local ingredients and the highest spend per meal - was found to generate the second highest plate waste levels of all the case studies, at 38%. Despite the considerable policy support and resource invested in these menus, many unfortunately did not fulfil the basic requirement of meeting pupils' appetites.

Does meal size matter?

Offering the right amounts of food can play a role in reducing plate waste. Croatia LOW model, with the lowest plate waste, served very modest sized portions, whilst the models with the highest waste levels – Greece and Italy ORG – all served big meals (see chart). Better adjustment of portion sizes for age and appetite also help here. But size is only part of the story. Giving students a pleasant canteen environment, and enough time and encouragement to eat, means they will eat more of even big meals.

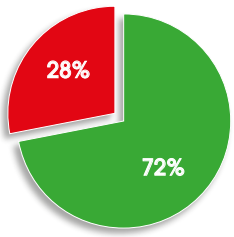
Average meal weights and plate waste

Percentage eaten

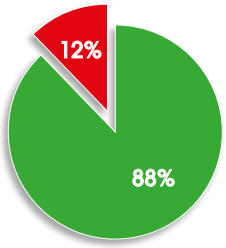
Percentage plate waste

Average planned weight of meal (g)

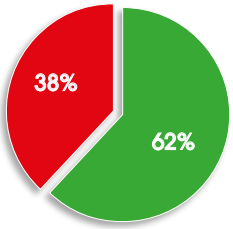
CROATIA LOCAL MODEL
472g



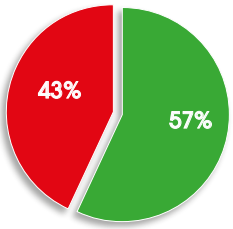
CROATIA LOW MODEL
293g



GREECE LOCAL MODEL
438g

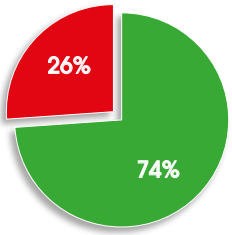


GREECE LOW MODEL
507g

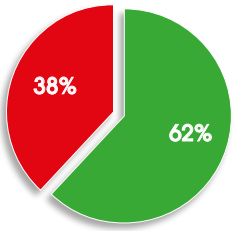


The chart slice shows the % of average plate waste. **Note** the differences in average meal sizes, from 252g (smallest) to 527g (largest)

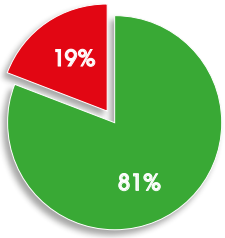
ITALY LOCAL ORGANIC MODEL
527g



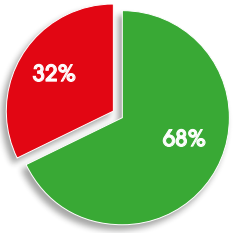
ITALY ORGANIC MODEL
498g



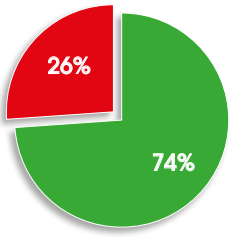
SERBIA LOCAL MODEL
495g



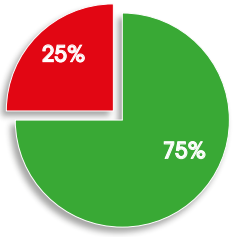
SERBIA LOW MODEL
417g



UK LOCAL MODEL
329g



UK LOW MODEL
252g



Actions for a sustainable public sector procurement & catering service

ACTIONS FOR STAKEHOLDERS

Environmental

- Reduce carbon emissions:
  (i) switch from landfill waste disposal to anaerobic digestion
  (ii) reduce amounts of ruminant meat in the menu
  (iii) ensure efficient delivery logistics*
  (iv) pay attention to the agricultural practices behind the foods used in the menus

*This could mean localising the supply base, but not always. Emissions reduction is equally possible by making use of piggybacking, backhaul, distribution hubs, lower emissions vehicle fleets, etc. Individual local suppliers who deliver items in isolation from other delivery rounds result in a high emissions burden.

Economic

- Increase the budget spend on suppliers in the local area, including by specifying minimum volumes of local products in contract tenders, and defining stringent boundaries for 'local' areas
- Pay catering staff the living wage
- Foster connections between stakeholders to encourage local spending**

**This is a particularly important point for catering services that are very urban or in areas with a limited local supply base.

Social

- Localise the supply chain to support good communication and relationship development between stakeholders.

Nutritional

- Ensure a robust standards regime for nutritional analysis
- Have active monitoring/implementation processes
- Engage with customers in menu design/testing
- Improve canteen environments and staff interactions.

Actions for public food procurement policy-makers

- Promote quality and sustainability measures in public procurement contracts (e.g. SMEs, social enterprises, green initiatives/targets, etc.)
- Employ a holistic approach to procurement policymaking (e.g. integrate nutritional policies with environmental policies)
- Integrate procurement policies with economic and structural policies (e.g. commitment to avoid landfill, prioritise dining environment in design and resourcing of new public buildings)
- Encourage 'vertical' collaboration between stakeholders to maximise opportunities for local economic and social benefits, (e.g. encourage suppliers to host school field trips and collaborate in menu innovation; incentivise wholesalers to act as intermediaries in bringing more small, local producers into the supply chain))
- Integrate catering services into wider school life
- Encourage 'horizontal' collaboration between stakeholders at the same tier in the supply chain. (e.g. collaboration between small suppliers to jointly bid for contracts, collaboration between schools to tender joint contracts.
- Develop policies which recognise the value of catering staff across the sustainability pillars (e.g. their role in producing appetising meals; reducing plate waste, reducing carbon emissions and nutritional and financial losses, their contribution to local economic goals, contribution to education and curriculum development).

Actions for contracting authorities

- Remove structural and investment obstacles that impact the ability of bidders to meet awarding criteria (e.g. setting emissions reductions targets, but giving no option other than landfill for local waste disposal)
- Integrate procurement and catering decision-making.
- Re-think budget allocation for food procurement and catering activities in line with their ability to impact multiple economic development goals, carbon reduction goals and community building goals (e.g. source funding from a wider base than education or facilities budgets)
- Allocate budgets to take account of the future savings that come from a great meals service (e.g. related to emissions reduction, health improvements, etc.)
- Link municipal goals (e.g. supporting local economy) with contract awarding criteria and include targets

and Key Performance Indicators to encourage and reward performance improvements that increase the probability that the authority's ambition is realised in practice
- Maintain communication with contract holders to confirm that criteria are being met
- When the contracting authority is an individual school, consider collaborating with other schools. (Devolving procurement responsibility to individual schools can encourage risk-averse, low-change behaviours.)

Actions for caterers

- Expand the vision of the meals service and staff to include contribution to education, curriculum and wider school life (e.g. breakfast clubs, after-school clubs, school holiday clubs).
- Consider the impact that the meals service can have on the wider community (e.g. suppliers involved in school field trips, hosting community events, parent/family cookery classes, tastings, etc.)
- Properly recognise and reward the ability of catering staff to positively impact the environmental, local economy and nutritional benefits of the service, including by reducing food waste and increasing meal uptake.
- Facilitate engagement with pupils/parents in menu design and planning, and operational issues, such as canteen design, management and lunchtime supervision.
- Adhere to a robust nutritional standards framework, or develop improvements to existing ones, and employ professional nutritionists in menu design
- Discourage child refusal of fruit and vegetables at the service counter, and look for ways of increasing their consumption through menu developments
- Where possible, switch from landfill food waste disposal to digestor, composting, etc.
- Explore possibilities for reducing plastic waste (e.g. avoiding plastic cutlery, using jugs of water not cartons/bottles, preparing yoghurt on site, not packaging cut fruit in plastic wrapping).

Catering contract tender

8 ESSENTIAL THINGS TO CONSIDER WHEN PREPARING A CATERING CONTRACT TENDER:

- **Food waste needs to be sent to recycling not landfill**
- **What are the targets for reducing plate and production waste?**
- **Look to develop lower carbon menus by reducing higher polluting food stuffs (e.g: ruminant meat)**
- **Where are suppliers based - what is their proximity to the delivery sites**
- **How much of the supplies need to be sourced outside of the contract locality?**
- **The more spent locally on staff and suppliers the more money is generated for the local economy**
- **Investing in quality food and the service (particularly local staffing) reduces environmental and health burdens**
- **Consider what practices can be changed to reduce single use plastics. Put pressure on suppliers to do similar. How can public sector caterers derive the biggest sustainability 'bang for their buck'?**

COUNTRY SERVICE DELIVERY MODELS

Croatia

The case studies were all in the capital city Zagreb. Here, individual schools typically operate their own catering services, which includes managing their procurement contracts for food supplies, usually on an annual cycle. The exception is for some core items such as milk and bread which are organised collectively by Zagreb city council. Meals are generally cooked on-site in school kitchens, with a set full price of €1.20.

Croatia established national nutritional standards for school meals in 2013, although compliance checking systems were still in development when the research was undertaken. Schools typically contract with around 10 suppliers.

Greece

Public provision of school meals was introduced here for the first time in 2016, following the country's financial crisis and related hardships. Meals are priced at around €2.22. Contracts are set at the municipal level and typically awarded to private catering firms who operate the services and related procurement.

As schools in Greece do not have kitchens or canteens, meals are prepared in central kitchens and transported to schools in insulated containers for service in classrooms/communal areas.

No national nutritional standards for school food are in place.

The LOW model was located in Evosmos–Kordelio, a relatively deprived district of the north-eastern city of Thessaloniki. The catering firm here contracted with eight suppliers, most of whom were located outside the area or abroad. The LOC model was in the rural area of Kastoria, north-western Greece. The catering firm here was headquartered in the region and drew from its established local supply network, so that a larger proportion of its suppliers (11 in total), were local.

Italy

There are well-established policies here to promote sustainability and to support high quality food and nutritional standards in school meals. This drives widespread use of local and organic procurement. School meal provision is organised at the municipal level, with contracting cycles typically of more than five years. A relatively high proportion of contracts are operated by private catering firms using central kitchens.

The LOC-ORG case study was located in the relatively wealthy municipality of Parma, in Emilia-Romagna region. The private catering firm operating this service had held the contract for six years and procured from a very large supplier base (in this study, data from 10 out of 29 main suppliers were analysed). Most meals were cooked in a central kitchen and then distributed to the schools at a full price of €6.18 per meal.

The ORG model was from the quite wealthy municipality of Lucca, in Tuscany. The contract was also operated by a private catering firm and all the meals were cooked in a central kitchen, charged at €5.00 per meal. The private catering firm here had held the contract for nine years and procured from nine suppliers.

Serbia

Public procurement policies here have placed less emphasis on sustainability, and until recently, push contracting authorities to accept lowest cost tenders. However, individual schools - who are responsible for organising their own meals provision - are able to specify food quality criteria, while a new law exempts small value contracts from 'lowest cost' procurement requirements. 2020 saw the first Serbian primary school to procure organic vegetables. The majority of schools contract to private catering firms, while the remainder operate their own procurement and meals services in-house, re-tendering contracts with suppliers on an annual cycle.

Serbia introduced national nutritional standards for school meals in 2018.

The LOC model comprised four schools (two located in the capital Belgrade and two in the city of Novi Sad), which had relatively high proportions of food procured from local suppliers, while the LOW model comprised four schools (three in Belgrade, one in Novi Sad) with higher proportions of food sourced from geographically distant suppliers.

In both LOC and LOW cases, the absolute number of suppliers contracted on an annual basis was small (1-2 for LOC schools, 3-6 for LOW schools), and the full prices per meal averaged from €1.02 to €1.21. All of the schools in both cases operated their own procurement and in-house meals services.

The measure of sustainability was carbon footprint, expressed as kgs of CO_2e

UK

The organisation for school meals in the UK varies across the devolved administrations. In Scotland, most services are organised by local authorities, but elsewhere the spatial scale of governance varies, from municipal to individual school level. In all areas, a mix of direct operation and use of private caterers exists.
A nutritional standards framework has been in place since 2014 (2003 in Scotland), and promotion of sustainable procurement exists, notably through the Food For Life programme of the Soil Association.
Both the LOC and LOW models here are located in regions scoring relatively high on social deprivation indices, and where local authorities organise the meals for the vast majority of schools. The LOC case study was in Durham, a region in north east England. All procurement and catering activities were contracted to a private caterer: this firm cooked almost all meals on-site in schools, at a full set price of £2.00 (€2.28).
The LOW model was in Inverclyde, a small region in west central Scotland. Here, the local authority operated the procurement and meals service directly, and almost all meals were cooked on-site in schools, at full prices of £1.95-£2.00 (€2.21-€2.27).
In both UK cases, the contracting cycle was five years, with relatively small numbers of suppliers (three in LOC case, four in LOW).

Data collection and analysis

Data collection and analysis for this research was undertaken from spring 2017 to autumn 2018.
Researchers gathered procurement invoices and logistics information from the suppliers to the catering services in each of the ten models. These data were used to estimate the carbon footprints of each model's meal services.
Researchers also conducted in-depth interviews with key stakeholders in each model, including municipal/policy officials, procurement officers, suppliers, catering managers and school staff. This added granular detail like where meals budgets were spent and on whom, who people talked to in the supply chain, and how people felt about the meals service.
Researchers recorded the recipes from a sample of daily menus in each of the models, undertook canteen observations and collected plate waste from a set of lunchtime services. This was used to analyse the nutritional quality of the meals, both in terms of planned pupil intake and actual intake (i.e. after subtracting nutritional loss of plate waste).
A full description of the research methods and analytical techniques is available in the relevant reports on the Strength2Food website: **www.strength2food.eu**

Measuring the environmental sustainability of case studies

The measure for sustainability was carbon footprint, expressed as the total kgs of carbon dioxide equivalent (CO_2e) emitted annually from the production, processing, transportation and waste disposal of food items procured in each case study. To calculate these emissions, a method similar to Lancaster and Durie (2008) was devised.*

For emissions relating to agricultural production, processing and upstream transportation of procured food items, researchers used the delivery invoices and information from food suppliers to estimate the total annual quantities (in kgs) of food items procured in each case. These annual quantities were multiplied by relevant per kg emissions factors. These calculations captured all emissions up to and including transport to first tier suppliers (wholesalers).
For emissions relating to the downstream transportation of the food items from wholesalers to the case study schools, researchers gathered information from suppliers on their vehicle types, loads, delivery round distances and frequencies, and then applied the estimation formula of DEFRA (2013).**

Finally, for emissions relating to the disposal of food waste, researchers collected and weighed samples of daily plate waste in two of the featured schools in each model over two week-long periods (one week-long period in the Greek cases). From these data, average annual plate wastes were estimated for all the featured schools in each case. This was multiplied by waste handling emissions factors (Moult et al, 2018).***

Measuring the economic sustainability of case studies

Researchers undertook local economic multiplier analysis of the models' meal services. This involved estimating

the additional economic value generated for the local areas in which the meals services were located, as a result of the spending and subsequent re-spending of the catering budgets within those areas.
For each model, the total annual meals budget was recorded, the proportions spent on staff and suppliers, and whether those recipients were local or non-local to the area. From these data, researchers estimated the proportion of monies re-spent by the budget recipients within the local area.
The outcome of these calculations is a ratio expressed between 1 and 3, where 1 indicates no budget is retained within the local area, and 3, which indicates the budget is entirely retained and re-spent within the local area. The higher the ratio, the more added value is generated locally.

Measuring the social sustainability of case studies

For social sustainability, researchers analysed the views of the stakeholders in each case, regarding who they did (and didn't) talk to in the supply chain, how they felt about their jobs, and what role the meals service played in the wider community.
Canteen observations were also relevant here. These views and observations were collated theme by theme to arrive at a global assessment of how well the meals services contributed to social well-being.

Measuring the nutritional sustainability of case studies

Researchers undertook food composition analysis on a sample of 20 daily menus in each case study meal service to arrive at an assessment of the total provision of energy (kilocalories), macronutrients (g) (protein, total fats, carbohydrates, dietary fibres and saturated fatty acids) and selected micronutrients, in standard portions of meals from these menus.
These nutritional profiles were compared against national (or WHO) standards, to determine what percentage of the daily menus met the standards or were excessive/deficient. The analysis of plate waste quantities and compositions were used to estimate the average nutritional losses from the case study meal services, and therefore what the actual nutritional intake of pupils was, compared with what was planned in the menus.

Country models nutrition comparisons

In Croatia, Serbia, Italy and Greece, the meals service offered only one daily option, and the style of dishes was quite traditional/adult in character, with no burgers, chips, etc. The menus of the UK cases were different, offering multiple daily options, and items such as burgers, chips, etc.
There was considerable variation in the extent to which sampled menus met national standards.
Whilst the vast majority complied with standards for protein and fibre (with the exception of Croatian cases for fibre), quite large proportions of the menus were either deficient or excessive in provision of energy, carbohydrates, total fat and saturated fat.
Most of the Greek and Serbian sampled menus contained excessive total fat and insufficient carbohydrates, while in the UK, large proportions were high in total fat, saturated fat and carbohydrates.
Of all the cases, the Italian menus performed best, with the majority compliant on four nutritional standards, including very high rates of compliance on three.
Although the results are based on a small sample and do not represent the nutritional profile of the entire menu cycles of the case studies, they do suggest menu designs that were not optimising nutritional quality on the plate.

* *Lancaster, O and Durie, D. (2008). The Social Return on Investment of Food For Life School Meals in East Ayrshire. Report prepared for East Ayrshire Council by Footprint Consulting.*

** *Defra (2013). Guidance on measuring and reporting Greenhouse Gas (GHG) emissions from freight transport operations. UK Government, Department of Environment, Food and Rural Affairs.*

*** *Moult, J.A., Allan, S.R., Hewitt, C.N. and Berners-Lee, M. (2018). Greenhouse gas emissions of food waste disposal options for UK retailers. Food Policy. 77. pp. 50-58.*

Acknowledgements

Strength2Food

Strength2Food (www.strength2food.eu) is a 5 year project which researches, supports and promotes quality and sustainability in agricultural and food systems. The research for this Guide was led by University of Edinburgh Business School in collaboration with the partners listed. Our thanks go to all the professionals and stakeholders who helped us in the work.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 678024. This document reflects the views only of the authors, and the Agency cannot be held responsible for any use which may be made of the information contained therein.

Produced with the help of:

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With thanks to:

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JANUARY **2021**

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