

Scottish interest in “local” food systems, supported by evidence of best practices from Scotland, UK and International case studies.

By Kieran Fowler

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## 1. Executive summary

This report was designed to inform the main SSAC report on Local Foods in Scotland and, to provide a detailed analysis of the evidence which has been collected by the SSAC during the course of this project. The Scoping Agreement between the SSAC and Scottish Government outlined a desire for evidence on what the wider literature details about local food.

This report includes a combination of primary qualitative data collected by the SSAC, and desk-based research. SSAC's primary data comes in the form of questionnaire responses received from targeted stakeholders, and, roundtable discussions held with multiple actors from across the food system.

Analysis of the primary data served as a means to identify potential innovations across the food system.

The literature review tables presented in Section 4 provide a reasoned balance of potential advantages and barriers to the introduction of certain topics of innovation which were raised through questionnaire and roundtable responses.

This report highlights eight specific areas of innovations across Scotland's food systems by compiling a range of domestic and international case studies which can be accessed in Appendix A at the end of this report. The examples presented in Appendix A are referenced throughout this report, allowing the author to discuss in fuller detail, these areas of innovation and their apparent opportunities for Scotland.

The report concludes by presenting the opportunities present around the eight topics of innovations, gathered by the author through a collection of evidence and synthesis of literature.

## 2. Approach and analysis

### 2.1 Definition of Local Foods and Food System

This project is concerned with the contribution of local production to food systems in Scotland. A definition of what local food is, in the context of this project, was agreed upon between the SSAC and Scottish Government and is as follows.

A food is considered a "local food" if:

- It is produced locally (this includes your, town, region or elsewhere in the rest of Scotland)
- It has short supply chains (there are fewer steps than global and imported food between the primary producer of the food and the person who eats the food, this could include a farm supplying a local shop or supermarket)"

As this project is also concerned with how *local food* can contribute to *food systems* in Scotland, the SSAC draws on internationally recognised definitions of what a *food system* is. The United Nations Environment Programme (UNEP) defined a food system in their 2016 report which focussed on Food Systems and Natural Resources. It covers all stages of the value chain - from growing and harvesting agricultural products to processing, packaging, transporting, selling, cooking, consuming, and the disposal of waste food and packaging (UNEP, 2016). Actors in the food system can be regarded as people and institutions, which perform food-related activities. Processes and suitable infrastructure are required for actors to engage in the activities of producing, distributing and consuming food for a given population (UNEP, 2016).

## 2.2 Food Systems Framework

Food cuts across many policy areas. The Scottish Good Food Nation Act (GFNA) is a new piece of framework legislation which aims to act as an “umbrella” over the different pieces of food policy in Scotland to ensure they align and work together. Any given food system has numerous inputs and covers a large number of outcomes. The pathways to these outcomes are inter-connected and the GFNA adopts an integrated approach. However, much of the underpinning evidence and innovation is best generated with a focus on one outcome, with due attention being paid to possible unintended impacts on other outcomes. During the development of the GFNA five “themes” were listed as key considerations for the SG (with these being considered in a more integrated manner within the Act) and this report uses these themes as a framework for presenting the evidence:

- Health
- Social Justice
- Knowledge
- Environmental sustainability
- Prosperity

These themes are incorporated as intended outcomes of a given food system, illustrated in Figure 1. The diagram illustrates the inputs which food system actors have available to them: Scotland’s natural resources are required by actors to produce Scottish food; regulations & legislation related to food are factors which must be considered by all actors across the food system; third-party and public sector resources are available to food system actors for various inputs such as access to finance, knowledge & information, and general business support. These inputs are used by actors in food system activities which, in turn, generate food system outcomes. Monitoring of the environmental and socio-economic outcomes generated by a food system has the potential to act as a feedback loop, creating insights for actors and helping inform future decisions.

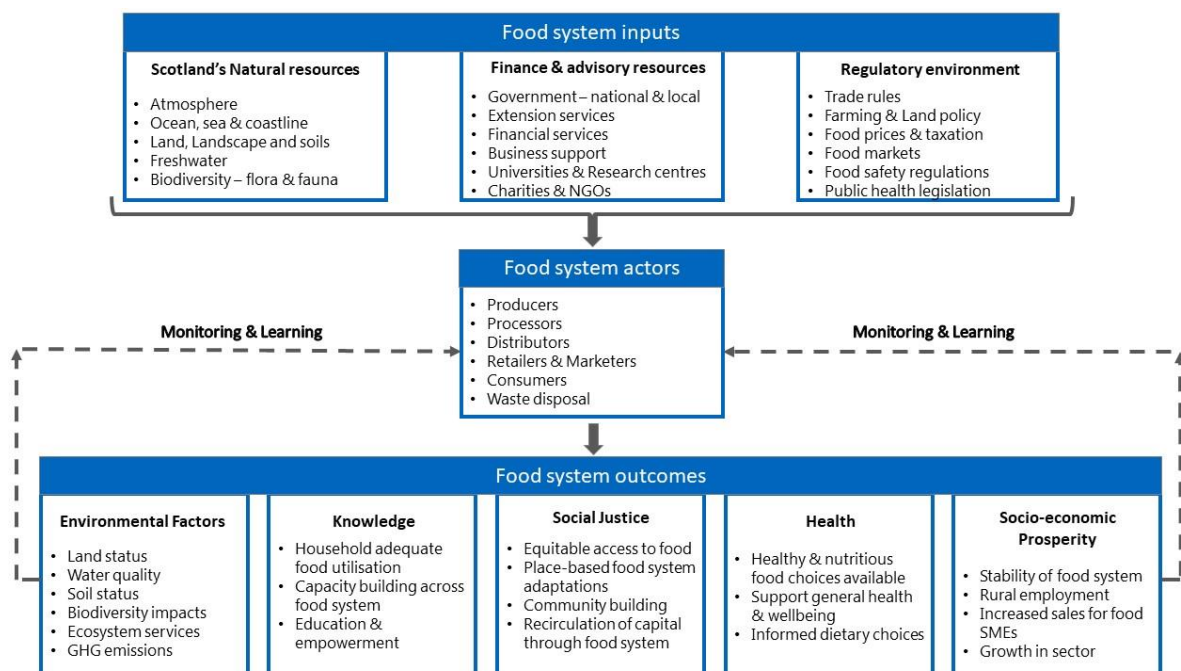


Figure 1. Food System Diagram mapping inputs, actors and outcomes – Designed by Author

The contribution of local foods to food systems in Scotland can be assessed consistently by utilising the framework introduced here. Recognising that any particular innovation or policy measure may

bring about a range of co-benefits and unintended consequences, a systematic approach to explore the potential impacts of case studies and policy measures on GFN outcomes was employed. Further details of the outcomes are summarised in Table 1.

Table 1. Food Systems Framework

Dimension of Food System Framework	Literature Summary	Reference
Health & Availability of food	Availability depends on a sufficient supply of safe and <b>nutritious food</b> within the proximity of individuals. Availability can be achieved through domestic food production, commercial food imports, food stocks and food assistance. A food system can be deemed as positive, in terms of health, if it can (but not exclusively): <ul style="list-style-type: none"> <li>• Improve overall nutrition</li> <li>• Benefit national health and wellbeing</li> </ul>	(Sassi, 2018) (United Nations, 1975)
Social Justice & Access to Food	Depends on the individual's ability to have both <b>economic and physical access</b> to available food. Households can produce or obtain food depending on their access to resources and markets.	(Sassi, 2018) (Sen, 1981)
Knowledge & Utilisation of Food	Utilisation refers to the individual and household's ability and knowledge to make proper use of obtained food to <b>achieve a diet that provides sufficient energy, good nutrition, and adequate sanitation.</b>	(Sassi, 2018) (FAO, 2006)
Environmental Sustainability	Food/Food system is deemed as environmentally positive if it can (but not exclusively): <ul style="list-style-type: none"> <li>• Drive lower emissions (in CO2 equivalent)</li> <li>• Reduce / Eliminate wastage across the food supply chain</li> <li>• Restore / Preserve Scotland's Natural Capital (examples include building soil health, increasing plant &amp; animal biodiversity, tree planting etc.)</li> </ul>	(Wood, 2000) (Millennium Ecosystem Assessment, 2003) (Ingram, 2011) (Frison, 2020)
Prosperity & Stability of Food Systems	The stability of a food system is reached when a reliable supply of <b>food products is available and accessible at all times.</b> Socioeconomically, a food system can be deemed as positive if it can (but not exclusively): <ul style="list-style-type: none"> <li>• Create sustained, profitable employment</li> <li>• Provide growth in the sector (can include export)</li> </ul>	(Stefanovic, 2020) (Sassi, 2018) (FAO, 1996) (Allen, 2016)

### 2.3 Methodology

The evidence used within this report includes primary data collected by the SSAC, complemented by a literature review of innovations in local food and food systems. Primary qualitative data is firstly obtained through questionnaire responses received from targeted stakeholders (Section 3.2). Following analysis of the questionnaire responses, roundtable discussions (Section 3.4) were held with stakeholders from across the food system.

Roundtable discussions with food system stakeholders and the roundtable presentations delivered by subject matter experts allowed the author to subsequently identify key areas of innovations within Scotland's food systems. Once topics of innovation are identified, they are sorted into four broad categories. Overall, 22 separate topics of innovation in local foods or food systems, which are applicable to Scotland, were identified through SSAC primary evidence collection.

The 22 highlighted areas of innovation are presented in tabular format in Section 4. The tables bring together evidence in academic literature with case studies, to give a balanced view of the challenges and opportunities presented by each potential area of innovation. The case studies are intended to supply specific examples of local food producers or food systems which are already working successfully in Scotland and at the UK level, as well as the most relevant European and International examples.

In terms of the approach to the academic literature, a non-systematic review was performed on each topic. The literature review provides a subjective summary of background information relating to the potential opportunities and barriers to the adoption of each of the 22 topics of innovation.

The case studies identified are intended to provide context and give practical examples of how potential innovations may be achieved in Scotland.

The report then highlights eight specific topics of innovation which are most relevant to SSAC recommendations. Each of the eight topics has a corresponding set of detailed case studies (Appendix A) which were compiled by reviewing: academic literature, food business registrars and an extensive internet search. Alongside detailed case studies, a further literature review regarding each topic was conducted to provide further background information. To conclude each discussion section a subjective summary of measures, initiatives and policies present in the literature, which may apply to the adoption of any innovation, are presented and discussed.

### 3. Evidence gathering

#### 3.1 SSAC Questionnaire

The SSAC Food Systems Working Group (WG) disseminated a questionnaire to a targeted list of stakeholders. The design of the questionnaire was informed through a literature review and the Working Group's extensive knowledge of the topic. To disseminate the questionnaire, the WG compiled a list of targeted stakeholders. Invited participants were identified through their interactions with, and knowledge of, food production and food systems. The stakeholder groups invited to participate in the questionnaire ranged across; academics, NGOs, Local Authority staff, third-sector food organisations, food producers and industry members.

The open-ended questionnaire form was circulated electronically on 25<sup>th</sup> April 2023 with a deadline of 12<sup>th</sup> May for return. The questions posed by the WG asked stakeholders their thoughts on innovations in local food production; barriers to local food supply chains; policies to support local food; local food in the context of health and social wellbeing, see [Annex A] for the full list of questions.

SSAC received seventeen responses in total from stakeholders across the food system. This is a relatively small sample size, which is not intended to be representative of the diversity of views across Scotland but was used to inform the roundtable questions as well as stimulate discussion in the roundtable. This is a caveat to bear in mind when reviewing the summary of questionnaire responses presented in Section 3.2.

The SSAC are very grateful to all those who took the time to respond to the questionnaire.

The seventeen respondents provided a diverse set of answers to the open-ended questions. The following section gives an overview and analysis of the qualitative data provided by the questionnaire.

### 3.2 Questionnaire Responses

From the total of seventeen completed questionnaires, some general themes were evident across the responses. When analysing the responses to the questionnaire, comparisons were drawn with responses to the Scottish Government’s Consultation “Local Food for Everyone”.

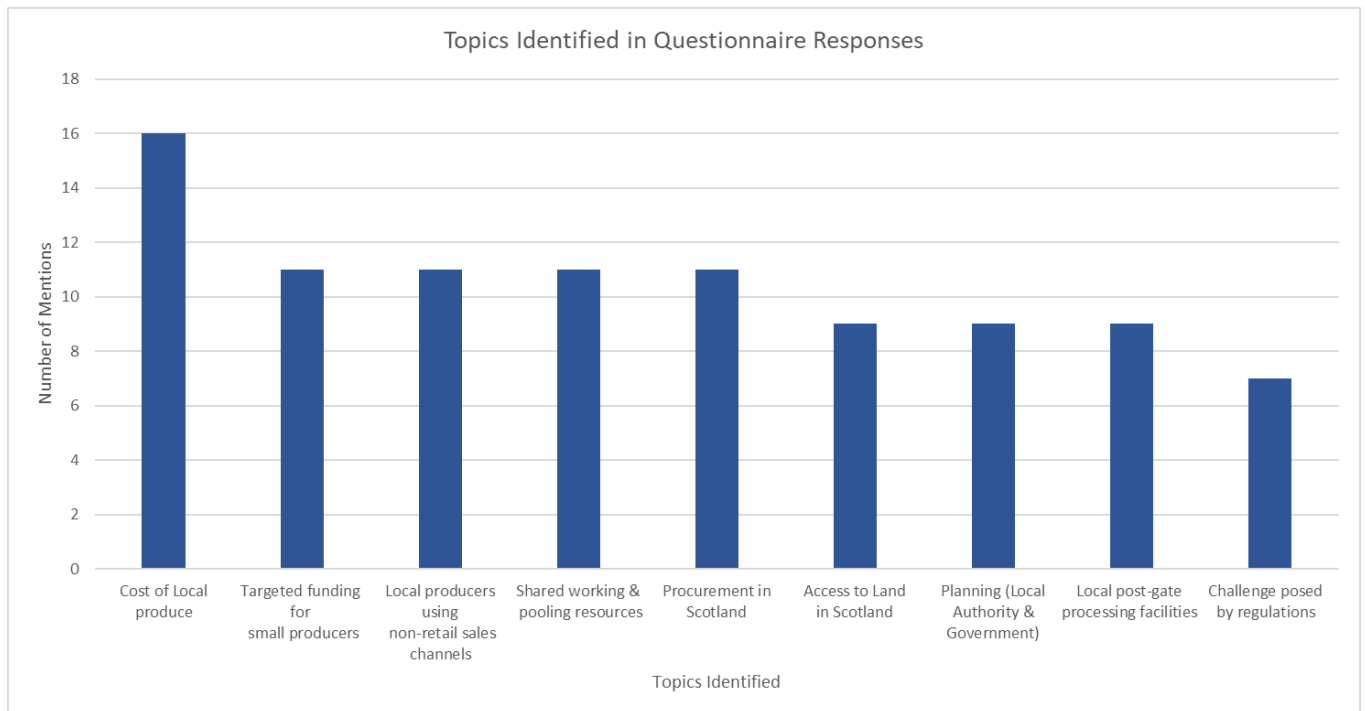


Figure 2. Summary of themes identified in SSAC Questionnaire (part 1)

The **perceived higher cost of local produce** was mentioned as a potential barrier in all-but-one survey responses. The affordability of local food was the most prevalent theme across all responses.

65% of respondents (11/17) mentioned some form of **direct funding** for small producers in Scotland. The majority of these eleven mentions were in response to Question 6 [Annex A], with direct funding for smaller producers discussed as a policy lever to stimulate more local production. The direct support for local producers differed in detail across the eleven mentions. Similarly, subsidies and payments for producers were identified as a key theme in the Scottish Government’s Local Food consultation. The analysis of the Local Food for Everyone consultation concluded that: “across respondent groups as well as across questions, it was evident respondents felt a need for updated financial support and investment, including agricultural subsidy reform” (Scottish Government, 2022). Analysis of both the SSAC questionnaire and Local Food for Everyone consultation showed an interest from respondents to see subsidy reform and a payments-based system which doesn’t bypass smaller producers.

The Scottish Government’s “Vision for Agriculture” set out a route map for a new Agriculture Bill. Regarding subsidy and payments for food production in Scotland, Scottish Government pledged to integrate enhanced conditionality to at least half of all funding designated for farming and crofting by

2025 (Scottish Government , 2022). Simultaneously, Scottish Government stated they remain committed to supporting active farming and food production with direct payments (Scottish Government , 2022).

Local producers in Scotland selling their produce via non-retail sales channels appeared in eleven questionnaire responses, with some listing **a lack of non-retail sales channels** as a barrier to local foods in response to Question 2 [Annex A]. Some responses regarded alternative sales channels as a potential innovation in response to Question 1 [Annex A], there were mentions of community growers' co-operatives, talk of establishing farm shops and several mentions of the online purchasing of local food produce.

The exact number of questionnaire respondents (11) mentioned **procurement** in Scotland. This was regarding local producers struggling to meet stringent procurement contracts. Respondents often mentioned an increase in local food should equate to a higher level of public procurement of local food in Scotland. Some respondents felt local producers may struggle to meet consistent supply at volume for procurement contracts and listed this as a barrier in response to Question 2 [Annex A]. An infrastructure that can facilitate the connection between large Scottish buyers and local producers was suggested by two respondents.

The questionnaire had similar findings regarding procurement with the consultation on Local Food for Everyone (Scottish Government, 2022). Procurement processes were discussed as a barrier in the Scottish Government consultation. The introduction of Dynamic Purchasing Systems and the need for central and local government to set an example by ensuring local food is procured were given as potential solutions.

Nine respondents to the questionnaire stated that a lack of **access to land** in Scotland for new entrants to the food-producing sector is a current limiting factor. This was aligned with Local Food for Everyone consultation (Scottish Government, 2022) “More land to be made available and accessible for those who wish to enter the market”.

A particularly mentioned innovation in response to Question 1 [Annex A], was **local processing facilities**, including mobile or micro abattoirs and butcheries. Nine questionnaire respondents discussed the opportunity lost by not having post-farm-gate processing of food products kept local to the area of primary production. There were several mentions of an increase in primary production (particularly in remote rural areas) having little benefit without a simultaneous increase in access to post-gate processing. Alongside SSAC findings, Local Food for Everyone (Scottish Government, 2022) captured respondents need “for suitable infrastructure and short supply chains.”

Responding to Question 10 [Annex A], **cooperative working** and the use of shared spaces between food producers – including the pooling of resources and shared sales channels such as localised wholesale groups – were given as a way to make local food more affordable and accessible to all. Five respondents to Question 1 [Annex A] discussed more cooperative working between small-scale food producers to combine resources and increase market share as a collective unit as an opportunity. This theme was also present in Local Food for Everyone (Scottish Government, 2022), with the following stated as a means to overcome barriers to local food: “Higher levels of partnership working and cooperation.”

There was a common theme across questionnaire responses regarding the economies of scale not provided for local producers and the effect that has on small producers trying to meet the same food safety and labelling regulations as big industry players. The possibility of **loosening regulations for small-scale food producers** was discussed, in some form, seven times, with respondents regarding it



as a barrier to local foods in Question 2 [Annex A] and some presenting it in Question 6 [Annex A] as a potential innovation in policy to prioritise local food production. This may be in contrast to the findings produced by (Scottish Government, 2022). A theme identified in their consultation regarded clearer food labelling – “for example, using a traffic light system for CO2 emissions so that the provenance of food is highlighted and consumers can identify food that is truly local.”

Respondents to SSAC questionnaires discussed fewer labelling restrictions as a means for smoother processes, in contrast to Scottish Government consultation respondents who discussed alternative labelling to enhance provenance.

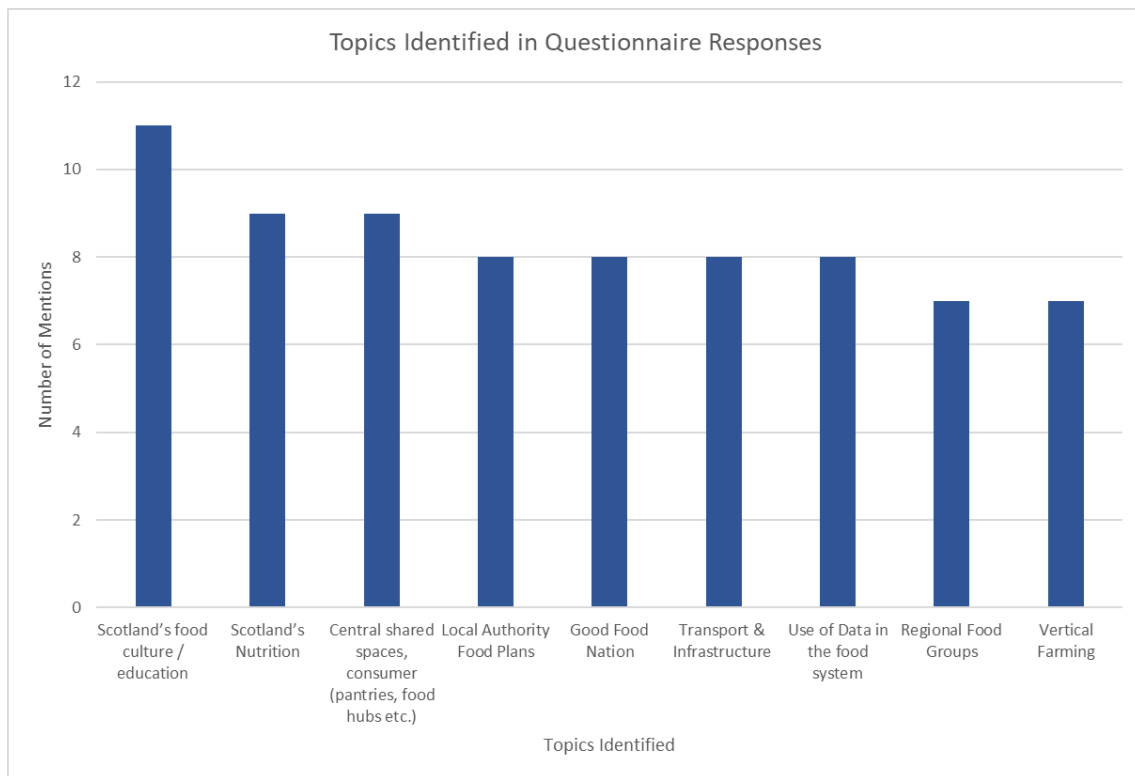


Figure 3 Summary of themes identified in the SSAC Questionnaire (part 2)

A total of eleven questionnaire respondents discussed the **food culture** of Scotland – including lack of cooking skills, diet preferences and high prevalence of processed foods in Scotland’s diet; **Scotland’s nutrition** in relation to not utilising local food was explicitly mentioned nine times, mostly in response to Question 9 [Annex A]. Some respondents discussed the national diet as a response to Question 11 [Annex A], mentioning that local foods have a role to play in improving Scotland’s nutrition. Alike to SSAC questionnaire responses, (Scottish Government, 2022) found respondents expressed a need for “Education and awareness raising of the benefits of local food as well as encouraging consumers to eat seasonal food.”

Questionnaire responses included comments on the need for change of food culture within the local area in order for local food producers to thrive. In relation to consumer-led spaces; things such as pantries, community fridges and food hubs received nine mentions across a variety of the questions. Cooperative buying was also discussed with groups negotiating lower costs in exchange for agreeing to purchase regularly at volume, also providing a stable market for producers.

Regarding policy, the **Good Food Nation** (GFN) received eight mentions, with seven mentions for the uptake of regional food groups. The GFN was included in responses to Question 4 [Annex A] as an

innovative policy which could support local food production. A small number of respondents cited the GFN in their response to Question 7 [Annex A], considering the alignment of national and local authority policies regarding local food systems. The need for GFN to be holistic in nature was also discussed in Question 8 [Annex A].

**Local Authorities** engaging with local food plans was discussed in some form, eight times. Town and city planning received seven mentions with calls for town planners to incorporate more urban growing spaces and consider new development with holistic food systems in mind. Comparably (Scottish Government, 2022) found that respondents denoted a need for “A comprehensive, holistic and interdisciplinary approach across all relevant policy areas, particularly concerning the environment; and policy interventions as aids for prioritising local food”.

Another issue raised through questionnaire responses was the feature of **urban growing** in Scotland’s cities, there were various mentions in Question 2 [Annex A] of the long waiting lists for allotments across Scotland acting as a barrier to increasing local production. Urban growing was also presented as an opportunity in responses to Question 1 [Annex A], with a call from respondents to increase access to land for community growing in urban spaces.

On the technology side of things, **Vertical Farming** was cited in some way seven times, with the majority of those seven respondents presenting it as an opportunity in response to Question 1 [Annex A]. The more generalised use of technology and data in Scotland’s local production was discussed fairly often throughout responses also.

**Transport and infrastructure** were frequently discussed, especially regarding rural Scotland. Many felt a lack of infrastructure was a potential barrier to local producers in Scotland’s more remote areas.

Some of the barriers discussed to rural food systems, in relation to Question 2 [Annex A], were:

- Poor internet connectivity in rural areas.
- Geographical distance to market (particularly islands).
- “Lack of infrastructure in many remote communities increases the cost of production”.

Overall, the key themes identified by SSAC in their questionnaire regarding the contribution of local production to Scotland’s Food Systems were well aligned with the key themes identified in the Scottish Government’s consultation on Local Food for Everyone. Although SSAC has obtained a smaller sample set than that of Scottish Government, the data having similar characteristics to Local Food for Everyone’s findings, allows SSAC to draw general conclusions to accurately inform the questions posed at the roundtable.

### 3.3 SSAC Roundtable

Roundtable discussions focused on two sets of questions, the first on ‘Consumption, Nutrition and Acceptability’ and the second on ‘Innovation in Local Food Production’.

The following section uses transcribed notes from roundtable discussions, as well as downloaded ‘chat’ text to summarise the roundtable.

The SSAC are very grateful to all those who took the time to input into the process.

### 3.4 General Themes of Roundtable

For a comprehensive list of answers to the roundtable questions, produced from chat text and discussion notes see the tables provided in Annex B.

With regards to ‘innovation in local food production’ the conversations centred around two different strands of innovation. One is based around the production-side technological innovation, and the other relates to social innovations.

#### *3.4.1 Production-side Innovations*

A recurring topic on the production-side was the potential economic benefits of secondary production and processing facilities for Scotland’s small producers. There was a general view that there is a lack of infrastructure present and that enabling producers to gain improved access to processing facilities in their local area would be of benefit. Local abattoirs and butcheries were a recurring theme; a topic mentioned multiple times. Processing capacity for lentils and pulses was also discussed.

An example given of one success story regarding innovative on-farm processing was [Rora Dairy in Peterhead](#). The dairy farm diversified its business by introducing yoghurt production facilities on-site. Their new product was sold initially from their farm, then locally, then to select retailers in Scotland and now is a national product.

Vertical Farming was also mentioned. Some participants felt that Vertical Farming could help with seasonality issues and that brownfield sites could be utilised to construct more indoor farming. However, an alternative view expressed considered increasing the support for glasshouse and polytunnel production as a means of boosting the availability of fruits and vegetables.

In terms of innovation, surplus and renewable energy technologies featured in discussions. Questions were asked if surplus energy in rural, and especially island communities, could be put to use in some form of food production or processing. The need for place-based strategies to utilise innovations in the energy space was discussed also. One example raised was the [P&J Live Centre in Aberdeen](#) which features an anaerobic digester turning local food and garden waste into a supply of power to the conference centre.

#### *3.4.2 Policy and Social Innovations*

Discussions emphasised that food policy needs to take a long-term view, with many participants agreeing that this should be considered in a decades-long system. Overall, participants were in favour of localised and place-based food system planning, with Local Authorities playing more of a role in their local area regarding food systems. One participant said, “The more localised the food plan the better”.

There were numerous discussion points around investment in local food system. The U.S.A. was cited as an example of having [invested heavily in its food system](#).

Food culture and the co-benefits / secondary benefits of local production were covered. National diet and dietary choice also featured throughout discussions. Examples were provided around educational programmes and school projects – particularly the Scottish-wide [Seafood in Schools](#) program – which can help encourage more positive dietary choices and inform consumers. However, there were concerns expressed around dignity and a need to avoid patronising people about food & diet choices.

#### *3.4.3 Supply Chains and Routes to Market*

The role played by supermarkets in the food system was discussed. One participant was quoted as saying “Supermarkets aren’t interested in food systems ultimately.” With another stating “Supermarkets won’t support local producers as much.” Further to that, a comment was made “There needs to be a strong independent and alternative retail sector to oppose supermarkets and

their market share/buying power”. Two relevant examples were given about how supermarkets can act as a force for good in local food. Morrisons supermarket group in Scotland operate their [Nation's Local Foodmaker's](#) programme. One respondent stated that Morrisons have a store-by-store buying policy – meaning stores located in different parts of the country could utilise geographically close local producers to supply their own store.

Another example was [Walmart in the U.S.A.](#) The procurement strategy for fresh foods differs across stores depending on which region or State they are located in. One participant stated, “Walmart in the U.S.A. procures 30% of their goods state-by-state as opposed to national decision-making.” In 2008, Walmart estimated that over 70% of its produce was sourced from U.S. based suppliers, sourcing on average \$400 million per year in produce from U.S. food producers.

The percentage share of local food within Scotland's fresh fruit & veg grocery market was discussed. One participant stated it was less than 5% currently, and a participant in the other group stated it was 2%. Discussions followed around European countries as examples, where a participant claimed local foods have up to 20% share of the fresh fruit & veg grocery market. Whilst data on grocery market share of locally produced fruits and vegetables is difficult to obtain, official Government data suggests that for all the fresh fruit consumed in the UK, 10-12% is domestically sourced (UK Government , 2023). Whilst domestic production accounts for around 50% of fresh vegetable consumption in the UK (Food Standards Agency, 2021).

The [Chinese fragmented procurement](#) strategy across differing regions of the country was also mentioned in discussion. However, it should be noted that the 5-year plans of China have differed greatly in their approach to food supply chains in the previous six plans (1986 – 2025). A relevant example of this fragmented procurement is [Walmart in China](#), which shifted its procurement strategy from global wholesale markets towards more direct contracting with farm communities in different regions. The [East Ayrshire Council procurement strategy](#) was used as a Scottish success story with one participant stating “long-term investment is needed to make procurement successful in each council area”.

The prices which small producers often have to charge to be financially viable to operate were discussed as a barrier to the general affordability and accessibility of local foods from small producers. An example was given of a [Food Hub in Dumfries & Galloway](#) composed of small producers in the surrounding local area – it was not deemed financially accessible to all consumers. To make it financially viable for the small network of producers meant it was extremely difficult to make it affordable.

#### 4. Literature review regarding potential innovations in Scotland's food systems

The remainder of this report is concerned with a literature review regarding potential innovations in Scotland's food systems and their potential advantages and disadvantages.

Innovations in the food supply chain combine technological innovation with social and cultural innovation and can occur throughout the entire food system (Earle, 1997). Innovations can be focused on one area of food technology, for example, novel product formulation; improvement of food qualities; or more efficient means of food production. Likewise, innovations can be found in other parts of the food system such as consumer eating patterns; central and local policies; procurement; and also within general social and cultural trends (Earle, 1997).

Each specific innovation raised through SSAC’s collection of evidence has an associated question of interest. Each question focuses on the impacts of introducing or scaling-up of any particular innovation to Scotland’s food systems. Case studies of relevance are cited alongside each question and are intended to give a relevant example of the proposed innovation. Each question is informed by examining the available literature on the innovation, with potential advantages and disadvantages discussed.

The most pertinent innovations within Scotland’s food systems, which are relevant to the overall SSAC findings, are allocated a more detailed discussion. The detailed discussions of potential innovations to Scotland’s food systems are informed through case studies in Appendix A of this report. Case studies are presented from within Scotland’s food system to detail innovative practices which already exist, alongside international case studies which provide novel innovations which may not be currently present in Scotland. Each innovation topic considered for discussion is assessed using the methodology presented in Section 3.2.

## 4.1 Technological innovations

Table 2 Technological Innovations Literature Summary

Technological Innovation		
Vertical Farming & Rooftop Farming	<p><b>Question:</b> Can large VFs and rooftop farms improve the availability of nutritious food in Scotland’s cities?</p>	
	<p><b>Case studies of relevance:</b> <a href="#">IGS – Invergowrie</a> &amp; <a href="#">Vertegrow – Elon</a> <a href="#">Nature Urbaine – Paris</a> <a href="#">Singapore Urban Agriculture Development Policy</a></p>	
	<p><b>Potential Advantages</b></p>	<p><b>Potential barriers</b></p>
	<p>Can utilise derelict or disused space in inner cities to grow more food in less space (van Delden, 2021). Is located directly at the source of consumption, resulting in physically short supply chains and produce which is fresh as possible (Butturini, 2020). The range of produce which can be grown via VF is generally nutritionally beneficial and leafy greens are important functional foods (Wong C. T., 2020) – yet not adequate for a full diet (Wong C. W., 2020). VF can improve food safety by maximizing the traceability of crops and reducing the need for pesticides (Van Gerrewey T, 2022).</p>	<p>Central Govt. and Local Authority policies must be aligned and long-term for effective adoption (Diehl, 2020). Highly energy-intensive method of growing food (Al-Kodmany, 2018). Extremely high urban land value in comparison to rural production (Agritecture Consulting, 2023). Can only supply a limited range of produce compared to land-based farming, and production volumes are not as large as traditional farming systems (Benke, 2017). Is currently not economically viable to grow the range of food needed for a full and adequate diet (Kalantari, 2018).</p>
Vertical Farming:	<p><b>Question:</b> Can smaller VFs be deployed in rural communities to enhance the food system?</p>	
	<p><b>Case studies of relevance:</b> <a href="#">Westray Community Garden – Orkney</a></p>	

Community-Scale	<a href="#">Achiltibuie hydroponium – Ullapool</a> <a href="#">Omaha Nation Hydroponics Initiative – Nebraska, USA</a>	
	<b>Potential Advantages</b>	<b>Potential barriers</b>
	Advantage of year-round production of crops. Can reduce the need for imports to rural food systems (Abdullah, 2021) – boosts the overall availability of fresh produce. Can provide a stable supply of fresh produce and move away from reliance on long supply chains for certain types of vegetables (Agritecture Consulting, 2021).	Community groups may face a barrier with significant capital needed to install systems (Chatterjee, 2020). High operating costs of VF systems may result in a high cost of produce (Lubna, 2022) – resulting in a barrier regarding economic access to produce. Currently, rural areas in Scotland may lack the skills to run & manage Vertical Farms (Butturini, 2020).
Innovative Use of Energy & Energy Sources	<b>Question:</b> Can energy technology, renewable or otherwise, be used to lower emissions; improve profitability; improve food supply chains?	
	<b>Case studies of relevance:</b> <a href="#">BrewDog</a> <a href="#">P&amp;J Live Arena - Aberdeen</a> <a href="#">Ethical Dairy – Dumfries &amp; Galloway</a> <a href="#">Mackie’s Ice Cream – Aberdeenshire</a>	
	<b>Potential Advantages</b>	<b>Potential barriers</b>
	Lowers dependence on external energy providers and improves business profitability in the long term (Mackies of Scotland, 2023). Works towards Scottish Government Net Zero Targets. Scotland has a world-leading range of expertise in renewable energy and integrated energy systems (Scottish Development International, 2023). Collaboration already exists between energy companies and food producers lowering their carbon footprint (FDF Scotland, 2023).	Often large amount of capital investment is needed to install (Hirmer, 2014). Poor ‘information flow and communication’ may be the greatest barrier to technology transfer across industry (Luthra, 2015). Complexity of technologies and additional maintenance burden on producers may be a barrier to adoption (Bundschuh, 2014). Some food production processes are very rigid, hence it is difficult to accommodate renewable energy and energy-saving options (J. M. Clairand, 2020).
	<b>Question:</b> Can digital technology be leveraged in Scotland’s food system to reduce food waste across the supply chain? Can data be better captured and accessed across Scotland’s food systems?	
Digital Technology – Tracking & Accounting of Food Data	<b>Case studies of relevance:</b> <a href="#">FDA’s Food Safety Modernization Act – USA</a> <a href="#">Mandatory digital waste tracking – UK Policy</a> <a href="#">Tata Consultancy Services – USA</a> <a href="#">Smart Kitchen – Finland</a>	
	<b>Potential Advantages</b>	<b>Potential barriers</b>
	IoT identification technologies can boost food-tracing capability and can	Farmers and food producers may be sceptical and reluctant to integrate data

	<p>help speed-up responses to outbreaks or recalls (Li, 2017). Can aid the management of inventory and tracking of expiration dates to reduce perishable food waste and minimize production costs. (Franz, 2022). Food businesses, including SMEs, can create actionable knowledge and insights, allowing them to make more informed decisions to improve their operational efficiencies, simplify processes, and reduce transaction costs (Rejeb, 2022).</p>	<p>systems into their organisational structure (Jeppesen, 2018). Data privacy and cybersecurity threats pose a major risk of disruption to highly digitised food supply chains (Spink, 2019). The complex diversity of data formats and structures paired with growing amounts of data and the high speed of real-time data generation may prove a capacity issue (Tao, 2021). Integrating digital data applications in food services can be unaffordable and almost exclusively developed for larger food businesses (Rejeb, 2022).</p>
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#### 4.1.1 Innovative use of energy & energy sources

Scotland is a global leader in producing electricity from renewable energy systems (Shively, 2023) – and some food producers are making use of innovative energy sources to improve sustainability and lower costs. Alongside this, Scottish Government continues to maintain its commitment to bring Scotland to net zero by 2045 (Scottish Parliament, 2018).

In 2013, 26% of the European Union’s total energy consumption was used to cultivate, process, pack and transport food to European consumers’ plates (The Conscious Club, 2019). Open-field agriculture itself accounts for roughly 3.7% of the total EU annual energy consumption (Paris, 2022). If the 2045 net zero goal is to be achieved, the energy use of Scotland’s food sector must be addressed.

Scotland has some excellent examples of food businesses making use of innovative energy technologies. Certain companies are employing circular systems to improve energy efficiency and are at the forefront of making change happen today. Box 1 details the case study of Mackies Farm in North-East Scotland.

##### *Box 1. Mackies Farm Case study*

#### *Mackies Farm – Rothienorman, Aberdeenshire*

Mackies farm produces a range of ice cream and biscuits which are sold all over the UK in nearly all major retailers. The company aims to make their ice cream the “greenest in the world”. They installed four wind turbines between 2005-2015, finished a 7000 solar panel installation over 10-acres in 2015, and have constructed biomass boilers which heat farm buildings. All of this has led to Mackie’s generating double their energy requirements (Mackies of Scotland, 2023). In addition to energy generation, Mackie’s installed a £4.5million low-carbon refrigeration plant which is the first of its kind in Scotland (GEA, 2020). The innovative low carbon system is helping Mackie’s to reduce their carbon footprint as well as lower business costs. As they recognise this is a cutting-edge technology for Scottish food production, Mackie’s have pledged to “invite interested businesses who also have refrigeration needs to come and learn about the system so they can improve their emissions similarly.” (Mackies of Scotland, 2023) This example of collaboration and knowledge transfer may prove vital in helping other food producers and processors to introduce innovative new energy technologies.

## **What initiatives could support further adoption of novel energy systems?**

From all of the Scottish businesses identified which have made use of innovative energy technologies, it is evident large sums of capital are required to install and/or upgrade renewable and innovative energy generation. How then, can more Scottish businesses across the food system access these capital-intensive innovations?

One option may be through the use of public funding, on 16<sup>th</sup> May 2023, Prime Minister for the UK Rishi Sunak pledged £ 32.5 million to “invest in sustainability” within the food and drink sector. The investment was to include greater support for controlled environment agriculture and also to explore the use of glasshouses co-located with generators within the energy sector and industrial power plants to improve efficiencies and boost food production (Ridler, 2023). Further details of how this investment will be targeted throughout the food sector remain to be seen. However, as the previous examples have shown, innovation in this space can incur large capital costs and, as such, any public funding stream would have to consider the size and number of projects it might fund at any given time. A sector which is currently underutilised in Scotland is glasshouse production and in particular greenhouses making use of waste energy streams. The innovative heating system employed by Castleton Farm allows them to extend the growing season with waste products from the farm. In the Netherlands, significant public investment into glasshouse capacity over successive decades has made them a world leader in the glasshouse sector. The glasshouse horticulture sector in the Netherlands is often presented as a successful example of regional economic development and is therefore interesting to derive lessons from (Alwin Gerritsen, 2014). Scottish Government could explore how to foster a similar growth pattern with Scottish fruit & veg production paired-up with waste energy streams.

In terms of publicly-funded support which already exists, the [Net Zero grant – FDF Scotland](#) offers £130,000 to help businesses work with Scottish universities, research institutes or colleges to accelerate their journey to Net Zero with funding awards up to £10,000 in value. Funding such as this can serve as a good enabler to aid Scottish food producers to develop and adopt novel energy technologies. The fund is a key initiative of the Scotland Food & Drink Partnership’s Recovery Plan, which is supported by £10m of funding from the Scottish Government. The fund will support a key priority of the Scottish food and drink sector in its Net Zero commitment. It is open to businesses working in or with the food and drink industry addressing sustainability challenges, with solutions delivered through matchmaking and collaboration with academic experts (Scottish Tourism Alliance, 2021).

A powerful tool in this space is knowledge transfer and sharing best practices. Scottish Government can look to the many examples across Scotland of energy and technology companies working in synergy with food producers such as the case with Absolute and Farmlay [Appendix A – Section 1.1]. Scottish Government may look to encourage innovative energy companies (which are numerous in Scotland) to work with food producers through policies and measures of support which help to foster innovation and collaboration. The UK Government’s Agri-Tech Strategy which funds organisations such as the AgriEpiCentre serve as a good example. The strategy pledged £160 million to “accelerate innovation by UK food and farming businesses and to drive UK growth through the emerging global markets” (HM Government , 2013). The AgriEpiCentre serves to bridge the gap between industry and academia across the agri-food sector in the UK Their work brings together food businesses, scientists and engineers to bring new products and services to market that will generate economic growth and help tackle issues of sustainability in food production.



## 4.2 Innovations & Opportunities in Biology

Table 3 Innovations in Biology Literature Summary

Innovations in Biology		
Plant Breeding and Genetics	<p><b>Question:</b> Can plant breeding and new genetics offer higher productivity for Scottish food producers?</p>	
	<p><b>Case studies of relevance:</b>  <a href="#">James Hutton Institute – Dundee</a>  <a href="#">UKRI, BBSRC Plant Science – UK wide</a>  <a href="#">John Innes Centre – England</a>  <a href="#">AHDB – England</a></p>	
	<p><b>Potential Advantages</b></p>	<p><b>Potential Barriers</b></p>
	<p>Scotland and the UK have world-class research facilities which can enable this to happen effectively and at scale. Adoption can enhance Scottish producers' crop performance as well as bring innovations to industries such as vertical farming (Rommens, 2007). Adoption can increase the overall yield of Scottish-grown grains (Bradshaw, 2017).</p>	<p>Adoption may lead to higher input requirements and can cause a decrease in bio-diversity (Bradshaw, 2017). Current regulatory barriers carry significant costs, both fiscal and time to market (Smyth, 2020). Public perception towards biotechnology is seen as a barrier to scaling adoption of new plant breeding technologies (Menary J, 2020).</p>
Coastal Seaweed Harvesting	<p><b>Question:</b> Will an increase in seaweed production lead to an increased uptake in Scottish diets?</p>	
	<p><b>Case studies of relevance:</b>  <a href="#">SAMS seaweed nursery – Oban</a>  <a href="#">MARA seaweed – Edinburgh</a>  <a href="#">Bod Ayre Products Limited – Shetland</a>  <a href="#">Algolesko – Brittany, France</a>  <a href="#">French Research Institute for Exploitation of the Seas</a>  <a href="#">IDEALG – French Seaweed Sector Development project</a>  <a href="#">SeaMark – Faroe Islands</a></p>	
	<p><b>Potential Advantages</b></p>	<p><b>Potential Barriers</b></p>
	<p>Abundant supply of seaweed on Scotland's coast (Scottish Government., 2022). Coastal and island areas of Scotland have a long history of seaweed and kelp harvesting &amp; export (Angus, 2017) – reintroduction of the industry is likely to create additional rural employment (Gegg, 2019). Exportable products with a global market growing by 5.7% each year (Mesnildrey, 2012).</p>	<p>Currently a lack of primary processing infrastructure across rural Scotland, fragmented supply chain coordination, and underdeveloped consumer markets (Orr, 2022). Potential competition for resources such as the seabed for cultivation, with the ever-increasing competition for marine space (Scottish Government., 2022). New entrants to the market face large start-up costs and a lack of access to</p>

	New state-of-art research centre in Argyle, designed to foster innovation across Scotland in the space (Argyll and Bute Council, 2019).	investment and funding to establish new farms (Scottish Government., 2022).
Novel Protein Production: Livestock & Aquaculture Feed	<b>Question:</b> Can an increase in Scottish protein production reduce the need for global feedstock imports?	
	<b>Case studies of relevance:</b> <i>Algae-based aquaculture feed:</i> <a href="#">MiAlgae – Stirling</a> + <a href="#">BioMar – Global</a> <i>Insect protein for livestock:</i> <a href="#">Entocycle – London</a> + <a href="#">Protogena – Singapore</a>	
	<b>Potential Advantages</b>	<b>Potential Barriers</b>
	Locally produced innovative sources of protein feedstock will reduce the biodiversity impacts of wild-caught fish ingredients for aquaculture feed (McGoohan, 2021). Increased local protein feed cultivation can: reduce imports of global livestock feed and improve ecological processes (e.g. nutrient recycling) of farming systems (Sasu-Boakye, 2014). Can offer Scottish farmers an alternative product and a path towards value-added activities (Matthewson, 2007). Emerging novel techniques can attract private-sector investment and generate growth in the sector (Gagnon, 2023).	Can take up otherwise productive land currently used in Scotland for human foodstuffs (Sasu-Boakye, 2014). Regulatory uncertainties may hamper growth in the sector (Van der Spiegel, 2013). Much work is required to viably compete with the global supply chain of imported soybeans (Tallentire, 2018). Soya is readily available, relatively cheap and provides an excellent nutritional balance for some livestock species which makes it both economically and technically more attractive (Wiltshire, 2020). Locally grown feed may contain less protein per gram and can result in reduced predicted meat & dairy yields (Rauw, 2020) – this may disrupt the traditional livestock sector.
Novel Protein Production: Human Consumption	<b>Question:</b> Would an increase in novel protein production for human consumption be positive for Scotland’s food system?	
	<b>Case studies of relevance:</b> <i>Dried peas &amp; legumes:</i> <a href="#">Hodmedods – England</a> <i>Bio-fermentation of proteins:</i> <a href="#">Quorn – England</a> <i>Insect production:</i> <a href="#">Horizon Edible – England</a> <i>Hemp:</i> <a href="#">Scottish Government &amp; Rowett Institute</a>	
	<b>Potential Advantages</b>	<b>Potential Barriers</b>
	Pea protein consumption doubled globally between 2015 and 2020, with significant increases in human consumption projected (Wiltshire, 2020). The production and consumption of peas and beans contribute to the GFN objectives of improved human health and reduced environmental impact (The Andersons Centre, 2017). Existing markets could sustain a	In terms of pea & legume production, Scotland has a challenging climate and legumes generally have a poorer economic performance for farmers compared to other crops such as cereals and oilseed rape (Wiltshire, 2020). The current lack of infrastructure and fragmented supply chain results in no processing options for locally produced legumes & pulses (Amos, 2021). Alternative proteins can struggle to

	doubling in the size and value of the UK pea and bean industry (The Andersons Centre, 2017). EU Commission & EU Food Safety have approved certain insects for human consumption (European Commission, 2021).	overcome negative social perceptions regarding nutritional benefits (UKRI TFP team, 2022). Consumers have low familiarity with insect protein, with the majority of consumers experiencing a “disgust reaction” (Veldkamp T, 2022).
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### 4.3 Processing & Supply-chain Innovations

Table 4. Processing & Supply-chain Innovations Literature Summary

Processing & Supply-chain Innovations		
Abattoirs and Slaughtering	<b>Question:</b> Can the small/local abattoir network across Scotland be re-established in an economically viable way to shorten supply chains for local meat?	
	<b>Case studies of relevance:</b> <a href="#">Fir Farm Micro Abattoir – Gloucester</a> <a href="#">Mountfield Butchers – Yorkshire</a> <a href="#">Western Isles Council Abattoir – Stornoway, Lewis</a> <a href="#">Shetland Livestock Marketing Group – Lerwick</a> <a href="#">Mobile Abattoir – Sweden</a>	
	<b>Potential Advantages</b>	<b>Potential Barriers</b>
	Local abattoirs tend to provide high animal standards of welfare and provide greater traceability of product (Farming UK, 2023). Local abattoirs provide rural employment and retain value in communities (Franks, 2022). Access to slaughtering and butchering facilities allows farmers to add value to their primary products and bring their product to Scottish consumers (NFU, 2020).	Abattoirs with small throughput have proved to be financially difficult to maintain in the past (Scottish Government, 2020), also, smaller abattoirs necessitate alternative supply chains, as large retailers tend not to buy from small, regional abattoirs (Laughton, 2017). Evidence suggests that smaller abattoirs are not economically viable and therefore may need subsidies to operate as rural infrastructure (Franks, 2022).
On-farm Processing (value-added agriculture)	<b>Question:</b> Can more local producers be encouraged to add/increase their on-farm processing?	
	<b>Case studies of relevance:</b> <a href="#">Rora Dairy – Peterhead</a> <a href="#">Scotland the Bread – Fife</a> <a href="#">The Free Company – Edinburgh</a> <a href="#">Balgove Farm &amp; Butchery – St Andrews</a> <a href="#">Janies Farm Mill – USA</a> <a href="#">Berea College Farm</a>	
	<b>Potential Advantages</b>	<b>Potential Barriers</b>

	<p>Can offer rural businesses growth opportunities, as well as increased rural employment (Coltrain, 2000). Allows producers to simultaneously increase profit margins whilst minimising waste (H. Chen, 2021). An increase in Scottish producers utilising value-added agriculture will create greater GVA in the sector and help meet Scotland Food &amp; Drink’s ‘2030 Ambition’.</p>	<p>Investment in infrastructure can be a risky prospect for producers due to rising and falling nature of commodity markets (NFU, 2016). Regulations on processing can pose an economic barrier (Laughton, 2017). Market research to determine successful product lines and marketing capacity is often a barrier for small producers adopting on-farm processing (Matthewson, 2007).</p>
<p>Cooperation in Local Supply Chains &amp; Small-scale Post-gate Processing</p>	<p><b>Question:</b> Can short supply chains be effective? Can local post-gate processing be effective?</p>	
	<p><b>Case studies of relevance:</b>  <a href="#">Mossgiel Dairy &amp; Baxter Storey</a>  <a href="#">Barony Mill – Orkney</a>  <a href="#">Fivepenny Farm – Dorset, England</a>  <a href="#">Dartington Mill – Devon, England</a>  <a href="#">Cambrian Mountains Beef Group – Wales</a>  <a href="#">Vestfold Cooperative – Norway</a></p>	
	<p><b>Potential Advantages</b></p>	<p><b>Potential Barriers</b></p>
	<p>Multiple food chain actors combining resources can coordinate logistics to lower costs and environmental footprint (Soil Association, 2023). A higher percentage of the final product sale price is retained and circulated amongst local producers in Scotland (Davies, 2022) – directly benefiting the local economy. Investing in post-gate processing can be a diversification strategy from farms selling raw agricultural commodities towards increasing control of the supply chain and increasing farm income (Ilbery B. M., 2005). Improving farm-gate prices in this way counters the retail sectors’ control over the co-ordination of food supply and builds local and resilient food networks (Cooper, 2003).</p>	<p>Can result in a higher final price paid by consumers as opposed to products obtained through industrialised supply chain (Dovleac, 2017). Potentially a shortfall of key intermediaries (producers, transporters, wholesalers etc.), specifically in rural areas of Scotland, that are able and willing to conform to alternative supply chains (Ilbery B. M., 2004). Smaller local supply chains can be weakened by small production volume and seasonality of production (Dovleac, 2017). Developing a short supply chain requires specialist skills, and often relies on a community network to remain sustainable and successful (Davies, 2022).</p>
<p>Co-operative Wholesalers</p>	<p><b>Question:</b> Fairly accepted that co-ops can support local food producers. But can co-op wholesalers increase their share in the sector?</p>	
	<p><b>Case studies of relevance:</b>  <a href="#">Highland Wholefoods Cooperative – Inverness</a>  <a href="#">Better Food Shed – London</a>  <a href="#">East of England Coop</a>  <a href="#">Organic North – England</a></p>	

	<a href="#">Suma Wholefoods – England</a> <a href="#">Ace Natural – USA</a> <a href="#">Mondragon – Spain</a>	
	<b>Potential Advantages</b> Nonprofits and cooperatives can play key roles in value chain development by building strategic partnerships with other value chain actors (Diamond, 2012). Member-owned food business approaches increase equity of ownership across food system actors and help to provide greater control over supply chains (Birchall, 2013). Increase in wholesale businesses prioritising local foods will benefit farmers by creating a more diverse mix of potential market channels (Diamond, 2012).	<b>Potential Barriers</b> New wholesale distributors of local foods in Scotland may face non-regular availability, limited supply and uncertainty about the delivery reliability of new local suppliers (Eriksen, 2016). Lack of participation from local producers and a lack of market power are barriers to the uptake of local food wholesale organisations (Farooque, 2019). Consumer awareness of alternative supply chains for local foods may be lacking for widespread adoption of cooperative wholesalers (Rikkonen, 2013).
Supermarkets’ Roles in the Food system	<b>Question:</b> Can large food retailers operating in Scotland play a role in supporting more local foods?	
	<b>Case studies of relevance:</b> <a href="#">Booths Supermarket – Northwest England</a> <a href="#">Asda, Supplier Development, Scotland.</a> <a href="#">Morrisons, Scotland.</a> <a href="#">Carrefour, France</a> <a href="#">Spar, Hungary</a>	
	<b>Potential Advantages</b> Retail is the UK’s biggest employer, with 1 million people employed by the big four supermarkets (Yehia, 2014). Supermarkets can benefit from supporting and marketing of local foods, as this can strengthen their corporate image and satisfy increasing consumer demand for “local foods” (Bloom, 2017). Supermarket’s willing to utilise their marketing functions can significantly increase the likelihood of consumers purchasing local foods (Brečić, 2021). Supermarket contracts for local foods (if fair and achievable) present a huge opportunity for local producers (Hattersley, 2010).	<b>Potential Barriers</b> Throughout the year in Scotland, the retailing of local food may only make up a small percentage of overall food sales (Zwart, 2021). Research suggests that market-based expansion of supermarkets cannot ensure food security of low-income populations despite their advantages of improved food safety and lower prices (Battersby, 2015). Supermarket’s power in regional and national food systems, along with the development of consumer choices may be a barrier to the introduction of more local foods to supermarket shelves (James, 2016).
	<b>Question:</b> Independent retailers can support local producers – but can they improve access & affordability of local foods?	
Independent Retailers’		

Roles in the Food System	<b>Case studies of relevance:</b> <a href="#">Locavore, Glasgow.</a> <a href="#">Bowhouse, Fife.</a> <a href="#">Wheatsville Food Coop, Texas, USA</a> <a href="#">Menomonie market, Wisconsin, USA</a> <a href="#">CDS</a> and <a href="#">FCI</a> – USA	
	<b>Potential Advantages</b>	<b>Potential Barriers</b>
	Local retailing practices can drive socio-economic benefits such as strengthening the local economy; supporting local producers' livelihood; establishing direct connections between producers and consumers; and contributing to local identities (Zwart, 2021). Independent food retail can contribute to a sustainable and localised food system which can connect small food producers with businesses and consumers alike (Pearson, 2011).	Structurally, the sector is small-scale and on the margins of the food system. Supermarkets' vast control over supply chains and distribution systems makes it difficult for smaller retailers to compete (Ilbery B. M., 2005). Independent retailers prioritising local foods will face issues of seasonality, particularly fruit & veg. This is a potential issue with large amounts of consumers in Scotland not eating a seasonal-focused diet (Brooks, 2011).

### 4.3.1 Abattoirs & Slaughtering

The closure of abattoirs and slaughtering facilities across the UK has been a pertinent topic in recent years. More specifically, the loss of small and medium sized abattoirs is causing concern for the livestock sector (Sustainable Food Trust, 2023). A small abattoir is classed as a facility which has a throughput of less than 5,000 Livestock Units (LSU) per year. Between 2001–2017, the number of small abattoirs in the UK was reduced by 34% (NFU Cymru, 2020). Over the same timeframe, the UK's medium-sized abattoirs (between 5,000–30,000 LSU/year) have seen a 49% reduction (NFU Cymru, 2020). The Food Standards Agency estimates that local abattoirs are closing at a rate of 10% a year (APPG for Animal Welfare, 2020), if this current rate continues, there will be no small abattoirs left operating across the UK by 2030 (Riverford, 2023). The current food system (particularly large retail food chains) favours larger abattoirs with greater economies of scale and efficiency of process. For instance, the ten largest abattoirs which slaughter pigs, process 99% of all pigs slaughtered in the UK (Franks, 2022).

The graphic in Figure 4 illustrates the remaining abattoir services operating across the UK.

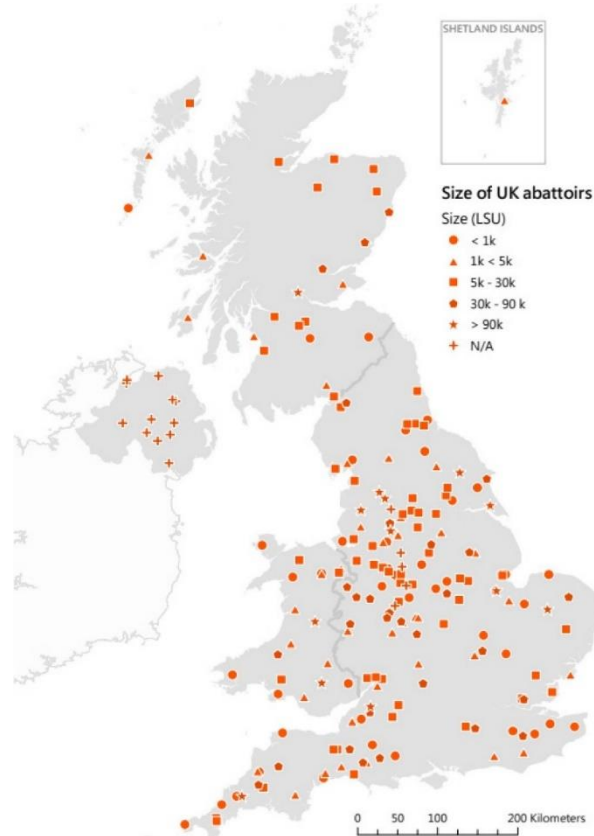


Figure 4 Map detailing Abattoir services with their size denoted in yearly throughput (Franks, 2022)

As this issue has been raised at both UK and Scottish Government level, in 2020 the Scottish Government commissioned a report on the viability and sustainability of mobile abattoirs. Through their stakeholder engagement, they identified a significant interest and demand for local abattoir services (Scottish Government, 2020). A 2023 survey asking meat producers across the UK their thoughts on abattoir provision had similar findings with:

- 88% of respondents stating their closest abattoir is either essential or important to the success of their business (Sustainable Food Trust, 2023).
- 64% of respondents feel the availability, or lack of availability, of a local abattoir, has impacted their future business plans (Sustainable Food Trust, 2023).

The report regarding viability of mobile abattoirs in Scotland included case studies from Sweden, Norway, France, Namibia, Canada, Australia and the USA. All of these case studies had varying degrees of success.

However, a recent example closer to home is [Fir Farm in England](#). Involved in the “Campaign for Small abattoirs” the farm obtained funding through the European Agricultural Fund for Rural Development to commission the design and pilot phase of a mobile abattoir (Fir Farm, 2022). The farm operates a hub system whereby the abattoir can be moved across five designated locations across the area. The idea is to improve animal welfare and value-retention on Fir Farm itself as well as to serve farmers in the local area who do not currently have access to slaughtering facilities. Following development in July 2022, the mobile abattoir was granted an operating licence.

Innovations in the space across England, such as the Fir Farm case study, and in Scotland such as [Bowhouse](#) and [Balgove](#) have shown that producer-owned slaughtering facilities can provide a solution for small levels of livestock throughput from farmers in local areas.

Provision of slaughtering services is being eroded across a large amount of Scotland's rural farming communities. Currently, rural communities across Scotland are seeing an ever-lengthening supply chain for meat products, which ultimately removes value from these communities. For smaller meat producers in Scotland, who cannot sell into large value chains due to size constraints as well as preference, alternative routes to market through existing abattoirs and slaughterhouses are vital.

### **What initiatives could support local abattoir provision?**

In February 2023, DEFRA's farming minister unveiled plans to make more funding available for smaller, rural abattoirs – with the funding targeting new technology and improvements to productivity for small abattoirs (Farming UK, 2023). Whilst no details have been released of specific measures, Scottish Government may be able to liaise with DEFRA to make this new funding package as relevant to Scottish abattoir provision as possible.

Referring to [Appendix A – Section 2.1], the cooperative slaughterhouse model (present in Mull and Shetland) could prove an innovative business model which could be utilised across rural Scotland. Further, this example of Shetland Council's investment into agricultural infrastructure provides a replicable model (likewise with Stornoway abattoir) which could feed into Good Food Local Authority plans across rural Scotland.

As indicated by the current operation of both Shetland and Mull abattoirs, cooperative structures may provide more chance of longer-term viability for smaller rural abattoirs. In terms of how these cooperatives can be encouraged to form, the [Scottish Agricultural Organisation Society \(SAOS\)](#) may be able to provide advice and support.

A summary of the literature on the subject considers the following measures and recommendations:

- Leaving the EU CAP offers the UK the freedom to “do things differently”. Providing targeted grant schemes to smaller abattoirs as providers of key infrastructure (Franks, 2022).
- The critical role small abattoirs can play in providing the easy return of livestock products to farmers and collaborators to add value to those products should be recognised by Government as key to enabling the evolution of a self-sustainable rural farming economy. (APPG for Animal Welfare, 2020).
- It should be recognised that small abattoirs are a key link in the chain for livestock products and an essential part of the infrastructure for a rural livestock industry (Northen, 2001).
- Encourage small abattoirs to deal with a range of species to meet the needs of local farmers – this often requires different equipment and training. (APPG for Animal Welfare, 2020).
- Funding must be accessible, broad and with a long timeframe, and it must be implemented alongside work to address other issues including regulation, recruitment and waste disposal costs (APPG for Animal Welfare, 2020).
- Promote the investment into the local network, and for livestock keepers to use that network (Farming UK, 2023).
- Need to be incentives to enable abattoirs to provide related services such as butchery, processing and packing. This could be done through revenue payments, in this way, farmers would be rewarded for sustainable initiatives (Herald Scotland, 2021).
- Co-operative slaughtering facilities should be fostered to capitalise on the opportunities present in rural farming communities (APPG for Animal Welfare, 2020).



### 4.3.2 On-farm Processing (value-added agriculture)

Value-added agriculture involves transforming a raw agricultural product into something new through packaging, processing, cooling, drying, extracting or any other type of process that differentiates the product from the original raw commodity (Matthewson, 2007). Food producers in Scotland who can retain primary and/or secondary processing of their products can, in turn, retain more of the products' whole value (Amit, 2017). An increase in value-added agriculture through on-farm processing ultimately reduces the need for longer supply chains and reduces the amount of food system actors required to bring any given product to market. Small-scale producers are increasingly interested in making value-added products as it enables them to expand profits whilst reducing overall waste associated with their production (H. Chen, 2021).

The Good Food Nation bill states that, in terms of prosperity, Scottish Government will look to “drive profitable, responsible growth across the entire food and drink industry” (Scottish Parliament, 2022). In 2017, the Scotland Food & Drink partnership launched the “Ambition 2030” strategy which aims to double the current annual turnover for food & drink in Scotland from £14.9 billion to £30 billion by 2030 (Scotland Food & Drink, 2017).

The Agricultural Marketing Resource Centre (AGMRC) in the US believes that to build successful value-added agricultural enterprises, innovation and vertical integration are key components.

Innovation focuses on improving existing processes, procedures, products and services or creating new ones. Innovative value-added activities developed on farms or at agricultural research institutes are sources of national growth through changes either in the type of product brought to market or in the technology and means of production.

Producers who invest in value-added projects past the farm gate cause the market to become more vertically integrated. A totally integrated system can provide consistent quality from the field to the shelf, eliminating middlemen and even saving money for consumers. By encouraging innovative ideas, adding value becomes a reality. (AgMRC, 2023)

#### *Box 2 Scotland the Bread Case Study*

##### *Scotland the Bread – Fife*

Scotland The Bread is a members cooperative and a community benefit organisation which brings together actors from across the supply chain. As a group they consist of breeders and farmers of grain, millers, bakers, nutritionists and consumers. The group purchased their own Zentrofan mill allowing them, as a cooperative group, to control their entire supply chain. The growers and breeders work together to produce Scottish heritage wheat which acts as the raw ingredient. Two part-time employee millers at Scotland The Bread, located in Fife process the grain into milled flour (the first value-added product). The milled flour is distributed to Scottish bakers who are part of the cooperative. From here bakeries produce the final product in the form of wholemeal bread. From field-to-loaf Scotland The Bread has created a value-added product in an ethical and sustainable way through the use of cooperative working.

Farms and food businesses that have control over the process of turning raw foodstuffs into a processed food product for market, have increased their turnover and retained much of the value across production (Amit, 2017). However, at present, the UK food sector faces large disparities in terms of value-added across the food supply chain. Within the Common Agricultural Policy (CAP) pre-

2019, the UK's primary food producers represented the lowest amount of value-added across the five largest (in terms of value) EU food supply chains, as detailed in Figure 5.

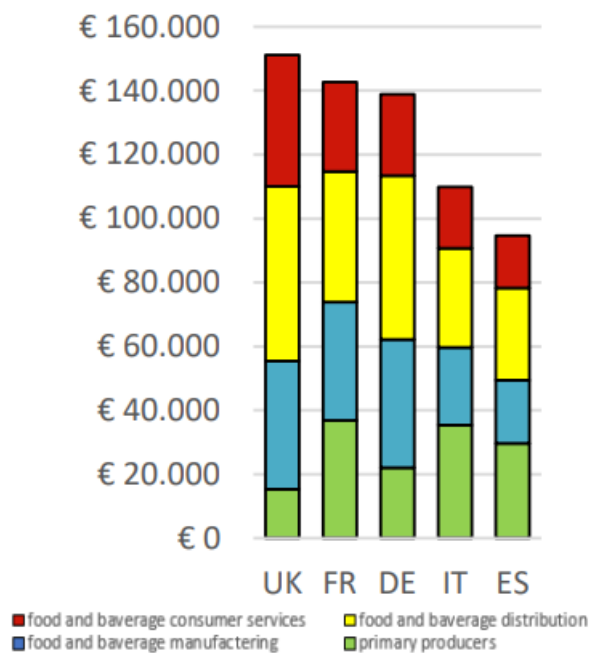


Figure 5 Value added throughout the food chain in millions of Euros of the 5 largest EU agricultural economies. Sourced from: (European Commission, 2019)

To achieve the aims of driving prosperity within the food & drink industry as laid out in the Good Food Nation Act, as well as the doubling of annual turnover in the food & drink sector by 2030 – value-added agriculture and on-farm processing may be a useful avenue to explore. As detailed in Figure 5, there exists a large scope for increasing the level of value-added retained by primary food producers in Scotland.

### **What initiatives could support further adoption of value-added agriculture?**

From the examples and case studies [Appendix A – Section 3], it is evident that farmers and groups looking to explore value-added agriculture will require appropriate facilities and may require investment in buildings and processing infrastructure – many smaller producers will require access to capital in order to invest in this infrastructure.

This cooperative-owned supply chain in both [Five penny Farm](#) and [Scotland The Bread](#) demonstrates how value-added agriculture doesn't have to be performed by just one food producer, it can be a collective effort amongst multiple actors. This can help to share infrastructure costs as well as bring benefits through shorter and stronger supply chains.

One area of support for encouraging innovation within the sector could be public funding. The [Food Processing, Marketing & Co-operation](#) (FPMC) fund, is one of several funding schemes which make up the Scottish Rural Development Programme (Scottish Government, 2022). The scheme provides grant funding to businesses (or groups of businesses) within the Scottish food and drink sector to enable them to: develop or create food processing facilities, including buildings and equipment; run pilot projects and feasibility studies; run cooperative ventures to ensure more value is retained by farmers and growers; and, to improve supply-chain efficiency. Whilst operating, the FPMC Grant Scheme made grant awards totalling over £18 million within the sector (eQ Chartered Accountants, 2022), enabling businesses to invest in physical assets and explore new products.

Despite the early success of the FPMC grant funding scheme, the Scottish Government have closed the funding for further applications in 2023. The scheme was closed due to “budgetary pressures, brought about by global inflationary trends and exacerbated by UK Government’s fiscal decisions” (Scottish Government, 2023). Scottish Government are currently reviewing the FPMC with a view to “simplifying and streamlining the process” (Scottish Government, 2023).

To increase vertical integration of the market, more investment in value-added processing capacity is needed (SIFIEM, 2018). A barrier to small food businesses investing in this capacity could be the rising and falling nature of commodity markets, which actively deters long-term capital investment in agricultural infrastructure (NFU, 2016).

Should future Scottish Government budgets allow for the re-introduction of the FPMC scheme, or any similar scheme to that of the [Adding Value Grant](#) in operation in England [Appendix A - Section 3.1], then the public funding could be used to strengthen Scottish producers’ ability to innovate and invest in infrastructure which can bring added-value agricultural goods to market.

In terms of value-added agriculture, producers must understand the market available before making the decision to invest in value-added activities, as was the case with [Rora Dairy](#) & [The Free Company](#) [Appendix A - Section 3.1]. Therefore, suitable business support to help with market research and effective marketing strategies should be readily accessible to help encourage Scottish producers. Readily available business support should allow Scottish producers to follow demand-driven production (Matthewson, 2007).

An effective way to encourage an increased uptake of value-added agriculture practices could be the introduction of a scheme which highlights work already being done by Scottish producers. The scheme could identify practitioners of value-added agriculture and include them as demonstration sites. The demonstration sites could promote effective knowledge exchange with other actors across Scottish food systems, prompting and inspiring Scottish producers to adopt new value-added agriculture business models (Kneafsey, 2013).

A good example of a support body is the [Agricultural Marketing Resource Centre \(AgMRC\)](#), funded by US Department of Agriculture. The agency helps coordinate and consolidate food businesses by providing access to business and economic analysis tools. Further resources include supporting producers in their efforts to prepare and apply for grants and loans which enable investment into value-added infrastructure (AgMRC, 2023).

Similar resources already operating in Scotland which could potentially be scaled or adapted to provide a similar role to that of the AgMRC are [Business Gateway](#), [Scottish Enterprise](#) and the Scottish Food Commission.

#### 4.3.3 Cooperation in Local Supply Chains & Small-scale Post-gate Processing

In their review of two decades worth of research into local food systems in the developed world, (Enthoven, 2021) concluded that the overall impact of local foods on social, economic and environmental factors is highly dependent upon the type of supply chain present. A food supply chain encompasses everything from; inputs, raw product, processing of product, distribution, marketing and sales (Bourlakis, 2004).

A short food supply chain, according to EU definition, is a supply chain involving a limited number of economic operators, committed to cooperation, local economic development, and maintaining close geographical and social relations between food producers, processors and consumers (European Parliament, 2023).

At various stages across the supply chain, food system actors require access to suitable facilities to bring a final product to market (Sellars, A. Roberts, D., 2020). The lack of specialist processing facilities across the food supply chain is seen as a major barrier to the production of certain foodstuffs in Scotland, (NFU, 2020). Small-scale processing facilities and co-operative-owned infrastructures which can be utilised by local producers can play a role in improving access to post-farm-gate processing (Ilbery B. M., 2004).

Co-operation in infrastructure focuses on arrangements among those that produce and market farm products. Coordination between producers can involve pooling or consolidation among individuals and companies from the same level of the food chain. Vertical coordination includes contracting, strategic alliances, and licensing agreements with market stages at different levels of the food chain (AgMRC, 2023).

Currently, around half of UK farmers are members of a farmer co-op. Further, a larger proportion of farmers in Scotland are involved in co-ops than in the other nations of the UK. (Macmillan, 2019). This is promising; however, the total market turnover of farm co-ops amounts to 6% of business in relevant sectors, compared with 68% in the Netherlands, 55% in France, 45% in Spain and 17% in Germany (Cogeca, 2014).

On the producer-side of short supply chains, managing the activity of selling directly to consumers requires knowledge and skills that farmers do not always have and training is often necessary (Dovleac, 2017). By selling directly, a farmer becomes much more than a producer because they are simultaneously: a marketing agent, a distributor and consumer relations expert (European Commission, 2013).

*Box 3 Dartington Mill case study*

*Dartington Mill – Devon, England*

The [Dartington Mill](#) in Totness was the idea between two local farmers and a local baker. They lamented the fact they could not connect and decided to build the “missing link” in the supply chain – their own mill (Thompson, 2022). They have effectively formed relationship from grower, to miller, to baker, to consumer. In doing so they are creating complete control of their products necessary supply chain and stimulating their local economy in the process.

**What initiatives could support short supply chains & small-scale processing facilities?**

In terms of alternative or short-supply chains, producers and co-op must understand the market before making long-term decisions. Therefore, suitable business support to help with market research and effective marketing strategies should be readily accessible to help encourage short supply chains in Scotland (Matthewson, 2007). Further, the BaxterStorey & Mossgiel Milk cooperative have demonstrated the buying power available and the benefits this can generate when used to purchase local foods.

As the case studies and literature have highlighted, there exists overlap regarding the skills needed and market knowledge required to successfully perform value-added agriculture activities and to effectively build short supply chains.

The [Cambrian Mountains Beef Group – Wales](#) study demonstrated that any food system actors creating new supply chains can greatly benefit from access to marketing support such as business tools for market research and product development (EIP Wales, 2020).

A good example of a support body is the [Agricultural Marketing Resource Centre \(AgMRC\)](#), funded by US Department of Agriculture. The agency helps coordinate and consolidate food businesses by providing access to business and economic analysis tools (AgMRC, 2023).

Similar resources already operating in Scotland which could potentially be scaled or adapted to provide a similar role to that of the AgMRC are [Business Gateway](#), [Scottish Enterprise](#) and Scottish Food Commission.

Evidence from [Vestfold](#) and [BEES Coop](#) case studies [Appendix A - Section 4.2] are great European examples of cooperative consumer-led short supply chains. On the production side, Erkop is a relevant example of cooperative working to create vertical integration of the food chain. From the Mossgiel and BaxterStorey case study, a large dairy co-op [Omsco](#) was a pivotal partner in establishing the success of Mossgiel Milk cooperative.

In Scotland, the [Scottish Agricultural Organisation Society \(SAOS\)](#) has done numerous projects in this space such as the [Potato co-op](#) which they were instrumental in forming, and the [Milk Suppliers Association](#) which they supported in the early stages of establishing their co-op.

Important to the development of shorter and more resilient food systems is the strength of organisation and cooperation between food system actors (AM, 2022). By committing to sourcing local produce and working with local food businesses, as well as carrying high ethical and sustainable standards, cooperative food structures can effectively create short supply chains and engage with consumers in both regional and national food systems (Malak-Rawlikowska A, 2019).

To effectively replicate these models of working across Scottish food systems, facilitating more impact from agencies such as the SAOS could be key to making cooperative-focussed shorter supply chains. For the agency to have a greater impact nationwide, it is likely more base funding is required to employ the relevant staff who can provide expert support within local areas themselves. Having agency presence, such as the SAOS, within a region itself can encourage more local food producers and food system actors to engage in cooperative working across the supply chain.

#### 4.3.4 Wholesalers

Wholesale food and drink businesses are crucial actors in many of Scotland's food systems and they often form a key element in supply chains across the country (Scottish Government, 2020). Pre-covid lockdowns, the market of Scottish wholesale and distribution of food and drink was worth an estimated £2.9 billion, employing over 6 thousand people directly and over 50 thousand indirectly (Scottish Wholesale Association, 2020). Food and drink wholesalers are located all across Scotland and range from single-depot, family-owned businesses to national wholesale groups (Scottish Wholesale Association, 2023). Wholesalers supply many different food businesses in Scotland, such as; restaurants, cafes and hotels, commercial canteens and caterers, public institutions, food processors and independent retailers.

The [Blochairn Wholesale Market](#) in Glasgow represents the largest wholesale fruit, vegetable and fish markets in Scotland (Glasgow City Council, 2023). The wholesale market is operated by [City Property Markets](#) on behalf of Glasgow City Council. The wholesale market at Blochairn is a major distributor of fresh fruits, vegetables and fish across Central and West of Scotland. Each year, over 2 million tons of produce from around the world goes through the market, equating to an annual turnover of £250M (City Property Markets, 2023).

The wholesalers which operate out of Blochairn, and across the rest of Scotland, stock ingredients sourced from across the globe, with wholesale traders supplying chefs and specialist caterers with

whatever they require at any given time of year (Gray, 2018). Wholesale distributors in Scotland are extremely important to food supply chains across the country, but they do not always prioritise local foods and partake in a globalised food supply chain.

*Box 4 Better Food Shed Case Study*

*Better Food Shed, Growing Communities – London*

The wholesale unit in Barking acts as a distribution hub for small/medium, local, organic food producers who can deliver all their London orders to a single location. Every week the hub distributes up to 15 tonnes of fresh organic produce, sourced directly from 23 small and medium organic UK farms, many of which are within 70 miles of east London. The efficient access to the London consumer market coupled with the fact they operate as a non-profit organisation, means the Better Food Shed business model aims to maximise profits for both the farmers and food businesses which they work with.

As the non-profit wholesale gathers so many local producers together, all producing a wide range of commodities, it allows Better Food Shed to supply larger public contracts. Having the reliable throughput of produce from local 23 farms gives the wholesale organisation greater buying power, allowing them to compete with larger businesses. Overall this initiative is boosting the availability of local foods directly in the Hackney Borough of London.

Can smaller, alternative business models and co-operatives be a good option to make more local foods accessible to Scottish consumers?

**What initiatives could support more local foods supplied by Scottish wholesalers?**

From a review of the literature and presentation of case studies, it is evident that wholesale organisations can play a key role in underpinning local food systems. As seen in the case studies relating to Nottinghamshire procurement [Appendix A – Section 7.1], wholesalers are vital components of a food system. In Nottinghamshire they are in dialogue with their end customer, the schools, to source from local producers identified. This allows the end customer to access a range of local products brought to the market by intermediary wholesalers. This example, highlighted in Figure 6 shows how the wholesale units in Nottinghamshire have enabled the creation of short supply chains for local foods.

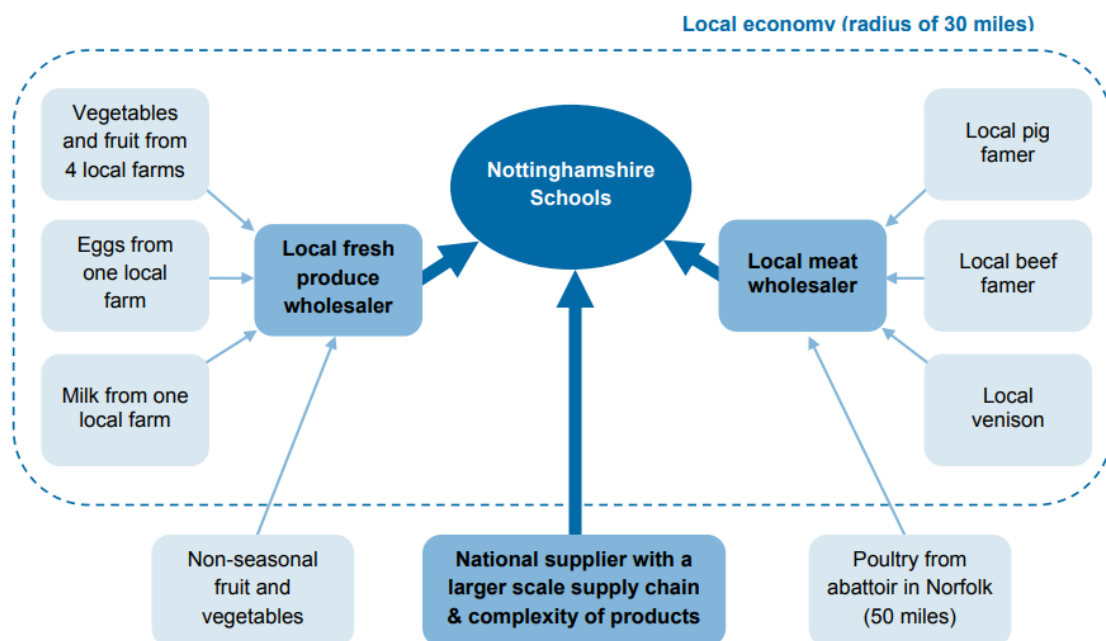


Figure 6 Diagram illustrating Nottinghamshire Schools procurement strategy through the use of local wholesalers. Sourced from: (New Economics Foundation, 2011)

Therefore, any new food systems being created, or existing systems looking to adapt, can benefit from cooperative and local-focussed intermediary wholesalers. Wholesalers who operate in the local area can allow easy and direct sales for local farmers and producers which allows the wholesaler to sell a range of produce under one contracting organisation to multiple canteens etc. within the food system.

Wholesalers in rural areas of Scotland such as the [Highland Wholefoods Cooperative](#) have established trading relationships with food producers in the local region, as well as nationally and globally to supply ethical wholefood products throughout the Highlands & Islands region to deliver wholefoods to those even in remote areas. By aiming to source products from highland producers – combined with their distribution network throughout the Highlands & Islands region – structures such as the Highland Wholefoods Workers Cooperative have demonstrated how to effectively bring local food to local food systems. Using their network of suppliers and distribution network in tandem highlights the ability of cooperative wholesale structures to supply local foods to local people, especially in remoter regions of Scotland.

At the other end of the scale, city-based wholesalers can boost the availability of local foods within the city itself. The [Better Food Shed](#) as part of the [Growing Communities](#) initiative sources from 23 local farms many of which are within 70 miles of east London (Better Food Shed, 2023), wholesaling produce for the London consumer market through independent retailers, veg boxes and council services. In this example, the large-scale, reliable demand for food of the London populace is matched up with a reliable throughput from a network of local producers. This collective of producers bringing together a wide range of local commodities gives the wholesale organisation greater buying power, allowing them to compete with larger businesses operating in London. Businesses such as these can increase their stake in local food systems and eventually tender for public contracts (Friedmann, 2007).

The [Food and Meat Co-op](#) in the USA was founded as a way to connect local food producers and farmers directly with local consumers. Initially, it started as a small group of families coming together

to increase their buying power and provide a route to market for local producers. Whilst this example is at a very small scale and direct-to-consumer, it demonstrates the positive impact of cooperative groups buying local food in wholesale quantities – encouraging the stability of local supply chains and strengthening accessibility of the community to local foods.

## 4.4 Innovations in Social-science & Policy

Table 5 Innovations in Policy Literature Summary

Policy Innovations		
New/Young Entrants to the Sector	<p><b>Question:</b> Can any initiatives reduce barriers for new entrants to farming? Can access to land for local food production be improved?</p>	
	<p><b>Case studies of relevance:</b> <a href="#">DEFRA’s “New Entrant Support Scheme”</a> <a href="#">ScotGov’s “Young Farmers start-up grant schemes”</a>.</p>	
	<p><b>Potential Advantages</b></p>	<p><b>Potential Barriers</b></p>
	<p>New entrants and younger farmers have a longer planning horizon and tend to invest more heavily in business growth than comparable older age groups (Davis, 2013). Bringing new entrants to the sector can bring new ideas regarding sustainable production methods as well as, new initiatives for shorter supply chains and alternative business models (Skrzypczyński R, 2021), (Sutherland, 2020).</p>	<p>There are considerable challenges to entering the farming sector in Scotland, with access to finance, land, advice, training and skills all potential barriers (Scottish Government , 2023). Potential high startup costs coupled with low expected rates of return are some of the economic barriers facing new entrants (Williams, 2006). The role of the wider rural economy can affect the success of new entrants to farming (Jack, 2019).</p>
Local Authorities & Local Food Systems	<p><b>Question:</b> How can Local Authorities improve &amp; encourage growth in their local food system?</p>	
	<p><b>Case studies of relevance:</b> <a href="#">Glasgow City Food Plan</a> <a href="#">Highland Good Food Partnership</a>. <a href="#">Sustainable Food Places</a> <a href="#">Toronto’s Food Charter</a> <a href="#">China’s 1988-current “Vegetable Basket Program”</a>.</p>	
	<p><b>Potential Advantages</b></p>	<p><b>Potential Barriers</b></p>
	<p>Local Authority resources can be influential in bringing together actors to form embedded local food systems (Zerbian, 2022). Local planning legislation has great potential to develop urban-rural interactions towards more sustainable systems (Granvik, 2012). Increased participation from Local Authorities in their respective food</p>	<p>Improving food access and tackling food poverty in towns &amp; cities is mainly conducted by partnerships between charities and community-based organisations with little input from Local Authorities. Because many local food initiatives rely on funding and volunteer work, their capacity to create infrastructures for integrated approaches is limited (Zerbian, 2022).</p>



	systems can increase resilience to risks in food supply and market shocks (Béné, 2020).	Municipal planning has traditionally not prioritised food system planning over housing, transportation and services (Granvik, 2012).
Urban Farming and Town planning	<p><b>Question:</b> Can more community gardens &amp; allotments be established and play a role in urban food systems? Can more food growing be incorporated into town planning?</p>	
	<p><b>Case studies of relevance:</b>  <a href="#">Lauriston Agroecology Farm – Edinburgh</a>  <a href="#">Bruz Municipality – Rennes, France</a>  <a href="#">Poland’s “Legislation on Family Allotment Gardens”</a>  <a href="#">Green City plan – Lisbon, Portugal</a>  <a href="#">City Rural Development Plan – Ljubljana, Slovenia</a></p>	
	<p><b>Potential Advantages</b></p> <p>Economic contributions of food produced from urban (especially peri-urban) agriculture can be quite significant (Mok, 2014). Evidence suggests that urban farmers contribute to boosting biodiversity in urban areas (Cabannes, 2013). An increase in urban &amp; peri-urban farming can provide new green jobs, bringing people from a diverse range of backgrounds together to generate employment opportunities (Roberts, 2021).</p>	<p><b>Potential Barriers</b></p> <p>Land ownership and usage data is fragmented and can vary greatly across different local authority areas which can act as a barrier to further adoption of urban productive spaces (Roberts, 2021). “Urban sprawl” and the capital value of urban development is resulting in less agricultural land in and near cities (Mok, 2014). To make a difference to a city's local food system, the scale of urban-farm projects needed may be prohibitive (Roggema, 2016).</p>
Increasing Food Production in Scotland’s Remote Rural & Island Food Systems	<p><b>Question:</b> Does increasing food production in rural/islands equate to an improved local food system?</p>	
	<p><b>Case studies of relevance:</b>  <a href="#">Westray Community Garden, Orkney.</a>  <a href="#">Transition Turriefield – Shetland</a>  <a href="#">Tagša Uibhist Community garden network - Uist</a></p>	
	<p><b>Potential Advantages</b></p> <p>Long-established fishing industries in Scotland’s coastal and island communities can be utilised at local level for a ready supply of nutritious proteins (Stead, 2005). Small-to-medium food businesses have been identified as integral to the economic sustainability of island communities (Schiffling, 2015). Many rural communities perceive local products, and the skills required to produce them, as</p>	<p><b>Potential Barriers</b></p> <p>Scottish fishing has a long history, but small-scale fishers in rural communities have seen a decline in recent decades (Brooker, 2018). A significant proportion of island food production is geared towards the high-value tourism sector (Francesco, 2021). Scottish rural &amp; island producers have poorer uptake of commercial finance compared to food &amp; drink enterprises elsewhere in Scotland (Watts, 2021). Rural food production in Scotland is often</p>

	important to their identity (Dargan, 2016).	centred on export commodity markets (Dargan, 2016).
Procurement of Local Foods	<b>Question:</b> How can more procurement of local foods be supported across Scotland?	
	<b>Case studies of relevance:</b> <a href="#">Mossgiel Milk and East Ayrshire Council</a> <a href="#">Nottinghamshire School meals supply</a> <a href="#">Georgia School Nutrition Program – USA</a> <a href="#">Riverside Unified School District Food Hub, California</a>	
	<b>Potential Advantages</b>	<b>Potential Barriers</b>
	Public sector procurement can have a powerful influence over local producers, processors and wholesalers as it represents a source of demand which is consistent, stable and predictable. UK public sector spends around £2 billion a year on food, including for meal provision in schools, hospitals, and prisons (Food for Life Partnership, 2021). If producers are in a long-term procurement contract, they have more confidence to invest (Molin, 2021). School pupils in Scotland provided with local foods can gain more knowledge and understanding of the food system (Wilkinson, 2022).	Accessing a wide variety of local foods year-round may prove challenging in Scotland’s climate with no community able to produce all the food products it will require (Policy Commission on the Future of Farming and Food, 2002). School budgets can be prohibitive in supporting local, high-quality food producers (Church, 2014). Small producers in the past, have been found to be unable to meet the bulk orders required by large-scale caterers supplying a number of schools (Food for Life Partnership, 2021).
Educational Programmes (consumer) / Food Education for Young People	<b>Question:</b> How can dietary preferences be changed at school level? Can future generations be connected with local food, in a positive way?	
	<b>Case studies of relevance:</b> <a href="#">“Eat them to defeat them” campaign.</a> <a href="#">Phuncky Foods Partnership</a> <a href="#">Farm to Cafeteria Canada (F2CC)</a> <a href="#">The Basic Law on Shokuiku – Japan</a>	
	<b>Potential Advantages</b>	<b>Potential Barriers</b>
	Sensory-based food education was found to contribute to children’s willingness to choose and eat vegetables and fruit (Kähkönen, 2018). School-based nutrition education programs can be crucial in decreasing disparities in children’s nutritional knowledge (Asakura, 2021).	Effective programs with successful uptake require cross-sectoral and public engagement which can be difficult to coordinate (Adachi, 2008). Making the transition from knowledge of good nutrition towards application of healthy diets can be challenging. (Brown K. , 2000).

Regulations for Small Food Producers	<b>Question:</b> Can regulations be altered in moderation/proportionality for small producers to create smoother processes for local food?	
	<b>Case studies of relevance:</b> <a href="#">Cottage Food Laws – USA.</a> <a href="#">Local Development Orders as part of Food Enterprise Zones – England</a>	
	<b>Potential Advantages</b>	<b>Potential Barriers</b>
	Cottage foods laws during the COVID pandemic demonstrated that sensible relaxation of food regulation can lead to more food businesses operating (Thilmany, 2021). Current regulations ensure a baseline standard of food safety throughout Scotland. Local Authority food business registration remains a powerful tool in ensuring good food safety practices (Buckley, 2015).	Food business regulations represent significant hurdles to overcome. On-farm processing can require significant investment in infrastructure since facilities must pass rigorous inspections of environmental health (Laughton, 2017). Small producers may have a lack of trust in food safety legislation and enforcement officers, as well as a lack of motivation in dealing with new legislation (Yapp, 2006).
Access to Finance for Small Producers	<b>Question:</b> Can funding streams be set up for small producers to access new or improved infrastructure to increase local food production?	
	<b>Case studies of relevance:</b> <a href="#">Croatia’s “micro &amp; small loans for rural development”.</a> <a href="#">Farm Microloan Programs – USDA</a> <a href="#">Feed the Hunger Foundation – California &amp; Hawaii</a> <a href="#">Small Growers Fund – Vancouver</a> <a href="#">SAFIN Network</a>	
	<b>Potential Advantages</b>	<b>Potential Barriers</b>
	Targeted finance models can improve financial inclusion in agriculture, by fostering lending to specific projects such as women-owned and community-led enterprises (OECD, 2021). Greater access to capital can cause increases in market participation which in turn can drive growth in local food systems (Hwang, 2019) There is evidence that decoupled direct payments keep farms that would otherwise exit the market in business and thus increase aggregate production (AFBI, 2018).	Key barriers to adoption of support programmes include the understanding and coherence of support available, along with regulations and the level of bureaucracy (Quinn, 2014). Debt financing can require collateral of farm assets which poses a high-risk-return investment for producers (OECD, 2015). Farm payments have a significant impact on production and can have indirect negative effects on farm production decisions and aggregate output (Young, 2004).

#### 4.4.1 Local Authorities & Local Food Systems

Different areas of Scotland have specific geographic challenges and advantages (Zero Waste Scotland, 2023), especially regarding food production. The varying food systems across Scotland present their own unique challenges and hence, will benefit from different measures.

For each Local Authority area in different parts of Scotland, there will be a different sense of what a Good Food Nation feels, smells and tastes like. Further, each area will have their own unique food system actors and stakeholders (Kenton-Lake, 2023).

How each council addresses the balance between supply and demand, combined with the food production opportunities it has at its disposal, will vary across the country.

*Box 5 Lauriston Farm Case Study*

*Lauriston farm – Edinburgh*

[Lauriston Farm](#), four miles from the city centre in the West of Edinburgh, was made possible by a forward-thinking agreement between the [Edinburgh Agroecology Cooperative](#) workers' cooperative, and Edinburgh City Council. Edinburgh Agroecology Cooperative (EAC) proposed a vision for a different agricultural landscape, attempting to bring together food production; nature; and the local community. Through a community consultation, which gathered over 1000 responses and lengthy discussions with the council, EAC began in the winter of 2021 to transform Lauriston into a productive regenerative agriculture farm. The farm covers 100 acres on the outskirts of the city and composes of market gardens and community growing plots, as well as community orchards. The farm operates a weekly veg box scheme and veg stall allowing consumers to buy produce direct from the urban farm. Commercially, engages with local retailers and wholesale businesses in Edinburgh's local food system.

In the case of Lauriston, Edinburgh Council has helped to create a group of local food system actors on council-owned peri-urban land. This can offer new opportunities for land-based jobs in the area and the community hub which is based at the centre of Lauriston farm has the possibility of providing more opportunities for local schools and groups. Actions such as these can begin to create a more resilient local food economy. In this mode of operation, the EAC is localising their food system where possible, building skills and increasing knowledge in the community.

The next question facing groups with a community-focussed food system at their core, such as Lauriston farm, is whether they can ever scale their production to meet the needs of local procurement contracts for public institutions in their area.

**What initiatives could support local authorities in engaging with their food system?**

As discussed in [Appendix A – Section 6.1] [Sustainable Food Places \(SFP\)](#) have demonstrated the ability of NGOs to work with public bodies to coordinate local food system actors and to share best practices across the UK. The success of any food system depends on the involvement of local food system actors and in SFP's case, coordinating partnerships and their activities is undertaken by a paid role – partnership coordinators. The coordinators convene people to come together and drive forward collective planning and strategy processes. An important element of the SFP network is the drive towards a positive food system change in a place-based manner, with the heterogeneity of each local food system considered. This allows each local area to play to its strengths regarding their local food system.

The example of the [Highland Good Food Group](#), an SFP member, demonstrates a successful structure of governance which can bring together local producers and partners from the public and private sector to increase transparency and encourage short supply chains in local food systems which prioritise locally sourced foods.

Another non-governmental organisation making changes in their local food system is [Glasgow Food Policy Partnership \(GFPP\)](#) who has helped drive positive changes and the establishment of the [2021-2031 Glasgow City Food Plan](#), in food systems. This example of Local Authorities working with the partnership shows the extensive network of third-sector organisations working “on the ground” coming together to use their collective power. Organisations that are operating within communities already can be key in driving change if given a platform to operate and collaborate with Local Authorities (Gunn, 2004). Communities can be a big driver of change at the local level, if communities are involved in preparing and reviewing Local Authority plans (Nourish, 2019).

The advisory group made up of public authorities, third-sector and NGOs, which helps to guide the direction and structure of [Lauriston Farm](#) [Appendix A – Section 6.1] is an invaluable resource for any new development. The effective use of collaboration is detailed clearly with Local Authorities, Universities, and organisations working in the area bringing about a small food system shift in a peri-urban site of Edinburgh.

In the case of Glasgow [Appendix A – Section 6.1], the many Local Authority areas which make up the greater Glasgow area are certain to have urban and peri-urban areas trading across Council boundaries. Therefore, neighbouring Local Authorities in urban and peri-urban areas could consider liaising with each other to make use of each other’s strengths and weaknesses, creating short supply chains such as the case with the Bruz municipality – pairing peri-urban land with nearby city demand.

As Bruz [Appendix A – Section 6.2] has shown, the needs of the city (public canteen requires food supplies) combined with an opportunity (agricultural land for sale) can be woven together to create short supply chains and support local producers. The addition of a weeknight organic market as an outlet for their produce is also a pertinent example of harnessing city needs (consumers need food supplies) with an opportunity (local producers ready to meet this need). The general capacity of single food system actors to create infrastructures for integrated approaches is limited. In this context, influential players – those who can provide resources, such as local authorities (in the case of Bruz) – become key in assembling long-term locally focussed food systems (Zerbian, 2022).

Ambitious and complex aims regarding Local Authority food systems require strong top-down coordination (Prové, 2019). However, no single organisation, whether public, private or third sector, holds the powers, remit, or insight to change the local food system alone (Sustainable Food Places, 2023).

Regarding strategies and measures at the national level, in 2020, the European Commission announced its [f2f action-plan 2020 strategy-info en.pdf \(europa.eu\)](#) and corresponding action plan.

An excerpt from the plan is as follows – By the end of 2021, the Commission will “determine the best way of setting minimum mandatory criteria for sustainable food procurement. This will help cities, regions and public authorities to play their part by sourcing sustainable food for schools, hospitals and public institutions” Further, the Commission will also “review the EU school scheme to enhance its contribution to sustainable food consumption and in particular to strengthen educational messages on the importance of healthy nutrition, sustainable food production and reducing food waste.” (EU Commission, 2020)

Currently, there has been no update on the strategy the EU Commission wishes to take with regard to future procurement systems and corresponding criteria for EU member states. Whilst the review of the [EU School Scheme](#) is currently ongoing. Scottish Government, when constructing the national-

level Good Food Nation plan, may benefit from including relevant national-level targets and criteria, with suitable measures of monitoring progress.

If Scotland was to adopt any performance-based procurement or a similar criteria system to the currently under-review EU criteria for sustainable food procurement, then it will be important to note that in different Scottish Local Authority food systems, there will be varying; costs, availability of foodstuffs, potential environmental impacts, and logistics considerations (Alhola, 2018). Therefore, market dialogue with high levels of communication and cooperation between procuring organisations and the relevant actors in the supply chain will be important for further development of local foods in public procurement contracts across Scotland (Alhola, 2018). Furthermore, from many procurement departments' point of view, local and innovative procurement can still be perceived as "new and difficult," hence why a general understanding of local procurement is restricted to a few well-known cases (Kristensen, 2021).

#### 4.4.2 Procurement of Local Foods

Public procurement of food in Scotland covers the purchase of food for provision in organisations such as schools, hospitals and care homes, prisons, and government offices (Parsons, 2021). Food purchased with public money represents a considerable cost to Local Authorities with £2.4 billion spent annually on food procurement across the UK – equating to roughly 5.5% of total UK food sales (Ryland, 2020). Therefore, the large demand for food in the form of public procurement contracts can deliver economic benefits to local food producers supplying these institutions, as well as broader benefits to the local economy (Parsons, 2021). Across the UK, innovations in procurement practices are enabling new opportunities for creating short supply chains (Soil Association, 2020).

##### *Box 6 East Ayrshire Council Case Study*

#### *East Ayrshire Council*

From the total of seven suppliers to East Ayrshire Council procurement contracts, three are from East Ayrshire and three from South Ayrshire (Eating Better, 2022). This allows East Ayrshire schools to increase the share of seasonal ingredients on their menus, enabling them to support local produce and local businesses. Especially in the case of [Mossgiel Milk](#), who deliver organic milk to all forty primary schools in East Ayrshire. Each school has a purpose-built vending machine operated by Mossgiel and pupils are supplied with reusable beakers to fill with fresh, organic milk produced in their local area. Mossgiel are able to supply their milk directly to forty schools packaging-free through the use of electric delivery vehicles – building an incredibly short supply chain with minimal costs along. The dynamic procurement approach adopted by East Ayrshire Council has enabled a local producer in Mossgiel to create an innovative and profitable route to market.

East Ayrshire and Mossgiel milk in Box 6 serves as an excellent example of local producers creating innovation in the supply chain and the Local Authority adopting a more dynamic procurement. In delivering milk which is free of packaging with electric vehicles directly to schools across the council area, the Local Authority has enabled a profitable route to market for local milk producers. Mossgiel has developed an innovative short supply chain to provide more affordable access for East Ayrshire to procure local, organic milk. Not only is the dynamic procurement contract giving school pupils access to local, fresh and organic milk, but it is also enhancing the return for a local producer and increasing local economic resilience.

## **What initiatives could support the procurement of local foods?**

Copenhagen's policies on organic procurement [Appendix A – Section 7.2] have helped build a robust wholesale market with a supply of local and regional foods. Through their organic procurement targets, Copenhagen demonstrates how large-scale food system actors can motivate food businesses to deliver organic and sustainable local food.

Each supplier of food to Copenhagen's public institutions must disclose information about the environmental impact of their products, including their carbon footprint and water usage (C40 Knowledge, 2023). In doing so, the Local Authority is working with local food suppliers to promote supply chain transparency whilst improving access to supply chain data. This collection of data on food procurement practices, including what types of food are being purchased and where they are from is paramount in measuring current levels of local foods within procurement systems.

To start collecting relevant data in Local Authority areas, a broader food procurement study and mapping exercise can help to identify and understand purchasing practices (C40 Knowledge, 2023). Better use and capture of food system data to create a baseline metric, as per Copenhagen's example, can allow for governing bodies to set targets for improving the provision of local foods (Kenton-Lake, 2023).

Larger food businesses can actively engage with smaller food system actors, and private sector companies, such as Northlink [Appendix A – Section 7.1] can also be active in supporting local foods. Enabling smaller food system actors to meet procurement contracts can be achieved in many different ways. One solution may be the greater adoption of cooperative structures, as larger procurement contracts can be met more easily with food system actors pooling resources. Supply different agricultural products, but having one main point of contact is far easier and much more effective way of doing business, such as indicated by the Georgia and Nottinghamshire case studies [Appendix A – Section 7.2].

Nottinghamshire County Council [Appendix A – Section 7.1] has demonstrated the power of procurement in stimulating the local food economy, increasing school canteen spending on locally sourced ingredients from £100,000 a year to an annual spend of £1.75 million in just seven years (New Economics Foundation, 2011). Their procurement model involves bringing together many different food system actors and represents a successful model for utilising public money in a way which supports local food businesses operating in the local economy. The Nottinghamshire procurement model makes use of two local wholesale logistics businesses that source local produce direct from local producers and then deliver to the school caterers.

Findings from (Soil Association, 2020) research into regional food supply chains, suggest that the success of local procurement systems is dependent upon both local advocacy and political support. The research proposed that high levels of stakeholder engagement within local food systems are required in order to develop closer relationships between local producers and food procurers. The [Food For Life Served Here award](#) rewarding East Ayrshire council with a gold award and continued recognition should be an inspiration to other Local Authorities to achieve new standards of local procurement. Organisations and public-funded schemes such as the Food For Life which recognise and champion local procurement can be a useful tool for other school boards and Local Authorities in Scotland to prioritise local foods.

At Government level, solid framework such as the [National Farm to School Network](#), created by the USDA, allows and encourages the adoption of geographic preference for procurement in child nutrition programs across the country (USDA, 2009). By encouraging different school boards and

state-level procurers to develop policies which prioritise the sourcing of locally grown and locally produced agricultural products – the US government are stimulating local economic resilience by investing public money into local and regional food systems.

#### 4.4.3 Access to Finance for Small Producers

Local and smaller food producers in Scotland accessing finance was a theme identified in responses to Scottish Government's Local Food Consultation (Scottish Government, 2022). Likewise, access to finance was also discussed in SSAC questionnaire responses and by SSAC roundtable participants.

With Scotland due to exit the EU Common Agricultural Policy (CAP) in 2024, the new Agriculture Bill is being designed to replace many decades-worth of single-payment systems through CAP Pillar I & Pillar II funding.

With the new bill, Scottish Government has greater freedom with regard to policy. Can affordable and targeted funding, grants or loans be made more accessible for smaller producers in Scotland?

#### **What initiatives could support better access to finance for small producers?**

When considering the new Agriculture Bill, Scottish Government could consider many different avenues of funding streams across agriculture and rural development in Scotland.

In regards to the examples presented [Appendix A - Section 8] of the USDA and the Croatian Ministry of Agriculture; publicly-funded micro loan schemes can be effective in encouraging rural growth and fostering local producers to invest in their infrastructure or increase their market participation.

Scottish Government are in the pilot phase of a new fund – the [Small Producers Pilot Fund](#). This fund currently under development could be vital in improving access to funding for small Scottish producers. How the fund will be disseminated and the application process is yet to be finalised. With that in mind, one of the main findings and recommendations from a review of the Croatian microloan for small food producers was that any new finance programme should be designed with room to experiment, innovate and adjust as it progresses (Križanović, 2023). The Croatian program itself has been reviewed and altered over a period of three years. It was also found that local institutions – including financial institutions, governments, and agri-food market players – are critical partners in developing and delivering solutions for access to finance (fi-compass, 2020).

Referring to [Appendix A - Section 8.1] the Vancity co-operative Credit Union, and the Feed The Hunger Community Development Finance Institution have shown; funding streams presided over by groups which do not have corporate shareholder structures can provide greater access to finance for smaller, local producers. It has also demonstrated the ability of these cooperative, community focussed funding providers to encourage new entrants to the sector and to foster new food businesses to enter local food systems.

## 5. Conclusions

This report has dealt with the analysis of primary data collected through the SSAC roundtable and questionnaire. The themes and topics identified through both the questionnaire and roundtable were used to explore a list of innovations which may be applicable to Scotland's food systems. The report employed an analytical approach, examining potential innovations through the lens of the conceptual framework, and within the context of the defined food system introduced in Section 2.



From the potential innovations raised through SSAC questionnaire and roundtable discussions, the topics highlighted were split across four broad categories: Technological innovations; Biological innovations; Processing & Supply chain innovations; Social science & Policy innovations.

Whilst a general list of innovations is presented in tabular format, the eight most pertinent areas of innovations identified by SSAC are discussed in further detail. Each of the eight areas of innovation chosen for discussion is supplied with detailed case studies in Appendix A to complement further discussions. The case studies are intended to supply specific examples of local food producers or food systems which are already working successfully at Scotland and UK level, as well as the most relevant European and International examples which learnings can be drawn from.

A summary of the key findings drawn from case studies and corresponding discussion is as follows:

- As illustrated through the multiple case studies of Scottish food producers making use of innovative energy systems – an extremely powerful tool in the adoption of technological innovations is effective knowledge transfer and actors sharing best practices.
- Cooperative structures may provide a greater chance of longer-term viability for smaller food businesses. The literature points to the fact Scottish cooperative structures have a small foothold of the total food market (Macmillan, 2019) (Cogeca, 2014). So, in terms of how more Scottish cooperatives can be encouraged to form, as well as gain a strengthened position in the market, facilitating more impact from public bodies and cooperative support agencies may be able to help drive more cooperative-focussed shorter supply chains.
- Throughout the analysis of case studies, it is evident that short supply chains require cooperation and dialogue amongst food system actors participating in the market.
- As presented in the literature (European Commission, 2019), there exists a large scope for increasing the level of value-added retained by primary food producers in Scotland.
- An increased uptake of value-added agriculture and on-farm processing may help achieve the aims of driving prosperity within the food & drink industry as laid out in the Good Food Nation Act.
- Suitable business support to help with market research, product development and effective marketing strategies should be readily accessible to help encourage Scottish producers.
- Processing facilities and infrastructure are key in bringing local producers' products to market.
- Reliable and stable access to markets strengthens Scottish producers' ability to innovate and invest in infrastructure.
- As East Ayrshire Council have demonstrated, public funds can be used to both: create reliable markets; and, foster innovation in the supply chain.
- As detailed in the literature and selected case studies, wholesalers and intermediary food system actors are vital components of a food system.
- Wholesalers who operate in the local area can allow easy and direct sales for local farmers and producers. On the flipside, this allows better access for procuring organisations within the local food system to purchase a range of local produce.
- Different areas of Scotland have specific geographic challenges and advantages with regards to food production – each area will have their own unique food system actors and stakeholders.

## Appendix A Case Studies of Relevance

### Appendix A –Relevant Topics and Case Studies for food system innovations

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# 1. Innovative use of energy & energy sources

## 1.1 What models of innovative energy usage by food producers are operating successfully?

### *BrewDog Brewery and Distillery – Ellon, Aberdeenshire*

BrewDog has been operating since 2007 and is now a world-famous brewery which produces beers and spirits which are sold globally. In 2020, they became the world's first carbon negative brewery (BrewDog, 2022). The following year, the company invested £12million into an anaerobic digestion plant (Mace, 2022). The bio-energy plant processes 200 million litres of wastewater as well as spent yeast and hops generated from brewing, making biomethane in the process. The resultant gas is used to power the brewery's boilers and is set to reduce emissions at the site by more than 7,500 tonnes annually (BrewDog, 2023). Surplus gas generated is used to power delivery vehicles with the remainder being sent to the mains grid.

### *Farmlay eggs – Fraserburgh, Aberdeenshire*

Farmlay eggs operates numerous sites in the North-East of Scotland and produce nearly 3 million eggs each week. They are a major supplier of eggs to retailers Morrisons and Aldi (Farming Monthly, 2014). Farmlay started their journey in 2010 when they invested £1.2million into an 800kWh wind turbine at their main egg production facility (Farmlay, 2023). Following this in 2012, the business invested further by replacing their existing gas heating system with a 1MWh biomass installation. Furthermore, Farmlay has worked with Scottish renewable technology company Absolute to install a 50 kWh and 150 kWh Solar installation on two of their out-farms, using the resultant electricity to power the henhouses (Absolute, 2023).

### *Castleton Fruit Farm – Fordoun, Aberdeenshire*

Castleton farm is a family run farm specialising in the growing of soft fruit as well manufacturing food products. Further to this, they operate a commercial kitchen, café space and farm shop. Their fruit is sold all over the East Coast of Scotland. As a large food producer, which at any given time houses 450 employees, the business has a very large energy demand. To combat this, they generate energy in a variety of ways. They run: a biomass boiler for the farm shop business; a photovoltaic system on the packhouse roof to capture solar energy; three CHP (combined heat & power) units; a heat pump using river water. The farm now produces more energy than they use (Castleton Farm, 2014). The renewable heat sources allow them to heat their soft-fruit production areas to improve growth and extend the season.

### *Mackies Farm – Rothienorman, Aberdeenshire*

Mackies farm produces a range of ice cream and biscuits which are sold all over the UK in nearly all major retailers. The company aims to make their ice cream the "greenest in the world". They installed four wind turbines between 2005-2015, finished a 7000 solar panel installation over 10-acres in 2015, and have constructed biomass boilers which heat farm buildings. All of this has led to Mackie's generating double their energy requirements (Mackies of Scotland, 2023). In addition to energy generation, Mackie's installed a £4.5million low-carbon refrigeration plant which is the first of its kind in Scotland (GEA, 2020). The innovative low carbon system is helping Mackie's to reduce their carbon footprint as well as lower business costs. As they recognise this is a cutting-edge technology for Scottish food production, Mackie's have pledged to "invite interested businesses who also have refrigeration needs to come and learn about the system so they can improve their emissions

similarly.” (Mackies of Scotland, 2023) This example of collaboration and knowledge transfer may prove vital in helping other food producers and processors to introduce innovative new technologies.

## 2. Abattoirs and Slaughtering

### 2.1 What abattoir / slaughterhouse models are currently operating successfully?

In terms of Scottish abattoirs, a few smaller abattoirs still exist in Scotland.

#### *Mull Co-op Slaughterhouse*

The Mull abattoir which is operated by Mull Slaughterhouse Ltd, trades in a co-operative structure, was established for the benefit of the community. This facility is aiding farmers on the island and surrounding area to maintain a localised supply chain, reducing demand for livestock to be moved across the ferry network and reducing overall time and cost incurred with livestock transport.

#### *Western Isles – Scotland*

An innovative example is the council-owned abattoir facility in Stornoway on Lewis. The slaughterhouse runs in a unique model. The operating of the facility is matched-up with seasonal local meat production. Council workers split their working year between refuse collection and meat processing. Donald McKinnon, chair of Crofters Federation claimed that the Stornoway abattoir “is a vital facility which we are lucky to have on the island. The council owned model works well and allows the abattoir to fit round our production cycle.” (The Scottish Farmer, 2023). Further to this innovative business model, Western Isles Council stated on 24th march 2021 that the council “Agreed to explore the redevelopment of the Stornoway abattoir facility with community involvement” (Comhairle Nan Eilean Siar, 2021). This is a very-localised solution but something which could potentially be explored in other island communities across Scotland.

Across the rest of the Western Isles, slaughtering facilities in Lochmaddy (South Uist) and Gearradh-mor (Barra) have historically received financial support from the Western Isles Council. However, at a series of meetings in December 2020 it was stated that “Comhairle nan Eilean Siar’s support for the South Uist and Barra based abattoirs could not be sustained going forward.” Further, the council claimed that “The viability of small-scale abattoirs is, beyond doubt, challenging. This, combined with the constraints on available budgets, presents an existential threat to the sustainability of the sector; as it does in other neighbouring mainland and island areas.”

The current situation at Lochmaddy is worrying for farmers and crofters on the island (Love Stornoway News, 2021). The Lochmaddy abattoir in North Uist remains licensed although is not currently slaughtering due to additional costs of installing CCTV as a requirement making it currently uneconomical to operate. Local councillors had hoped to make a case for the regulations to be softened slightly due to it being a small island slaughterhouse (North Uist Community Council, 2020).

#### *Shetland, Scotland*

Another island local authority, Shetland Islands Council, assisted in the building of a new abattoir which is now owned and operated by Shetland Abattoir Cooperative Ltd and operated by the Shetland Livestock Marketing Group. The investment from the Shetland local authority exceeded £400,000 (The Shetland Times, 2009). The facility represented an investment into local infrastructure – it provides direct access to the Shetland Mart. and aims to encourage local crofters and farmers to rear more livestock, particularly cattle and pigs (Shetland News, 2011).

### 3. On-farm processing (value-added agriculture)

#### 3.1 What models of value-added agriculture are already operating successfully?

##### *The Free Company – Balerno, Edinburgh*

A very original means of value-added agriculture. The peri-urban farm located in the Pentland Hills to the South-West of Edinburgh has developed their own restaurant following conversion of an old farm building. The restaurant allows them to maximise their profit margins on the farm produce.

##### *Fivepenny Farm – Dorset, England*

[Fivepenny Farm](#) is a smallholding which grows vegetables, and runs a productive small orchard, as well as raising a small number of livestock for meat and dairy. They sell their products directly to consumer through farmers markets and other channels.

As the farm looked to add-value to their products, apple juice (which multiplies the selling price of apples several times) was seen as a profitable option (Patrick, 2013). However, as their orchard was of a relatively small size and the making of apple juice requires a health & safety approved licenced premises – they decided to bring other smallholders in the local area together to form a cooperative. The group raised funds to build a processing facility located on Fivepenny Farm. The processing facility contains a juicing room and catering kitchen, butchery room and dairy, all of which can be rented by the day by members of the cooperative. Local smallholders pay a nominal amount to be part of the cooperative group and can then book to use the facility (Rosie and Adam Travels, 2011).

This small-scale processing facility is a pertinent example of a key community resource in rural Devon. By having a hygiene certified central space which is accessible, it acts as a centre for smallholders to process their produce – allowing local producers to add-value to their raw farm products.

##### *Support schemes available for value-added practitioners*

In terms of support available in England, the [Adding Value Grant](#) represents a similar scheme to that of the FPMC. The scheme is designed to enable businesses to add value to agricultural products with the grant being used for capital items such as: equipment for preparing or processing edible agricultural products; equipment for 'second stage' processing; equipment for retailing agricultural products; premises for the preparation or processing of added value agricultural products (Rural Payments Agency, 2022). Food producers in Northern Ireland can apply to the [Micro Food Business Investment Scheme](#) and producers in Wales (pre-2020) could access the [Food Business Investment Scheme](#).

#### 3.2 What international examples can we draw from?

##### *Berea College Farm – Kentucky, USA*

<https://farm.berea.edu/about/> - Berea college farm

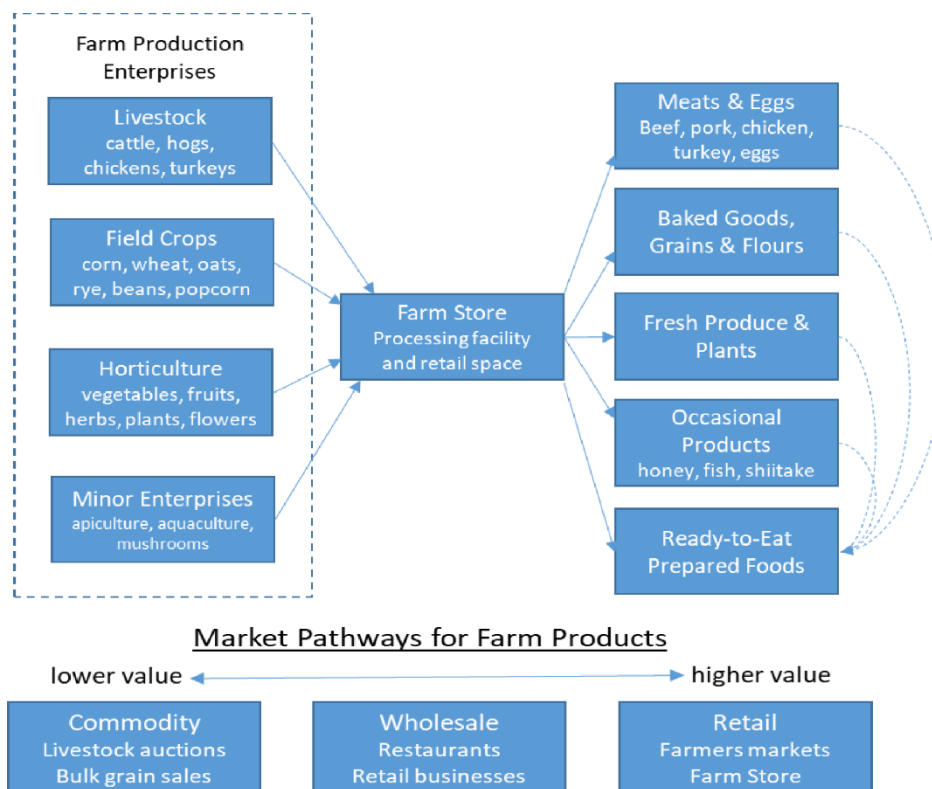


Figure VII Overview of Berea College Farm value-added activities (Berea College Farm, 2023)

An example of successful on-farm processing comes from [Berea College Farm](#). Figure I shows how the commodity products produced by the farm prior to processing, can be transformed to higher-value product types suitable for retail sales channels via the use of on-farm processing facilities.

This graphic describing Berea College Farm’s on-farm activities details the importance of suitable processing facilities. Alongside the processing facilities required to produce value-added products, the further addition of a farm store facilitated a shift in focus towards producing product for retail sales (Clark, 2020).

## 4. Co-operation in local supply chains & small-scale post-gate processing

### 4.1 What models of cooperative and short supply chains are currently operating successfully?

*Mossgiel Milk and Baxter Storey Food Group – Scotland*

[Mossgiel Organic Farm](#) are based in Ayrshire and manage a herd of 45 dairy cows. In 2015 the farm installed a pasteuriser and a bottling line on-site to gain direct control of their milk’s supply chain. The farm itself works with other members of [Omsco](#) –UK’s leading organic dairy co-operative which is 100% owned and run by farmers across Britain. Over the years Mossgiel Milk has itself expanded to form a cooperative of six dairy farms in the local East Ayrshire area, batch-pasteurising organic milk and selling into hospitality markets and direct-to-consumer.

[BaxterStorey](#) are an independent hospitality provider across the UK, Ireland and Europe who manage canteens and workplace restaurants. They are one of the UK's largest hospitality and food service providers.

BaxterStorey have signed a contract with Mossgiel cooperative to provide Mossgiel Milk to 14 workplace restaurants and public institutions across central Scotland. All the milk is delivered directly from Mossgiel by electric vehicles with a zero-waste packaging policy (Eating Better, 2023).

This serves as an excellent example of vertical integration of the market – local organic milk producers in Ayrshire coordinating their own supply chains and forming contracting agreements with food service providers further up the food chain across central Scotland.

#### *Pastificio Carleschi – Essex, England*

[Pastificio Carleschi](#) was founded in 2019 and was the first British Artisan Organic dry pasta producer in the UK (Pastificio Carleschi, 2023). They were the first producer to make dry pasta using British stoneground farro flour.

The grains which are used in their pasta necessitated building an alternative supply chain. They have established direct relationships with smaller, artisan grain growers and flour millers around the UK in order to successfully bring their pasta products to market.

#### *Barony Mill & Westray Bakehouse – Orkney*

[Barony Mill](#) is the last remaining water-wheel powered mill in Orkney and is the world's only miller of Bere (Orkney.com, 2023), which is an ancient landrace of Barley used by humans for millennia (Wallace, 2019). The Mill has agreements with local farmers around the Birsay area of Orkney who produce the Bere crop in the summer for winter milling. Once the Bere has been milled into meal, the Birsay Heritage Trust operated mill then sells to commercial bakers across Scotland, such as the Westray Bakehouse. Their products are also available to consumers via retailers all over the country.

[Westray Bakehouse](#) is located on Westray, an Orcadian Island roughly 15 miles north of the Barony Mill and has been in operation since 1892. They have their own unique family recipe making hard biscuits from the roasted Bere Barley grown and milled in Orkney Mainland. These biscuits are sold in independent stockists across the UK.

This incredibly short supply chain is turning locally grown grains, through small-scale post-gate processing facilities, into local ingredients which are then used by local bakers to make products sold nationwide.

#### *Dartington Mill – Devon, England*

The [Dartington Mill](#) in Totness was the idea between two local farmers and a local baker. They lamented the fact they could not connect and decided to build the “missing link” in the supply chain – their own mill (Thompson, 2022). They have effectively formed relationship from grower, to miller, to baker, to consumer. In doing so they are creating complete control of their products supply chain and stimulating their local economy.

### 4.2 What international examples can we draw from?

#### *Vestfold Kooperativ – Tønsberg Norway*

[Vestfold](#) is a community food initiative which operates as a non-profit cooperative run and owned by members. The cooperative is designed to enable consumers to access locally grown organic produce in their area. As a buyer group, they negotiate directly with local farmers for direct sales of organic

and biodynamic foods. By purchasing direct from the producer and sharing amongst consumers, intermediaries (middle-men) are removed from the supply chain which allows a fair price for producer and consumer alike (Morrow, 2023). The group operates a not-for-profit structure which means they can focus on improving access of local foods and cutting-costs of local foods for consumers all whilst ensuring fair prices for farmers. The group also claims they encourage less transport packaging and food waste – helping to boost the environmental sustainability of local producers in the Tønsberg region.

#### *BEES Coop – Schaerbeek, Belgium*

[BEES Coop](#) is a food cooperative with some 1600 members who partake in the running of Belgium's largest participatory food cooperative. They operate a unique supermarket model where members must participate to earn the right to shop. Each co-operator works a monthly shift of 2.75 hours on the supermarket, including daily management, inventory shelving, checkout, cleaning, and receipt of deliveries. BEES Coop aims for cost-effectiveness and financial independence, they promote the farming community through prioritising local producers, working with the local food network and with seasonal produce (BEES Coop Supermarket, 2023). The goal of the coop is to offer healthy and quality food - preferably locally sourced. Products are marketed at attractive prices compared to traditional organic supermarkets because their economic model is based on three pillars: a low and transparent gross margin, a minimal recourse to intermediaries, and savings on labour costs via the active participation of all (Ruault, 2022).

#### *Erkop Cooperative – Basque, Spain*

[Erkop Cooperative](#) - part of [Mondragon Corporation](#), a Cooperative Association based in Basque, Spain. Erkop Cooperative encompasses other smaller cooperatives and local businesses from across the Basque region of Spain. Their partners work in all areas of the food supply chain. For example, they work with [MIBA](#) who manage rabbit and poultry farms; [Behi Alde](#), an agricultural cooperative which is the largest dairy farm in the Basque region (Erkop, 2023); and cooperative Basque fruit and vegetable grower, and wholesaler, [Barrenexte](#). Further, Erkop works with [Ausolán](#), a cooperative catering company, who operate 16 central kitchens across Spain and serve more than 260,000 menus per day in schools, companies, hospitals and residences (Ausolan, 2023).

Although this example illustrates the many different actors across the food chain required to meet the demand of a quarter-of-a-million meals a day across Spain – the vertical integration of the market was constructed entirely by cooperative structures, from local producer right through to canteens. This system of food supply chain prioritises local produce and short supply chains. Ensuring fair prices for producers and ethical standards for consumers.

## 5. Wholesale & Co-operative wholesalers

### 5.1 What models of co-operative wholesalers are operating successfully?

#### *Highland Wholefoods Workers Cooperative – Inverness*

[Highland Wholefoods](#) is a workers co-operative founded in 1989 who are made up of eleven worker/members. The company is wholly owned by its employees and is democratically run with a non-hierarchical structure. They supply vegetarian, vegan, organic, ethical and environmentally friendly food, drinks and household products to the Highlands, Islands and north-east of Scotland.

The Highland Wholefoods Cooperative have established trading relationships with co-operative producers locally, nationally and globally to supply ethical wholefood products in the Highlands &



Islands region. They believe that “good healthy food should be available to all in even the remotest areas”.

As part of their offering, Highland Wholefoods even have a specific [The best of the Highlands pricelist](#) – aiming to showcase and promote the best of local produce found in the Highlands. They also specifically have a “from Scotland” pricelist.

This example demonstrates the benefits which a cooperative wholesale structure can generate for local food systems. By aiming to source products from highland producers – combined with their distribution network throughout the Highlands & Islands region – structures such as the Highland Wholefoods Workers Cooperative have demonstrated how to effectively bring local food to local food systems.

*Better Food Shed, Growing Communities – London*

[Growing Communities](#) is a community-led organisation based in Hackney, who have been active in trying to build an alternative food system in North London since 1996. They operate a veg scheme with 30 collection points around Hackney; as well as a weekly farmers' market showcasing small sustainable farmers and growers organic produce.

2018 saw the launch of their non-profit wholesale arm, the [Better Food Shed](#). The wholesale unit in Barking acts as a distribution hub for small/medium, local, organic food producers who can deliver all their London orders to a single location. Every week the hub distributes up to 15 tonnes of fresh organic produce, sourced directly from 23 small and medium organic UK farms, many of which are within 70 miles of east London. Having the reliable throughput of produce from local 23 farms gives the wholesale organisation greater buying power, allowing them to compete with larger businesses **Invalid source specified**.. The wholesaler sells produce for the London consumer market through food businesses as well as various veg box schemes and council services.

The efficient access to the London consumer market coupled with the fact they operate as a non-profit organisation, means the Better Food Shed business model aims to maximise profits for both the farmers and food businesses which they work with.

As the non-profit wholesale gathers so many local producers together, all producing a wide range of commodities, it allows Better Food Shed to supply larger public contracts, boosting the availability of local foods directly in the Hackney Borough of London.

*Organic North Wholesalers – Manchester*

[Organic North Wholesale](#) cooperative is one of the UK's largest and longest established wholesaler of certified organic produce. They supply independent grocers across the UK as well as food manufacturers and processors. They operate a weekly ordering system, the largest in the UK for an organic selection of fruit & veg, eggs, dairy, breads, pulses, oils, ferments **Invalid source specified**.. They aim to support and establish local growers by providing a route to market for their produce. Everything they stock is as locally sourced as possible and as a wholesale buyer, they follow the seasons of production closely. They also appreciate that provenance is important and therefore all farms and their locations are clearly listed each week on their price-lists.

## 5.2 What international examples can we draw from?

*Ace Natural – New York, USA*

[Ace Natural](#) is a wholesale organic food distributor formed in 1994 which aims to distribute the cleanest, healthiest and safest possible ingredients made with integrity by local farmers and suppliers. They distribute produce to restaurants, hotels, commercial caterers, food producers as well as public institutions such as schools and universities throughout the city of New York.

The group aims to create small and localised food systems, providing opportunities to farmers and producers located in the USA. Through working with local farmers and small-scale food manufactures they prioritise seasonal products as much as possible **Invalid source specified..**

#### *Food and Meat Co-op– Utah, Idaho & Wyoming USA*

The [Food and Meat Co-op](#) was founded early into the covid-19 pandemic in May 2020 as a way to connect local food producers and farmers directly with local consumers. Initially it started out as a small group of families coming together to increase their buying power and provide a route to market for local producers. The arrangement quickly grew into a community co-op based over Utah state. Now the co-op supplies thousands of families across three neighbouring states, Utah, Idaho and Wyoming **Invalid source specified..**

The cooperative group purchases in wholesale quantities directly from local farmers and producers in these three states. The produce is then distributed to thousands of members through weekly designated pickup locations and home-deliveries. Through this innovative approach to wholesale food purchasing, the group is able to prioritise local producers, negotiating bulk-buying deals in advance which is beneficial to the producers themselves. Following this, through removing traditional intermediary costs they can offer their cooperative members quality locally sourced foods at otherwise unattainable value.

#### *Coop Italian Food – Italy*

[Coop Italy](#) is Italy's largest retailer with over 2000 stores representing a 12.5% market share **Invalid source specified..** Whilst they have a large market share domestically, the group (under the name Coop Italian Food) also exports Italian food products to retailers around the globe. Despite their large domestic market share and global export market, the Coop only stock products which are 100% made in Italy. This is achieved through the use of a network of over 500 Italian farmers, producers and manufacturers –resulting in the Coop group being the biggest buyer of Italian food and beverages in the world.

Whilst this example illustrates an export wholesale network – the produce is 100% sourced from Italy through well-developed supply chains of local food producers, making the cooperative-owned wholesale group the largest stockists in the world of authentic Italian food products.

## 6. Local Authority's & local food systems

### 6.1 What successful models of local authority food systems are currently operating?

#### *Sustainable Food Places*

[Sustainable Food Places \(SFP\)](#) is a network which seeks to bring together pioneering food partnerships from towns, cities and Local Authorities across the UK that are driving innovation and best practice. The SFP network exists to drive positive food system change in a place-based manner, with the heterogeneity of each local food system considered. The SFP is a partnership program led by Soil Association, Food Matters and Sustain (Sustainable Food Places, 2023). The network currently has [15 Scottish members](#).

SFP act as a group to facilitate the sharing of data, insight and best practice and offer joint delivery of services and initiatives. Through the SFP, information around the role of local food initiatives and their measured impact are brought to the awareness of public and local institutions.

### *Highland Good Food Partnership (Sustainable Food Places member)*

Whilst it is not a Local Authority, the [Highland Good Food Partnership](#) is actively working in their local food system to establish a circular food economy and to stimulate the growth of the Highland-area greenhouse sector (Sustainable Food Places, 2023). Since the group formed in 2021, they have worked with the Highland Council to sign the [Glasgow Declaration on Food & Climate](#). Further, the group has gone on to work with [Scotland Food & Drink](#) to increase their work as the Regional Food Group for the Highlands. The group demonstrates a successful structure of governance which can bring together local producers and partners from the public and private sector to increase transparency and encourage short supply chains that prioritise local foods.

### *Glasgow Food System and the Glasgow Food Policy partnership*

Glasgow is Scotland's most populous metropolitan area with 1.6million residents living in the greater Glasgow area (World Population Review, 2023). Therefore, it has Scotland's greatest need for food with a lot of mouths across the city to feed.

The wider Glasgow area is also composed of many different Local Authorities on the fringes and peri-urban areas. Therefore, neighbouring Local Authority areas in urban and peri-urban areas should consider liaising with each other. Cross county lines trade is inevitable in a situation such as Glasgow. Local producers supplying consumer markets in Glasgow represents both an opportunity and a challenge.

[Glasgow Food Policy Partnership \(GFPP\)](#) was established in 2014 out of the need for the city to have a more sustainable food system (GCFP, 2023). The partnership and the group are a member of [Sustainable Food Places \(SFP\)](#) and are a group of public, private and voluntary sector organisations operating for the benefit of improved local food systems in Glasgow. GFPP have been active in the cities food system ever since and helped establish [Glasgow Community Food Network](#) in 2017, which connects around 300 members and supports community growing and food education activities in the city (GCFP, 2022). In 2019 they were key in organising the development of the [Glasgow City Food Plan](#) – a ten year plan bringing together over 80 organisations working in Glasgow's food system.

The Glasgow City Food Plan has identified six main areas of action: Food poverty; Community food; Food procurement; Food economy; Food & environment; Children & young people. Within these six categories the contribution of successfully achieved aims will allow Glasgow to meet with Scottish national targets of Obesity rates; Food waste; Child poverty; Net zero (GFPP, 2021).

The plan is far-reaching in that it brings together actors from every area of the food system and uses this extensive network to have multiple delivery organisations for certain aspects of the Plan.

This plan developed by the GFPP is not a Good Food Nation (GFN) Plan – which is a mandate of Local Authority offices within the greater Glasgow area. The future GFN plans being written by council officials may benefit from including relevant targets, and measures of monitoring progress, outlined within the [Glasgow City Food Plan](#). Further, Local Authorities may benefit from collaboration with organisations already working on specific targets of the [Glasgow Food Policy Partnership \(GFPP\)](#) City Food Plan.

### *Lauriston farm – Edinburgh*

[Lauriston Farm](#), four miles from the city centre in the West of Edinburgh, was made possible by a long-standing contractual agreement between the previous landowner of Lauriston and Edinburgh

City Council which obligated that Lauriston Castle was to have unobstructed views across the 100-acre farm towards the Firth of Forth (BBC, 2023). This results in the parcel of council-owned land being contractually unable to house residential or commercial developments.

The current iteration of Lauriston Farm was brought into reality from a forward-thinking agreement between the [Edinburgh Agroecology Cooperative](#) workers' cooperative, and Edinburgh City Council.

Edinburgh Agroecology Cooperative (EAC) proposed a vision for a different agricultural landscape, attempting to bring together food production; nature; and the local community. Through a community consultation, which gathered over 1000 responses and lengthy discussions with the council, EAC began in the winter of 2021 to transform Lauriston into a productive regenerative agriculture farm (Lauriston Farm, 2023).

The farm covers 100 acres on the outskirts of the city and composes of market gardens and community growing plots, as well as community orchards (BBC, 2023).

The community hub which is based at the centre of Lauriston farm has the possibility of providing more opportunities for local schools and groups. They aim as a collective to create new apprenticeships and accredited learning pathways to encourage more people into urban & peri-urban agriculture. In summer 2023, Lauriston Farm started their Community Supported Agriculture (CSA) veg box scheme. CSA schemes can be extremely useful for producers as it can generate a constant and ready market which production can be geared towards. Every Thursday evening the farm operates a veg stall allowing consumers to buy produce direct from the urban farm. The farm also engages with local retailers and wholesale businesses (Lauriston Farm, 2023).

The farm's success has been aided and enabled through an advisory group which meets three times a year and includes representatives from [SRUC](#), [NHS Lothian](#), [Landworkers Alliance](#), [Nourish Scotland](#), [FreshStart](#) and [NatureScot](#) (Lauriston Farm, 2023).

## 6.2 What international examples can we draw from?

### *Bruz Municipality, Rennes, France*

On the outskirts of the municipality town of Bruz, in the city of Rennes is a [publicly owned farm](#) which supplies schools in the nearby area with fresh produce. The involvement of public authorities was crucial in the development of this short supply chain. When a 24-hectare farm on the edge of Bruz Municipality came on the market, the local authority's desire to procure more local vegetables for their public institutions, converged with an opportunity to buy land (EIP-AGRI, 2015). The farm was split into 4 lots of 6-hectares and a tender was put out for 4 farmers to build together a collective business plan, to provide the food required for school canteens all year long.

The local municipality regarded the farm as a good opportunity to build the public infrastructure needed to develop the supply of fresh vegetables required to meet the demand from their public institutions. The motivations and drivers behind the project were: to build a supply chain in order to feed pupils with fresh, healthy and locally sourced produce; and to optimise employment in a small peri-urban area (Combe, 2015). The municipality guaranteed a route to market for the 4 new farmers by ensuring a year-round contract to supply local school canteens. They also ensured that an organic market which the farms could supply in the town was open from 17.00- 20.00 midweek, for people coming back home from work (EIP-AGRI, 2016). All 4 farms have now developed CSA schemes alongside the weekly organic market to increase their diversity of customers in the region.

### *China 1988 Vegetable Basket Program*

Since 1953, China have developed a series of social and economic development plans, known as the [Five year plans of China](#). In 1988, the Vegetable Basket Program (VBP) was introduced during the Seventh Plan **Invalid source specified**. The policy mandated mayors of major Chinese cities responsible for providing affordable and safe non-grain foods to citizens, including meat, eggs, dairy, seafood, and importantly, vegetables **Invalid source specified**. Accompanied with the launch of the first VBP, there was a policy shift towards the decentralisation of vegetable production from the central government control to the local city level **Invalid source specified**. Today, the VBP is applied to 36 major metropolitan areas with each assessed directly by the central government once every two years **Invalid source specified**.

Chinese liberalisation of food supply policy in the late 1980s towards the city level has parallels with incoming Good Food Nation plans, which mandate each Local Authority in Scotland to produce individual plans relating to local food systems.

## 7. Procurement

### 7.1 What models of procurement are operating successfully?

#### *East Ayrshire*

East Ayrshire Council is the longest serving holder of the [Food for Life Partnership \(FFLP\)](#) Gold Award. The main success of the food procurement story of East Ayrshire so far, is smaller and simpler contracts – designed to encourage local businesses to apply. In 2021, from the seven suppliers to East Ayrshire Council procurement contracts, three were from East Ayrshire and three from South Ayrshire (Eating Better, 2022). One is [Locavore](#), an independent retailer, food producer and wholesaler of local produce. In 2021 they successfully tendered for an East Ayrshire Council procurement contract to provide organic dried and canned foods.

For further information please visit – <https://www.eating-better.org/news-and-reports/films/building-a-better-local-food-economy/>.

Another local producer supplying the East Ayrshire public procurement contracts are [Mossgiel Milk](#), who deliver organic milk to all forty primary schools in East Ayrshire (Eating Better, 2022). Each school has a vending machine operated by Mossgiel and pupils are supplied with reusable beakers to fill with the fresh, organic milk produced in their local area (Cumnock Chronicle , 2022). The contract was carried out successfully due to the incredibly short supply chain present operated by electric vehicles and zero packaging cost. This serves as an excellent example of dynamic procurement – allowing for innovation in the supply chains and hence enabling a route to market for local producers.

For further information please visit – <https://www.eating-better.org/news-and-reports/films/producing-and-serving-better-dairy-mossgiel-farm-and-east-ayrshire-council/>

#### *Nottinghamshire schools & Food for Life Partnership*

Nottinghamshire County Council catering department procures school meal ingredients for around 300 schools (New Economics Foundation, 2011). The [Food for Life Partnership \(FFLP\)](#) is a Soil Association program which helps public institutions build the knowledge and skills required to effectively well-source local ingredients. The Council strived to improve the provision of quality school meals. Joining FFLP helped Nottinghamshire Council to increase the share of seasonal ingredients on their menus, enabling them to support local produce and local businesses.

The diagram in Figure II shows the distribution channels the Council procurement strategy employed when prioritising the sourcing of local produce.

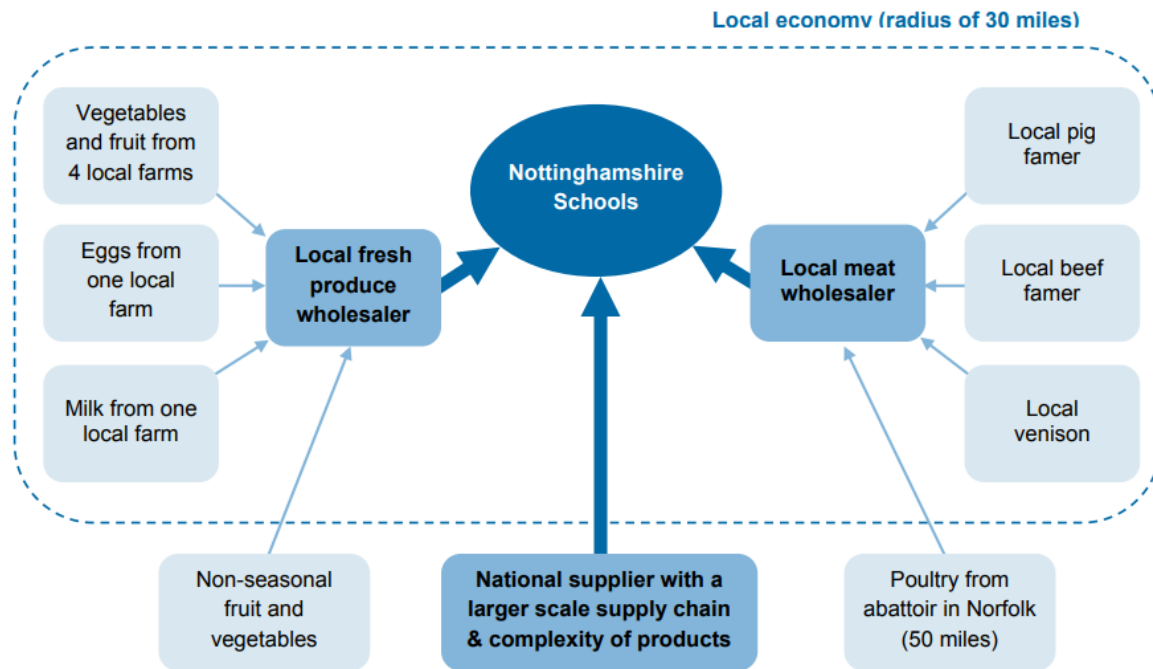


Figure VIII Diagram showing food system actors in Nottinghamshire School procurement strategy (New Economics Foundation, 2011)

The school canteens use intermediary wholesalers operating in the area to source ingredients from local producers. The meat wholesaler provides Nottinghamshire schools with meat which is 90-95 per cent local (within 50 miles); with 50-55 per cent from within 30 miles (New Economics Foundation, 2011). Another local wholesaler provides fruit and vegetables, milk and eggs for the school meals. Staples, such as potatoes, onions and cabbage are 100 per cent locally provided. 40 per cent of the fruit and vegetables across the board is local. The milk is 100 per cent local, bought from one dairy. The eggs are 100 per cent local through one supplier (New Economics Foundation, 2011). Depending on the time of year, there may be fluctuations in the volume of fruit and vegetables which can be sourced locally, hence the food system is underpinned by the security of national suppliers & the UK wholesale markets, which must be utilised in times of local shortages.

The financial outcome of Nottinghamshire Council's procurement strategy has been a positive one. The volume of spending in the local economy through the school meals budget has changed dramatically. Previous to joining the FFLP program, around £100,000 a year was spent on buying locally produced ingredients, compared to 7 years in the program where the annual spend is now £1.75 million (New Economics Foundation, 2011).

#### *Northlink Ferries Scotland*

Northlink operate ferry services between Aberdeen-Shetland-Orkney-Scrabster on a daily basis, providing lifeline services to island communities but also supplying travel means to a large tourist market. Although a private company, they have a large footfall of passengers every year and serve as a good example of prioritising local food in procurement strategies. NorthLink Ferries are committed to using locally sourced produce wherever possible, with a range of food and drink from Orkney and

Shetland available on board (Northlink Ferries, 2023). Their daily menu is organised in a flag system, as displayed in Figure III.

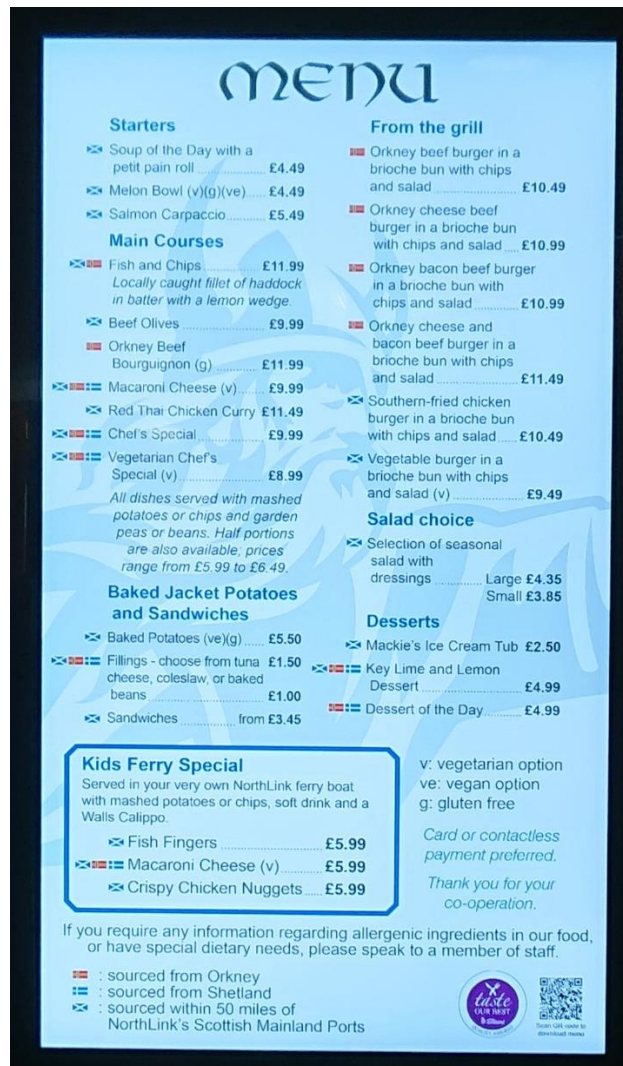


Figure IX NorthLink Ferries menu highlighting local produce - source SSAC member

The flag system on the menu showcases where the produce is sourced for each dish, with produce from the two island chains Orkney and Shetland, as well as “within 50 miles of Northlink’s Scottish Mainland ports”.

Northlink are a private company but have showed how a reliable and sizeable market, in the form of food requirements for ferry services, can be used positively to support local foods. In Northlink’s case they have used their buying power to support local producers and raise awareness amongst consumers.

## 7.2 What international examples can we draw from?

### *US National Farm to School Network and the Georgia State school nutrition program*

The [National Farm to School Network](#), established in 2007, is a collaboration of the Centre for Food and Justice, Occidental College and the Community Food Security Coalition. The Network began with a desire to support community-based food systems, strengthening local farms and supporting the relationship between schools and local agricultural production (Georgia State School Department,

2012). The Farm to School network promotes and supports Farm to School programs at the national, state and regional levels. As of 2019, the US Department of Agriculture (USDA) released figures suggesting that 67,369 schools and 42.8million children across the U.S.A had been involved with Farm to School activities (USDA, 2023). The USDA allows and encourages the adoption of geographic preference for procurement in the child nutrition programs (USDA, 2009). The geographic preference allows state procurement policies to prioritise the sourcing of agricultural products which are locally grown and locally raised.

The Georgia Department of Education's School Nutrition Program was formed in 2007 with the aim of assisting schools in developing their own [Farm to School program](#), in relation to the nationwide network. The program allows procurement directors to purchase local foods through various methods such as buying directly from the farmer, through a farmers' cooperative and from wholesale distributors. The bulk of sourcing is achieved through larger distributors operating in the area who purchase from local farmers, hence the state encourage farmers' cooperatives to supply into the program, as this allows a streamlined process of doing business with multiple actors (Georgia State School Department, 2012).

#### *California Department of Food & Agriculture (CDFA) Farm to School program*

The [California Farm to School program](#) helps to connect California's agriculture and food production to California consumers. It supports schools throughout the state to stimulate procurement of more Californian grown or produced food. In a joint venture between the USDA and the CDFA, \$25.5 million in funding was granted for 120 "incubator" farm to school project consisting of over 50 farms and four food hubs (CDFA, 2023).

In this example at the Local Government level in California, the Department of Food and Agriculture and Department of Education are collaborating to help connect schools with local food producers with an investment of "approximately \$60million" (CDFA, 2023) for the 2023 [School Incubator Grant program](#).

At the Local Authority level, areas such as Upland City in California received \$69,500 from the [School Incubator Grant program](#). The funding was used to build additional school gardens, introducing food into the curriculum. Field trips to local farms and producers were also funded (Namkung, 2023). The procurement strategy for the city is focussed on sourcing from local growers and bakeries. To implement this successfully, the role of public kitchens needed to become more focused on preparing meals from scratch which include more organic and seasonal produce (Namkung, 2023).

#### *Copenhagen – Denmark*

The [Children and Youth Administration](#) is responsible for food procurement in Copenhagen and operate some 900 public kitchens throughout the city (Organics Europe, 2023). Their food procurement targets set around organic and local foods have been hailed as world-leading (Dragonetti, 2023). Each public kitchen in the Copenhagen area must reach a target of 90% organic foods served (Procura+, 2023). Another goal of the is to increase the accessibility for local food businesses to bid on public tenders. By targeting more organic products in its public kitchen tenders, Copenhagen's organic market offer tripled between 2015-2022 (Organics Europe, 2022).

Copenhagen's policies on organic procurement have helped build a robust wholesale market with a supply of local and regional foods. Through the procurement targets, Copenhagen demonstrates how large-scale food system actors can motivate food businesses to deliver organic and sustainable local



food. As a part of the policies, the Local Authority directly engages with local producers to develop sustainable long-term procurement contracts (Organics Europe, 2022).

Each supplier of food to Copenhagen's public institutions must disclose information about the environmental impact of their products, including their carbon footprint and water usage (C40 Knowledge, 2023). In doing so, the Local Authority is working with local food suppliers to promote supply chain transparency whilst improving access to supply chain data.

## 8. Access to finance for small producers

### 8.1 What international examples exist?

#### *Micro and small loans for rural development – Croatia*

Croatian Government's Ministry of Agriculture, introduced in 2020, the Croatian micro and small loans for rural development financial instrument under the EU Rural Development Programme (RDP) 2014-2020 in Croatia. The instrument includes micro and small loans for rural development, and micro working capital loans for Small-to-Medium food businesses (EIB, 2018).

The funding is split between two strands. One of which is micro loans for working capital, designed to help fill a short-term capital gap, especially for autumn and spring sowing, cattle breeding, raw materials and repairs (fi-compass, 2020). In accessing this working capital, small producers in Croatia have the ability to increase their market participation – supporting local supply chains in the process. The second strand of funding is targeted to help meet medium and long-term needs to finance investments, such as land purchases, equipment purchases, plant extensions (Križanović, 2023).

The target groups of this micro-loan funding stream are primarily small business entities in the agricultural, processing and forestry sectors. The programme aims to improve access to finance through greater availability of loans, reduction of interest rates, and reduction of required collateral with loans obtained for anywhere between €1,000 to €25,000 (Eurofound, 2020).

The micro and small investment loans decreased interest rates for small producers and provided a three-year to five-year repayment period. Prior to the introduction of this fund, Small-to-Medium businesses operating in the Croatian agri-food sector were struggling to access traditional sources of finance, such as farm business loans disbursed by commercial banks (EIB, 2018).

The funding was designed to improve the economic performance of farms through the facilitation of investment into farm restructuring and modernization, as well as agricultural diversification.

The funding targets the following areas in Croatia:

- Investments in agricultural holdings
- Investments in processing/marketing and/or development of agricultural products
- Investments in creation and development of non-agricultural activities
- Investments in forestry technologies and processing of forest products

#### *USDA Micro loan Programs – USA*

Through the U.S. Department of Agriculture (USDA), the [Farm Service Agency offers loans](#) to help farmers and ranchers get the financing they need to start, expand or maintain a family farm (USDA, 2023). Within their various agricultural loan schemes, the USDA offer microloans up to the value of \$50,000. The focus of the [microloan programme](#) is designed to meet the financing needs of small, new entrant farmers; novel farm operations; farms participating in direct marketing and sales such as farmers' markets, CSA's (Community Supported Agriculture), restaurants and grocery stores; or those using innovative growing methods such as hydroponic, aquaponic, organic and vertical.

The loan program contains some inherent flexibility and allows for situations where production yield history or reporting is impractical or is otherwise not available. requirements accommodate smaller farm operations, beginning farmers, and those with no farm management experience. Microloan applicants still need to have some farm experience; however, small business experience and agricultural internships and apprenticeship programs, even those that are self-guided, count toward meeting the farm management requirement (USDA, 2023). And applicants with minimal farm experience also have the option of working with a mentor for guidance during the first production and marketing cycle.

#### *Feed the Hunger Foundation – California & Hawaii*

The [Feed the Hunger Foundation](#) are a Community Development Finance Institution which use a rolling-loan fund, meaning that interest received from the capital loans is re-invested into the total fund, enabling further low-cost loans to be administered to more local producers (NSAC, 2016). The foundation provides micro loans to local food and farming entrepreneurs in Hawaii and California.

[Feed the Hunger-Hawaii](#) was able to grow their micro-lending program significantly due to \$500,000 of additional funding achieved through the USDA's [Rural Micro-entrepreneur Assistance Program \(RMAP\)](#) (NSAC, 2016). The RMAP provides loans and grants to non-profit organisations, community-based financial institutions, and local economic development councils – which in turn provide technical services and micro loans to rural small business owners in their states and local communities (NSAC, 2016).

#### *Vancity Small Growers Fund – British Columbia, Canada*

[Vancity](#) is Canada's largest community credit union, a financial co-operative that operates as a member-owned, community-based, full-service financial institution with 54 branches in the Vancouver region. The [Small Growers microloan](#) is designed to help get small farm and food production businesses off the ground. If a business involves farming under 50 acres in a rural or urban setting, or producing food in other ways, like tending nurseries or producing value-added food, the microloan can help with investment into production. Unlike traditional small business loans that are based on business history and collateral, Small Growers microloans are based on the character of the owner and the strength of the business plan (Vancity, 2023). The loans are applicable to any of the following:

- Working capital
- New production and services capacity
- Seeds, fertilizers, fencing and other farm inputs
- Land leases or leasing kitchen or production facilities
- Business purposes or business related expenses
- Specialized farming tools or equipment, including transport equipment or food trucks
- Research and development leading to commercialization
- Pre-commercial and commercial product development
- Market development.

Whilst this example does not regard public finance, the co-operative, community-based financier structure of the credit union itself means that local food producers can be targeted ultimately benefitting local food supply chains and economies.

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