Food Data
Collaboration

The case for collaborative digital infrastructure to scale regenerative food supply networks

Food Data Collaboration

Working with

- OPEN FOOD NETWORK UK
- DATA FOOD CONSORTIUM
- Hodmedod's
- sustain — the alliance for better food and farming
- Ooooby
- SOIL ASSOCIATION ORGANIC
- BIG BARN
- APRICOT CENTRE
- BETTER FOOD TRADERS
- Landworkers' Alliance
- Shillingford organics
- CAMBRIDGE organic

This paper serves as a call to action to collaborate and invest in data infrastructure that will enable shorter, relational, regenerative food supply networks to scale.

These food supply networks play a vital role in achieving a truly sustainable and resilient food system. By embracing data technology that fosters commons ownership models, collaboration and interdependence we can build a more inclusive and dynamic food ecosystem in which collaborative efforts, as opposed to competitive businesses operating in silos, can achieve transformative scale.

Since 2022, the Food Data Collaboration has been exploring the potential for open data standards to enable shorter, relational, regenerative food supply networks to scale and pave the way towards a healthier, more equitable, and more resilient food future. This paper explores the high level rationale for our approach.

Introduction

As we navigate the challenges of climate change, biodiversity loss, social inequality, and geopolitical insecurity, it is increasingly evident that our current food system must undergo transformative changes to meet the demands of the future. The conventional food system incentivises cheap food at high social and ecological cost. Alternatively, shorter and more relational food supply networks prioritise ecological regeneration and social justice, while still finding ways to be price competitive in the marketplace.

Shorter, relational, regenerative food supply networks (which we will abbreviate to Good Food Networks (GFNs) in this paper) have been widely studied for their ability to offer critical solutions to the challenges created by the industrial food system. A common theme that emerges through this evidence is that of increasing diversity - on farms, in diets and in businesses[1].

GFNs have been shown to enable sustainable consumption behaviours[2], boost the adoption of sustainable agricultural practices[3] and enable socially beneficial business practices and ecologically regenerative production methods[4]. GFNs generate employment in rural areas[5]. They create local and regional opportunities for meaningful employment[6] and enhance farmers' work satisfaction[7].

1. This theme emerged in IPES Food's 2016 report From Uniformity to Diversity
2. O'Neill et al. (2022) Thou shalt not waste: unpacking consumption of local food
3. Mundler and Laughrea (2016) The contributions of short food supply chains to territorial development: A study of three Quebec territories
4.Sustain (2021) Beyond the farmgate: Unlocking the path to farmer-focused supply chains and climate-friendly, agroecological food systems
5. Jarzębowski et al., (2020) Short Food Supply Chains (SFSC) as Local and Sustainable Systems
6 . Mundler and Jean-Gagnon (2020) Short food supply chains, labor productivity and fair earnings: An impossible equation?
7. New Economics Foundation (2020) Farmer Focused Routes to Market

GFNs also increase shopper appreciation of their food [5]. Shoppers tend to buy more vegetables and wholefoods, known to be better for health and nutrition[8]. GFNs also encourage food diversity, enabling a wide range of agricultural practices, locally adapted crops and varied sources of nutrition to come into our food supply.

Yet GFNs make up a small part of food retail in the UK. There is too little data to even know how small, but the widely reported statistic is less than 3% of UK food retail. With well-evidenced multifunctional benefits, the question must be asked - why?

Most commonly people point to price to answer this question. GFNs are generally more expensive than a budget food shop, but when comparing like for like with supermarkets (eg organic and ethically sourced products) the pricing is comparable[7], with far higher social and ecological outcomes. GFNs contribute far more to the local economy in terms of jobs and money reinvested[6]. The money saved in cost per unit is paid many times over in healthcare, waste and ecological destruction[9].

From the social and ecological benefits to the societal cost savings, learning how to appropriately and effectively scale good food networks is a core challenge for this critical coming decade.

8. Unpublished research with University of East Anglia and Open Food Network
9. Hendriks, S. et al. (2023). The True Cost of Food: A Preliminary Assessment. In: von Braun, J., Afsana, K., Fresco, L.O., Hassan, M.H.A. (eds) Science and Innovations for Food Systems Transformation. Springer, Cham. https://doi.org/10.1007/978-3-031-15703-5_32

Defining Good Food Networks

While there isn't a clear definition or certification for food supply networks that are shorter, relational and regenerative, there are a huge number of businesses, organisations and membership bodies working toward these goals. Words like agroecological, regenerative, farmer-focussed, organic, short food chain, fair, real, local, planet-friendly, nature-friendly, ethical, sustainable and social enterprise all apply, with differing weightings dependent on context.

Core to food businesses and organisations working in this space is committed action toward ecological regeneration and social justice through food systems. Many share a sense of being aligned with movements for change, and recognise the time it takes for deep, collaborative, transformative action to happen.

Good Food Models
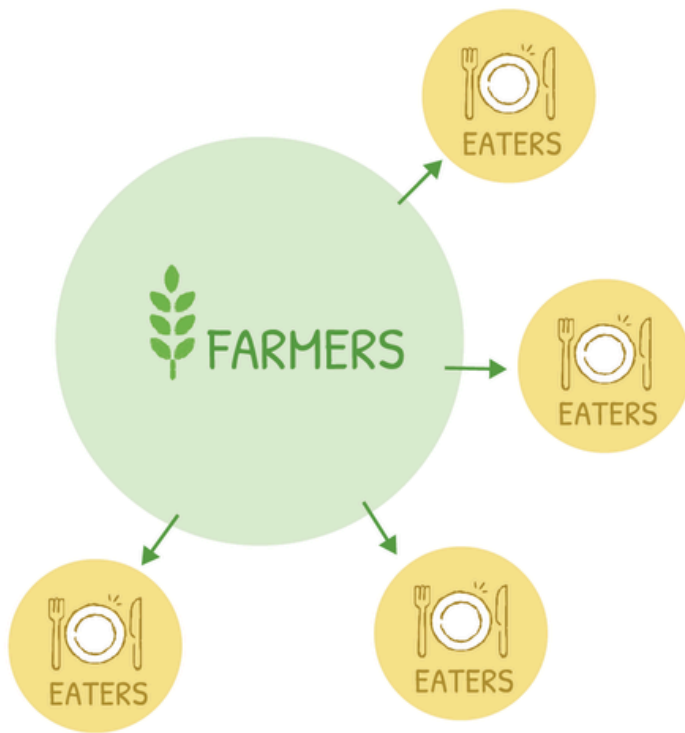
Direct Sales

Farmers and food producers selling directly to customers. This might be at a farmers' market, a veg box scheme, via an ecommerce platform or a simple phone or spreadsheet ordering system. Direct sales generally need good access to a strong, local market, that is diverse enough to withstand economic shocks and cycles (ie cost of living crisis). Many farmers and food producers diversify their direct sales offering by selling into a local food hub.

Food Hubs

Food hubs aggregate different farmers and food producers to create a more complete offering with a wider range of produce and coordinated logistics. This might take the form of a farm shop, food box, local wholesaler or buying group. Food hubs might manage orders and inventory via an ecommerce platform, POS system, or potentially a complex spreadsheet system. Food hubs in GFNs tend to offer producers 60-70% of the sale price, and often have schemes that offer discounts to people on low incomes.
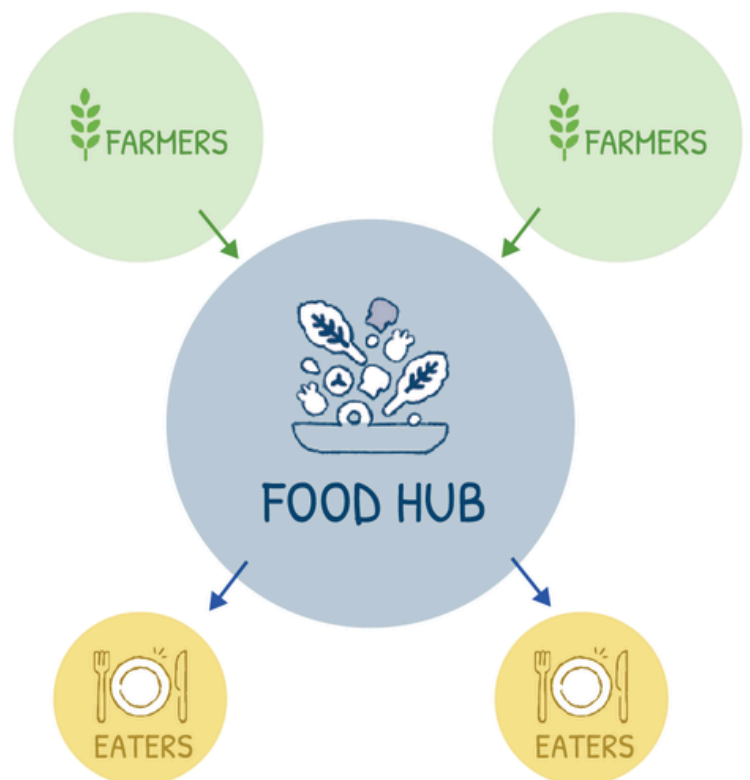
Regional Coordination

Food hubs tend to serve specific geographic areas. In a simpler world one food hub would supply one region, scaled to demand. However, in reality different businesses tend to operate in the same area and may compete with each other for customers and producers. Additionally, not all produce is available in every region, so buying in produce from further afield is often necessary. Regional coordination can help to create fair and effective conditions within which all businesses thrive, sharing distribution logistics and creating appropriately sized markets for different scales of production.
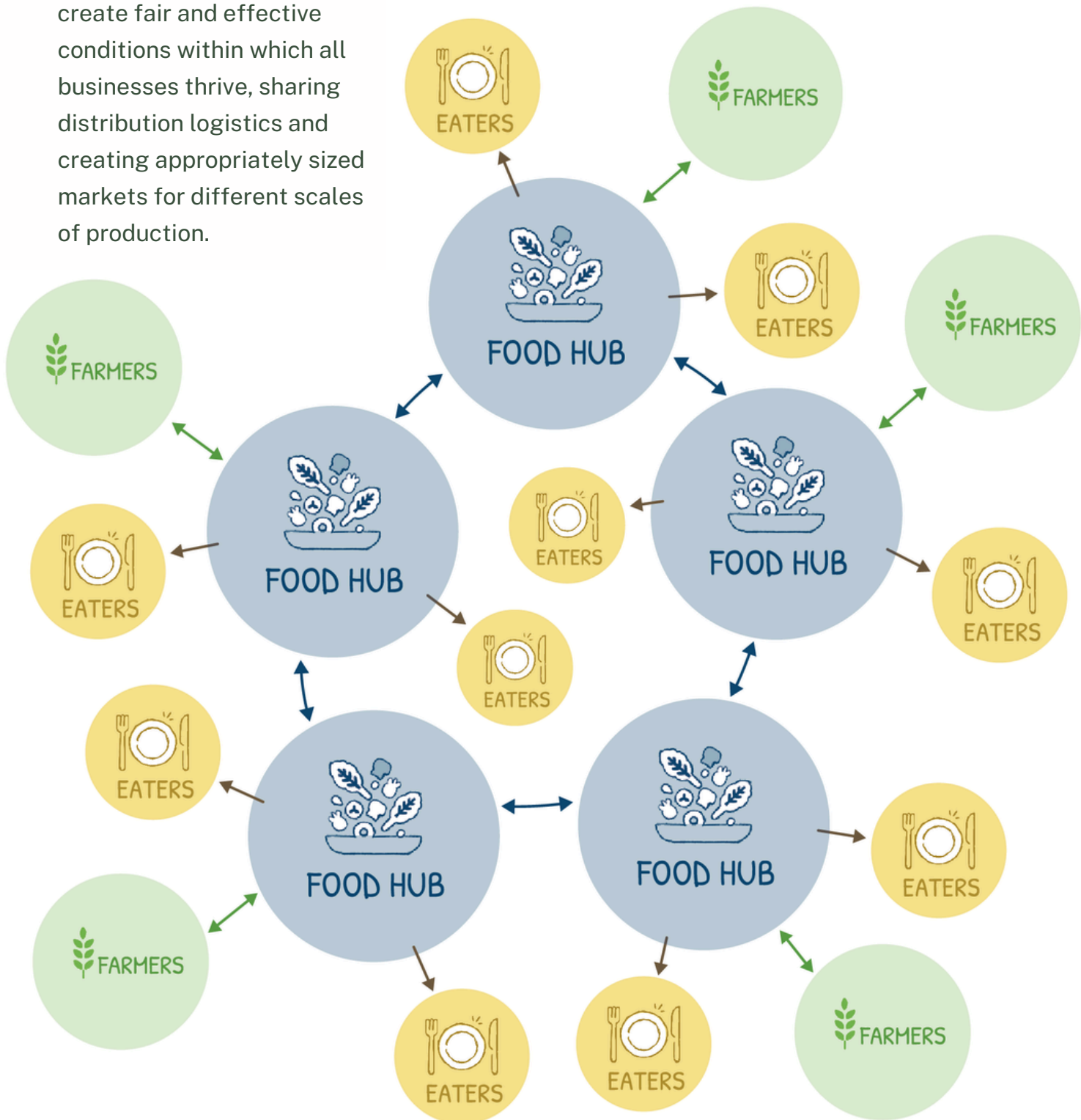
Scaling Good Food Networks

GFNs are characterised by their diverse, creative responses to local contexts. This diversity breeds local resilience, which was made evident during COVID19. However, this diversity also means that scaling to feed more people through these networks is a unique challenge.

GFNs require very different infrastructure from conventional agri-food systems. National and international motorway and port infrastructure, centralised processing and warehousing incentivise huge scale and thus benefit conventional supply chains by reducing per unit costs. Alternatively, GFNs require well-networked local and regional infrastructure at a smaller scale to nurture diverse small businesses such as local abattoirs, regional warehousing, flexible processing facilities and coordinated distribution logistics.

Appropriate and necessary infrastructure for GFNs requires investment that prioritises social and ecological returns over financial returns. Such investment is limited and thus identifying opportunities that will have the greatest impact is critical. In the information age investment decisions could, and should, be made based on data.

Data for food supply has historically been collected through surveys by government bodies (DEFRA, ONS) or private companies (KANTAR) primarily through surveys. More recently big ag and supermarkets have been collecting data digitally through farm equipment services and customer loyalty cards. This data has historically

focussed on efficiency, scale and profitability, and has been a key driver in optimising our food system on cost per unit metrics that externalise social and ecological costs.

Businesses working to strengthen GFNs also have a wealth of data, however this data tends to be locked in the spreadsheets, POS systems, logistics software and sales platforms of producers, wholesalers and retailers across the sector. Usually this data is fragmented and difficult to analyse without the context of the whole business.

Businesses working in GFNs create a wealth of data. They create data about what produce is available when and for how much. They create data about distribution networks and delivery routes. They have information about shopper buying habits and market trends. Collectively they have comparable data to a supermarket chain. However while this data is fragmented the best we have to go on is intuition. While there is a lot of value to intuitive ways of knowing, GFNs can benefit greatly from harnessing and organising this data to make more informed decisions.

Greater benefits come when businesses working in GFNs are able to share their data effectively. Sharing inventory information enables different actors to cross-sell each other's produce. If done well this can reduce the administrative overhead of selling through multiple GFN models - a problem that can be a blocker for larger producers seeking to transition from conventional sales channels. Sharing logistics information can help to identify beneficial logistics collaborations that can expand reach in a cost efficient way.

These kinds of benefits require a high level of data interoperability in order to be effective. The next section explores how open data standards enable this level of data interoperability to be achieved.
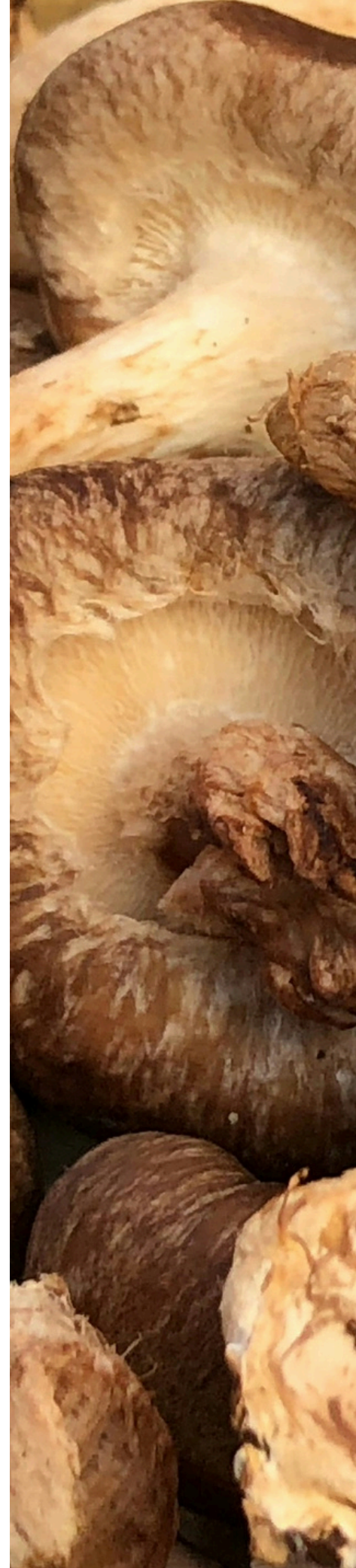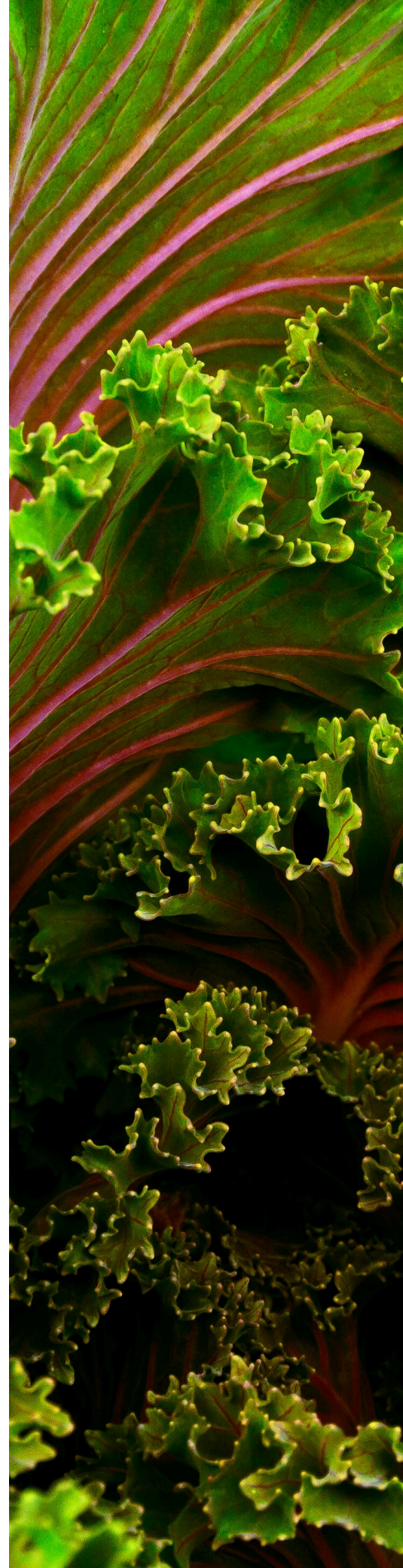
What are open data standards?

Most GFN businesses rely heavily on digital tools such as spreadsheets, apps and software for core operations such as sales, distribution, logistics, inventory management and accounting. These tools are generally designed to work independently, perhaps integrating with one or two other platforms, such as accounting software. They use their own data formats, with some export facilities. When a digital tool works exactly as you need it to, this is fine. However, more often than not this is not the case, and businesses end up shaping their operations around the capacities of the tools. Changing core business software is a task that causes huge upheaval, and most businesses avoid this until their current tools are unbearable.

The result is that small businesses struggle to innovate and their data ends up locked in data silos created by their software. Collaborating with other businesses requires manual data entry or conversion, which is time-consuming, costly and often the source of errors and inconsistencies.

Open data standards can help to overcome these challenges. In essence a data standard is an agreed language for digital information. Software tools first integrate with the data standard, creating a translation between their data and the data standard. Once this is done the software can then speak with every other tool that has integrated. A single integration to communicate across a whole network of digital tools, systems and businesses.

Data standards are widely used in other sectors. The NHS uses data standards to enable hundreds of internal software tools to share critical health data. UK Government has a policy of using open data standards to ensure the smooth running of government services. The internet relies on data standards to enable web browsing and email to function.

In the GFN sector there are data standards that we can use to common business practices like sharing business information, sharing products and inventory, sharing order information and sharing logistics information. Some software tools are already integrating with some of these standards to share inventory information and to automatically place orders between different platforms.

Open data standards can be a powerful tool to enable collaboration between businesses, though to be truly effective they need wide uptake.

What open data standards are not

Open data standards do not mean that data is public or freely accessible. Whenever data is exchanged digitally there are potential risks around privacy, commercial sensitivity and security. Built into the functionality of data standards are systems for authorisation and authentication so that only those who have permission to view and access data may do so.

How can open data standards grow good food networks?

Open data standards can help businesses in good food networks to collaborate more effectively. We believe this is a critical piece in enabling these businesses to supply a higher proportion of the UK's food supply.

1. Help more food producers transition to selling through Good Food Networks

GFNs enable food producers to gain a higher proportion of the selling price. However this fact is not enough in itself to enable farmers to shift from selling into conventional supply chains. For medium to large scale producers, selling into GFNs means managing many smaller orders - more relationships, more administration. This is time consuming, compared to selling everything to one buyer.

Using open data standards, food producers can manage a single inventory or shopfront. This shopfront can then integrate with other GFN outlets locally, giving access to food hubs and regional distribution. Sales are aggregated and received in one primary place for fulfillment. This simplifies access to GFNs meaning that more farmers, and in particularly mid-large scale farmers, can access the higher margins GFNs offer. This in turn incentivises more producers to improve their production methods to meet the higher standards GFNs require.

2. Make it easier to identify areas for effective collaboration between businesses

Many businesses in GFNs recognise that the sector needs to grow, yet often when new businesses enter the space they compete with other local businesses for customers. To effectively grow this sector we need to 'scale out' through deep collaboration, cooperative marketing and sales routes[10].

With shared open data standards in the bones of a collaboration, sharing inventories and cross-selling is effortless. Distributions can be easily coordinated. Marketing efforts can be streamlined. Businesses can use the right digital tools for their businesss and share data with each other securely to support collaborative and cooperative operations.

Collaboration takes investment in relationships and responsibilities. Effective data sharing can take away some of the pain points.

10. Rebecca Laughton (2018) Horticulture across Four Nations. Landworkers Alliance

3. Coordinate approaches to increase access to good food

Schemes such as Healthy Start have aimed to make fruits and vegetables more affordable and accessible to targeted groups through the use of vouchers. While most fruit and veg is imported into the UK, a scheme like this misses the opportunity to simultaneously boost UK horticultural production and create multifunctional impact from the subsidy.

Sustain's Bridging the Gap pilots[11] have demonstrated that vouchers linked to agroecological, local produce are an effective way of both increasing fruit and veg consumption in low income households, and boosting the GFN economy.

Integrating to shared data standards for the sector can help roll such pilots out on a wider scale. By integrating businesses across good food networks to a common data standard and enabling vouchers to be spent at businesses across the network, we can build on schemes that simultaneously increase markets and increase consumption of agroecologically produced, locally grown fruit and veg.

4. Create opportunities for a new wave of GFN entrepreneurs

Many businesses working in GFNs tend toward a similar style of marketing that attracts a similar type of customer. The result is that GFNs have an image problem. The sector needs a wider diversity of people, backgrounds and skills to grow our share of the market, both shopping with and running businesses in the sector. The challenge is that barriers to starting a small food business are enormous, and the risks are sufficient to make this path impossible for many potential entrepreneurs.

With existing businesses, producers, inventories and distribution networks integrated into a common open data standard, it becomes much easier to link into the infrastructure that exists. This makes it possible to enable new small businesses, focussed on marketing to build new customer segments on top of existing supply networks.

This concept is similar to drop shipping, which is not without its challenges, but also represents a novel approach to innovation in scaling out GFNs.

11. Find more on Sustain's Birdging the Gap pilots at:
https://www.sustainweb.org/bridging-the-gap/pilots/

4. Create better digital tools that enable Good Food Networks

Over the past five years we have seen platforms promising to connect producers with shoppers, chefs, procurement and wholesale grow, and a few close. A single platform cannot be the silver bullet to transform the food system. Though when a platform ceases trading it can have a significant and devastating impact on the producers they support. While digital platforms have great potential to support the sector, they can also create competition, monopolisation and fragmentation.

By encouraging platforms in the sector to integrate with a common open data standard the sector can become more resilient overall. Using open data standards makes platform data - like inventory, ordering and logistics routes - shareable between platforms. This simplifies tasks like collaborative marketing, distribution and cross-selling. It also makes software tools more flexible. Platform developers can focus on building modular pieces to better serve the diverse business models in the sector, which plug into a wider ecosystem of tools and platforms to serve the digital needs of the sector. This makes software development cheaper and more effective.

5. Data to better understand the sector

One of the key benefits of using an open data standard across the sector is that it makes collecting and collating data about businesses working in GFNs much more straightforward. Data that is already public, like product inventories, distribution schedules and business information, can be collated and analysed to better understand availability, shortages, gluts and gaps by neighbourhood. Data that is not public, like order details, can, with permission, be anonymised and analysed to understand trends, demographics and opportunities in the same way as supermarket loyalty cards. The same data used by bigger businesses can be used to grow this sector while it scales out.

Such data can be held in a data commons, owned by the farmers, producers and businesses that generate it. As such, this group can decide how to benefit from the data, who can have access and how it should be used. The data will be valuable to many outside of the businesses involved - researchers, funders, policy makers - and hence may generate additional revenue for the sector that can be used to fund future projects and capital expenditure.

Better quality data is widely recognised to be a powerful tool that can boost the GFN sector.

Building open data standards

Since 2022 the Food Data Collaboration (FDC) has been exploring the practicalities of implementing open data standards for UK Good Food Networks. The story so far...

2016
Discussions began in France between short food chain actors to develop an open data standard to facilitate data interoperability between digital platforms.

2018
The French community published the first iterations of the data ontology on Github.

2018
The French community published their 'prototype' software that enables platforms to test their integrations with the open data standard.

2020
With the sharp rise in platforms during COVID19, Open Food Network UK begins to explore possibilities and liaises with the FR community.

2022
A key initial partner, Boxmaster Systems, announces that it is going to cease trading.

2022
The group recruit key sector organisations to join to guide the governance process of our exploratory funding period.

2022
The group is awarded almost £500k from the National Lottery Community Fund - Growing Great Ideas.

2021
Amidst a year of critical COVID response, an initial collaboration between four UK platforms forms, and begins working toward a joint funding bid.

2022
Implementation begins integrating the Open Food Network, Ooooby and BigBarn to share inventory information via the data standard.

2023
Hodemdod's join the collaboration, creating the opportunity to integrate Shopify into the data standard.

2023
To understand how to ensure this work boosts the agroecolgoical sector, the group commisions research with the Organic Research Centre.

2023
Open Food Network complete product/ inventory integration.

2023
Strategically the governance group shift direction, aiming for a deeper integration between Shopify and Open Food Network to test cross-platform sales.

2024
Testing begins on the integrations, preparing for live beta testing with users' sales cycles.

2024
After failed survey attempts the group commissions deep sector research to understand the platforms used by good food businesses.

2024
BigBarn complete product/variant integration.

2024
Shopify complete product/inventory integration and order integration. Tested between Shopify stores.

2024
Ordle, by Cambridge Organic, agree to integrate the data standard into their new system.

2024
Collaborative explorations begin with groups in Canada to explore farm management software.

2024
Research begins to understand appropriate models for the future of the FDC (independent from fiscal hosts).

2024
Collaborative explorations to extend the Australian 'Discover Regenerative' platform for sector-wide onboarding, directory and search.

2025
Trials in the UK successfully enable thousands in cross-platform sales, facilitated by the open data standard.

2025
Open Protocol v2.0 to be published incorporating wider links with other semantic web standards, more robust architecture and support for data discovery (utilising WebID/Solid protocol).

The Food Data Collaboration

The Food Data Collaboration is a groundbreaking initiative designed to revolutionise agroecological food supply networks.

In the past three years we have prototyped and piloted open data standards and integrations that enable inventory sharing and cross-platform ordering between a number of platforms serving Good Food Networks in the UK.

To find out about our current and future pilots and integrations, and our roll-out strategy, visit our website - www.fooddatacollaboration.org.uk

Sector collaborators

Technical collaborators

With thanks to The National Lottery Community Fund

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