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Collaboration for innovative routes to market: COVID-19 and the food system

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Abstract:

In a time of global crisis, existing systems are rigorously tested and placed under significant and abnormal strain. This paper uses Welsh case studies to explore how food producers in Wales have collaborated to protect livelihoods while also providing accessible food to the nation. Prior to the coronavirus pandemic, the food and drink supply chain in Wales contributed £22.1bn in annual turnover to the national economy and supported over 200,000 jobs. The coronavirus pandemic however has put the food and drink industry, which is considered a priority sector in Wales, at significant risk. The hospitality sector, which turned over £3 billion in 2019 and is a key end destination for Welsh produce from small businesses, faced months of near total closure, with no certainty of when the sector may be allowed to resume trading as normal. This in turn has significant and long-lasting effects on the country's food producers, facing a decimated sector they once relied upon to bring their produce to market through stable and established supply chains and procurement relationships.

This paper explores how both producer-led and organisation-led producer collaboration in Wales has provided new and innovative routes to market for Wales' food producers as a result of the lockdown imposed by Welsh and British government to prevent the spread of coronavirus. The challenges faced by these newly established collaborations are discussed alongside the opportunities for longer term collaboration generated by these organisations which emerged to fill a specifically identified void in this unprecedented crisis. Two innovative, in depth, regional level case studies that have responded to this increased demand for accessible food are discussed. Users range from those choosing to buy local produce contact free, through an online click and collect service, to those most vulnerable, wholly reliant on a food box delivery scheme developed through cross sector collaboration at the outbreak of the crisis. This paper concludes that long term producer cooperation in the region is likely to be established following on from the short-term measures implemented as a direct result of the development of social capital during the Coronavirus lockdown, and further concludes that a crisis of this magnitude can stretch the current centralised and

remotely controlled food system to breaking point. A number of lessons are highlighted which are pertinent for actions to integrate policy to support societal change and resilience, in order to prevent catastrophic food (in)access in the future.

Keywords

Collaboration, Food System, Food Access, COVID-19, Innovation

Highlights

- Wales' food producers have experienced extreme stresses during the COVID-19 crisis.
- Innovative producer collaborations demonstrate opportunities for risk mitigation
- COVID-19 is likely to lead to long term collaboration between food producers
- The benefits of a producer or organisation led model will suit different producers

1. Introduction

“Food does not happen by magic. It all begins with our remarkable farmers and growers” the words of Prince Charles (Clarence House, 2020), as concern was growing across the UK of the vulnerability of the U.K.’s food and drink sector as illustrated by empty supermarket shelves and purchase limits commonplace in the early weeks of the UK’s lockdown (BBC News, 2020; Rayner, 2020). This fragility of long commercially driven supply chains has been widely discussed at a range of scales globally (Clapp & Isakson, 2018; Vljajic et al., 2013; Dani & Deep, 2010), at more regional or national scales (Lang, 2020; Maye, 2018) along with the potential impacts of external shocks being highlighted (Stone et al., 2015). The global coronavirus pandemic undoubtedly placed the UK’s food system under the greatest strain ever faced in modern day peacetime, realising previous academic debate and visions. Prior to the outbreak, the Welsh food system was a significant growth sector, supporting over 200,000 jobs across food production, supply, retail and hospitality and contributing £22.1bn in annual revenue to the devolved nation’s economy (Welsh Government, 2020).

As the pandemic unfolded and the country was plunged into a Government enforced lockdown however, the thriving hospitality industry, a key sector also clearly underpinning much of Wales' Tourism product, was effectively closed overnight. These closures would largely remain in place until August in Wales. However, with social distancing now becoming a way of life, it looks to be many more months before the sector can return to business as usual. The implications for Wales’ food producers, 98% of whom employ less than 10 people (Welsh Government, 2019a), of this closure cannot be understated as they are faced with produce ready to be harvested, a shortage of workers due to international travel restrictions and the prospect of their traditional routes to market through the hospitality sector closed. In this context this paper explores how two Welsh case studies of collaborative innovation between food producers have established new networks. These were a direct result of the coronavirus crisis and allowed the producers to reach alternate markets and maintain business activity in extraordinary times.

2.Context

2.1 Food, farming and producer collaboration in Wales

The food and farming community was historically based on family and local community ties. Informal sharing of labour was used for hay making and shearing, and traditionally also in upland areas for sheep gathering from common grazing spots at key points in the farming year. However, in most areas this combination of farm capital pooled and reciprocated across local communities, has all but disappeared. Since the move towards farm modernisation, post war intensification and later EU succession with the associated administrative loading and recent focus in improved food traceability, have all lead to farms and farmers acting as separate private entities and businesses, producing food from each farm regulated by paper trail audits for UK and EU regulators. Few interventions were in place to maintain traditional collaboration and co-operation in the face of modernisation and industrialisation and dispersed more marginal production was subsumed into supplying remote markets and ultimately distanced consumers who became increasingly dependent on the influence of larger food retailers. Little of this advantaged smaller food business in remoter areas undertaking farming and horticultural production and food processing and wholesale.

Agri-food producers in the UK were informed and supported by the guaranteed markets and production targets through early government led productivity targeted collaborations such as the Potato Marketing Board, Milk Marketing Board and latterly by commercially lead marketing collaborations such as Milk Marque and Hybu Cig Cymru. Few local groups worked together at a local scale within farming, other than around maintaining farmers' marts as traditional places for livestock sales or very rural development led localised branding initiatives. The supply of downstream farming supplies also explains the continuance of purchasing collaborations such as Wynnestay Farmers (Powys) and Eifionydd Farmers (Gwynedd) which focussed on inputs and farmer supplies across Wales. Co-operatives working towards establishing localised supply chains which open routes to new markets, or towards new food development through innovation, however, are scarce and often depend on government support and the availability of local sources of advice and support e.g. Farming Connect or farming unions.

Lifestyle or niche products are often proudly sold direct to consumer or at local produce markets, require a supply chain to markets that producers feel allow sufficient control of the product and supply chain transparency. These chains can only be maintained when economies of scale for effective logistics of transport and distribution is possible, in the case of this study in Wales, often to feed into very seasonal and dispersed end consumers e.g.

through specialised wholesale business such as Blas ar Fwyd (Llanrwst) and Castell Howell (Llanelli).

Welsh provenance is an important part of Welsh culture, *'food and drink is rooted in our communities, shaped by our landscape and honed by our culture and language'* (Welsh Government 2018a). It is important that provenance is protected and promoted for both local and tourist interests. The Welsh Government, working with the food and drink sectors have strategically put together a number of Cluster Groups – CEO Cluster, Drinks Cluster, Export Club, Fine Food Cluster, Honey Cluster, Nutri-Wales Cluster and the Seafood Cluster (Welsh Government, 2018b). Clusters around branding for red meat have also been suggested but have thus far demonstrated limited longevity often explained by confusion about optimum scale of branding and issues of ownership or how best to market provenanced produce (Welsh Government, 2019b). The value that Wales' provenanced foods holds to fuel the growth in food tourism and calls for local produce makes this a very relevant development but would require clear producer collaboration and regulation of the product right onto the plate e.g. PDO Welsh Lamb and Saltmarsh Lamb.

The drive from Welsh Government to establish Food and Drink clusters as part of the Food & Drink Action Plan to improve productivity, illustrates the recognised importance food governance places on shared knowledge and business networking. The fact that Welsh producers are not well connected within sector and are also very dispersed due to Wales' geography is a challenge but also a pool of future potential growth through connecting suppliers into sustainably managed procurement, especially if international markets shift post-Brexit.

Moves towards collaboration, is often a result of social enterprise, which seems to be a key driver for bringing about collaborative innovation e.g. South Caernarfon Creamery (SCC), one of the best known and longest surviving dairy co-operatives in Wales. These are potentially key for rural economic development (Thomas Lane et al., 2016), and timely and necessary in the challenging times of changing EU markets, global climate change's associated challenges and the rise of local food in access in Wales.

2.2 Increase in alternative food systems

Alternative food networks (AFNs) have long been explored and routed by commentators as a potential opportunity to provide stability within both urban and rural contexts (Goodman and

Goodman, 2009; Renting et al., 2003) and to reconnect consumers with producers and the land (Kneafsey et al., 2008). The details that make these networks 'alternative' have been the focus of much debate in literature, but Sarmiento (2017) identifies that they broadly seek to address "ecological, social, and/or political economic problems associated with conventional food systems". AFNs are increasingly used as a supplementary route to market for small to medium sized food producers as they look to compete with the large-scale producers and low cost imported food. Alternative food systems can take many guises, but common systems include local food hubs, farmers' markets and local or regional delivery systems, and often include producers collaborating (Kottila and Rönni, 2008). These alternative systems are often described (eg Nousiainen et al., 2009) as being more broadly sustainable socially when compared to more traditional systems, but the success of such projects is largely reliant on the skillsets of those managing them (Guzman and Reynolds, 2019).

2.3 Wales' Coronavirus restrictions + impact on food sector

The coronavirus lockdown across Wales implemented on March 23rd 2020, imposing unprecedented restrictions. Overnight all shops (except those selling food and essential items), hospitality businesses and other non-essential services closed, people were required by Welsh Government to leave home no more than once a day to shop for food or to exercise close to their homes, and were banned from gathering in groups of more than two people and were strictly urged to remain within single household bubbles. These restrictions would remain in place until a slight easing on June 1st 2020 when the Welsh Government deviated from those in England and Scotland permitting the meeting of other households, albeit outdoors but to remain within 5 miles of home, however the hospitality and service sectors remained strictly closed. These restrictions had a significant impact on farm shops, food catering services to schools, food retailers as well as the tourism and hospitality sector. Food production as an essential service was permitted to continue production subject to a number of additional precautions however while food continued to be produced the routes to market were significantly disrupted. Supermarkets experienced food shortages and imposed purchase limits on certain items. Changes in shopping habits lead to shopping less often and so-called panic buying or hoarding. On the other hand, many of Wales' small producers that relied on supply routed to the hospitality sector or smaller markets and direct to customer

sales were left with produce they could not sell going to waste with loss of revenue and uncertainty of when, if or how the situation would return to stability.

3. Methods

A mixed methodology approach was adopted for this study, to ensure that the methods chosen were open to the unprecedented global pandemic and the growing diversity of evolving interactions. Adopted to portray and interpret the complex intertwined food system and its effects on producers in light of Coronavirus, two in-depth case studies were developed investigating the pop-up nature of collaboration in times of uncertainty.

Five food and drink collaboration networks were identified in Wales and screened based on their collaborative responses to Coronavirus. Two were identified as appropriate case studies, on recognition that they were the only two identified collaborations set up as a direct result of the Coronavirus pandemic, while others existed prior to the pandemic and were operating in more traditional ways. Neges and Wye Valley Producers (see Figure 1) were approached and agreed to participate in the study.

Reflections on the collaboration from each organisation's perspective were drawn using a structured online questionnaire, due to Coronavirus restrictions preventing in-person interviews and site tours from being possible, and the limited availability of participants in the short timeframe. The bilingual questionnaire was divided into two sections. Firstly, the contributors were asked about the collaborative network; aims, management structure, service users, and the challenges and opportunities of the venture. The second section focused more broadly on the food sector, questioning the intricate relationship between Coronavirus and engagement within collaboration networks. The questionnaire is drawn to a close with an opportunity for follow up interviews if the contributors were available. All responses were then analysed using the software package NVivo, developing open then selective codes to draw out similar and differing key themes (Saldaña, 2013). Flow diagrams were created to show the movement of goods across the supply chain highlighting the different actor networks involved. Mapping was conducted to gauge the spread of producers for each organisation to show the far and wide-spread producer base and contributions to the case studies discussed.

4. Case Studies

The following two sections highlight the two chosen case studies, the first of which is a producer-led model from South East Wales and the second is an example of an organisation-led alternative food system in North West Wales. Both organisations that form these case studies were established as a direct result of the Coronavirus pandemic and the geographic spread of the regional producers they work with are displayed in Figure 1. While similar schemes to these case studies have been implemented elsewhere, both case studies presented here represent significant innovation in the context of the rurality and existing business models of Wales' food and drink sector.

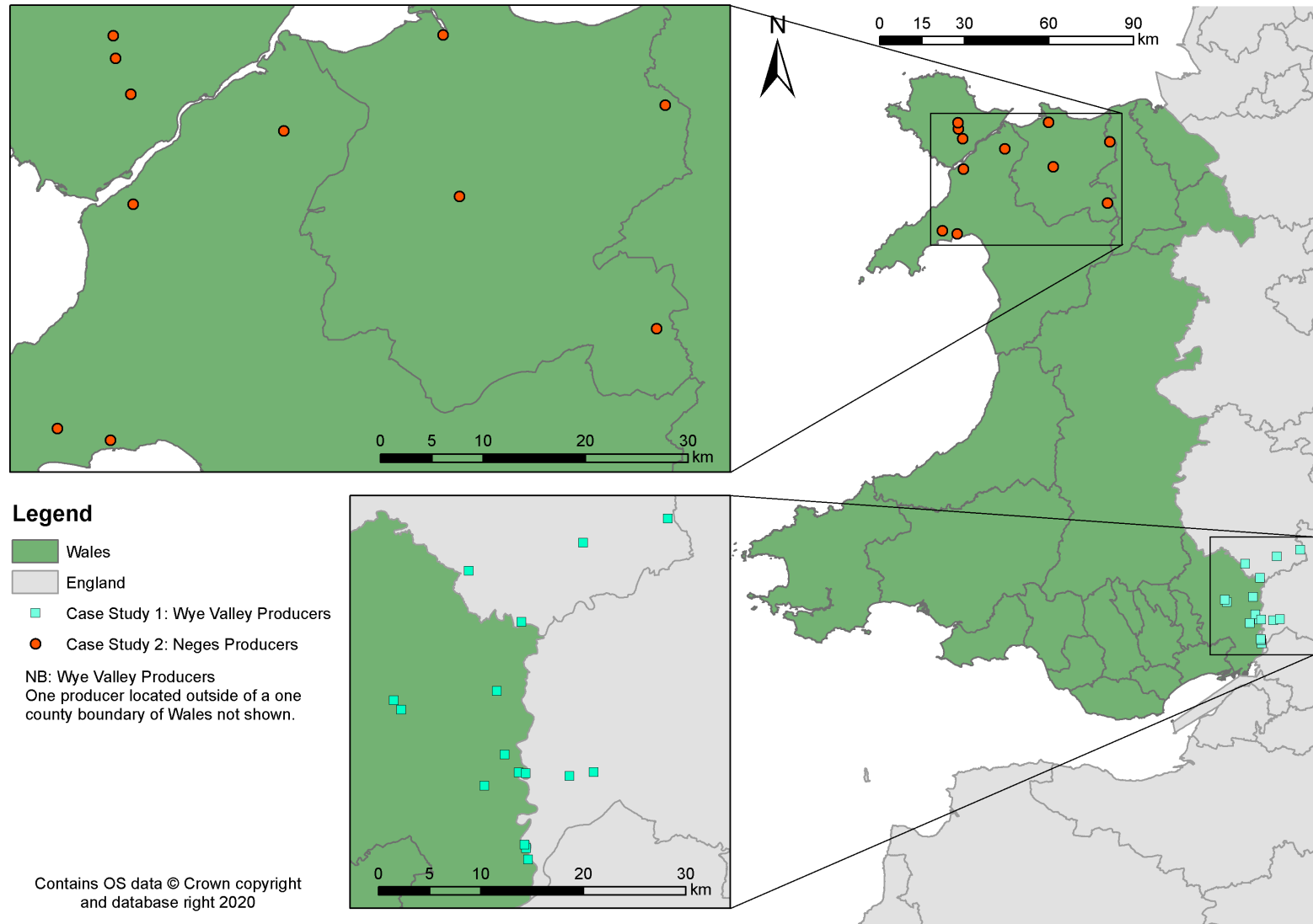


Figure 1: Locations of Wye Valley and Neges producers

4.1 Wye Valley

The Wye Valley Producers are a group of local artisan food and drink producers who as a direct result of the coronavirus pandemic saw many of their routes to market for their produce, largely the local restaurant sector, close overnight. They realised they needed a way to continue to serve their loyal customers while also providing access to a broad new client base, and that they were uniquely positioned to offer a safe alternative to the supermarkets. As a result, they came together to establish a weekly drive through click and collect service stating that:

“As a direct response to the pandemic, overnight our shops, hotels, restaurants, markets and festivals all disappeared, we needed a way of reaching our customers and realised that we could offer a very safe alternative to the supermarkets with our weekly, friendly and super safe Drive Through Click & Collect.” (Wye Valley Producers)

The service operates as an online shop, where the produce of all members is available for purchase, at prices set directly by the producers themselves. This allows users to buy produce from many local producers all in one easy and convenient place, much like they would be able to do so from larger retailers. Customers place and pay for their order through the website and are then able to collect their produce between 5pm and 7pm the following Friday. Collection is conducted in a contact free manner, in line with coronavirus guidance, with customers asked to display their order number for staff who then load their order into the car boot, without the customer having to leave the car.

The 17 local producers (see fig. 1) involved established the collaboration within two weeks of first discussions, and all play different roles within the organisation and receive varying benefits as a result. All members contribute an initial £20 joining fee, with new members encouraged to join at any point, and then contribute a percentage of takings from their produce sales depending on their level of involvement (core organisers pay a lower percentage of sales than those that simply sell through the scheme). The project was boosted by a feature on national television programme Countryfile which was watched by nearly 6 million people nationally (BARB, 2020) which expanded their customer base from those in

close proximity to the Wye Valley to a national customer base serviced by a postal service for order.

Having established as a direct result of the Coronavirus crisis the Wye Valley producers are now exploring opportunities to continue their success long term. They have identified the need for a more permanent base, a more comprehensive and resilient web platform and a collaborative delivery system to complement the collection service to enable the platform to grow and be sustainable long term for the benefit of all the producers involved.

4.2 Neges

Neges is a food consolidation, production and distribution scheme, established by not-for-profit company Menter Mon in North Wales in direct response to the coronavirus crisis. Menter Mon's work covers the breadth of North Wales with the aim of providing solutions to the problems facing rural Wales. This remit means they have been well placed and suitably structured to be responsive to a major crisis as brought about by the outbreak of Coronavirus in early 2020. The organisation first met on April 3rd 2020 and quickly identified food access as a key issue facing North Wales' rural population, largely as a result of the specific implications of lockdown on rural communities set across a wide geographical area. The primary opportunity identified to combat the issue of food access across Gwynedd and Anglesey was to establish a food delivery service in the two counties.

Due to the nature of the ever-evolving crisis, response time was key to the successful implementation of the collaboration. To respond quickly, Menter Mon established a partnership between Dylan's, a local restaurant chain with establishments in Anglesey, Gwynedd and Conwy, a production facility based on Anglesey and a commitment to using local produce part of their company ethos, and their own Mon Larder project, already in place supporting regional food and drink supply chains through developing producer collaboration. The service, which was mobilised in 10 days, involved weekly home deliveries of food parcels for one, two or four people to those identified as vulnerable by the two councils was delivered at no cost to the end user. Funding was raised from Welsh Government through the Mon Larder project and from other sources including lottery funding and donations. Produce was purchased from 11 local producers (fig 1.) at a negotiated fair price, enabled by Neges not being driven by needing to profit from the scheme, before being processed at Dylan's production facility into a range of ready meals and other fresh produce, designed to support

an individual, couple or family of four for a week. By using local producers over more traditional supply networks such as large-scale wholesalers, Neges were able to work closely with producers with excess produce as a result of reduced demand from the hospitality sector, make best use of available produce due the impacts of Coronavirus, and provide financial support throughout the period of vulnerability for the region's food producers and wider regional economy. In the four months Neges was operational from April to July, the service made 14,520 deliveries to NHS staff and vulnerable individuals, which included over 10,000 lunch bags for NHS staff at the region's hospitals, 1,878 one person parcels, 266 two person parcels and 1779 family or four person parcels, amounting to weekly food support for 9526 individuals across two counties.

Neges has quickly established a recognisable brand in the North Wales region and are now exploring opportunities for future regional innovations. The Neges scheme came to an end at the conclusion of the Government guidance for vulnerable individuals to shield themselves. Neges recognised however that food access in the region is not exclusive to a global pandemic and are exploring financially viable options for the project long term, which may include a move away from the food parcel solution.

5. Discussion

The impact of the Coronavirus pandemic has undoubtedly been hugely significant on the food and drink sector globally and is mirrored by experiences of food producers in Wales. Despite this, a number of opportunities for innovation have been effectively recognised and implemented by producers across Wales to mitigate the impacts, provide value filled services and generate increased long-term commercial sustainability. In some cases, such as the Wye Valley Producers, this innovation surrounds the evolution of alternative supply chains by modifying traditional routes to market and implementing technological solutions to the problems associated with supplying food throughout a global pandemic. In other cases, innovations have included ways to incorporate corporate social responsibility, the act of making business decisions which will contribute to achieving societal goals, to support local residents most significantly impacted by the outbreak and subsequent restrictions. In return these businesses have strengthened their brand image and public relations by being seen to be 'doing good' within the communities in which they operate, and maintained their ability to trade during the crisis, as seen with the Neges project.

The traditional food system in the UK follows a clear model (fig. 2) whereby the producers and consumers of food are distanced, often geographically but also in the price paid or received for that food. The two case studies outlined here provide alternative options for producers to combat the inequalities and injustices in this traditional model, which sees system actors driving on-farm prices down while driving on-shelf prices up, increasing the cost to the consumer and reducing profitability of producers. These similar but contrasting case studies both provide evidence that a single link between producer and consumer, minimising the so called 'middle men' and directly involving the producers in this phase, can generate revenue, reduce the risk of unsold stock, and provide fair prices and access, to locally produced, high quality and provenanced food, and doing so by targeting entirely different markets.

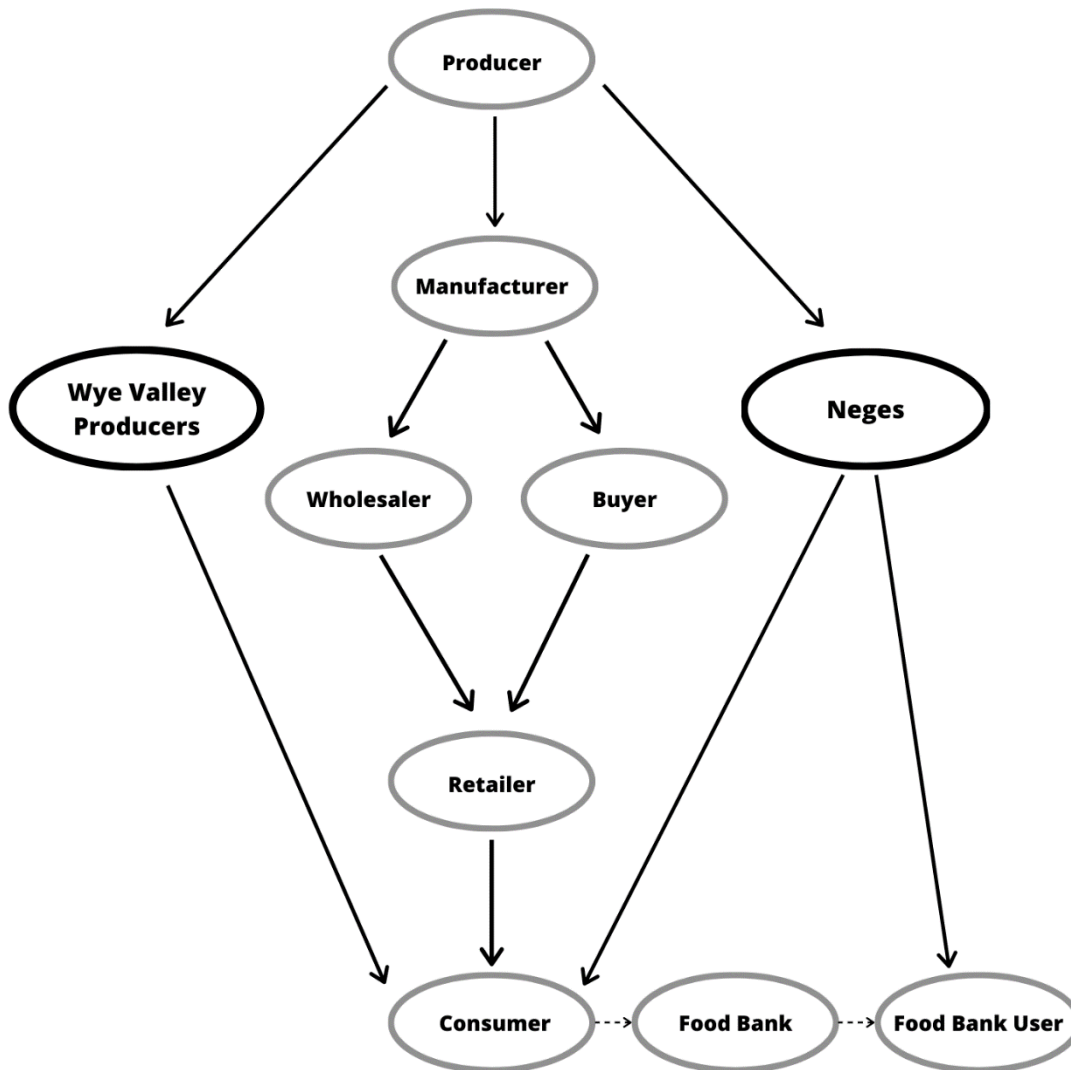


Figure 2: Case study positioning in the food system

Both cases show that businesses have been forced to look at how they operate and to explore fresh opportunities for collaboration, whether with other food and drink producers or across sectors. Collaboration allows producers to minimise the risk, reduce cost and share workload with others while all working together for mutual reward. The two case studies highlighted here use differing models of collaboration. The Neges project takes an organisation led approach, whereby an organisation, in this case Menter Mon, a not-for-profit enterprise (administering EU RDP and WG funding) act as an organisational body for the producers, while the Wye Valley Producers use a producer led approach where all leadership and management is conducted by the producers themselves.

5.1 Producer Led Approach

The producer led model requires significant input from the participant producers but may lead to greater returns for each producer. Under this model, as is the case for the Wye Valley Producers, the participant producers are responsible for all aspects of the organisation such as sales, marketing, management, logistics and other business operations. In return the producers receive payment for their produce sales and may receive a cut of profits. Wye Valley Producers also recognise that involvement includes non-financial benefits including knowledge sharing, camaraderie and support network in a time of instability and uncertainty, access to support from other agencies, an additional outlet to reach customers, significant positive publicity and increased brand recognition regionally and nationally. This model also brings about challenges however, most notably the levels of time and effort required to be contributed by often already very busy producers. However, these issues are easily overcome with the implementation of a tiered membership system, whereby cost of, and benefit from, involvement is relative to an individuals' level of contribution.

5.2 Organisation Led Approach

The organisation led approach implemented by Neges requires a far smaller contribution from participant producers, however the benefits of involvement may also be seen to be diminished. In this system, producer's involvement (if invited) is limited to the contribution of produce to the project at a negotiated fair price. Despite this, participating producers will still receive a number of benefits including the publicity and public relations related to being involved in a collaborative project. An organisation led approach means that producers are further removed from the decision-making powers than they would be in a producer led approach, however this benefits producers who already run complex operations and who cannot or do not wish to commit time contribution to a collaborative approach. The significance of this would benefit from being explored over the long term. This approach however does ensure²² producers are more effectively involved throughout the food system than the traditional food system would, ensuring negotiations focus on fair price, producer support and promotion, recognising quality produce, supporting local economies and proactively working for the benefit of all participating producers as well as consumers. Challenges for this system arise from the need for an appropriate organisation to manage the collaboration. Not for profit or social enterprises are likely the best suited for this role, as they are less likely to be driven by profitability, but rather work for the benefit of communities,

although they could be perceived to be driven by positive publicity gain for their organisation over the publicity of the individual producers. The Neges case study explored here was funded by national and local government, grants and donations as a direct result of the Coronavirus pandemic and the project would likely need to demonstrate an ability to be financially sustainable, either through a government commitment to continue long term funding for the scheme or through a paid element to the project to ensure its longevity, an issue also recognised by (Crick and Crick, 2020).

Table 1: Benefits and constraints of producer and organisation led models for food producers

	Producer Led Model	Organisation Led Model
Benefits to producer	<ul style="list-style-type: none"> • Producers retain complete control over operations • Producers can share knowledge across the network • Access to agency support • Development of partnerships that may lead to other opportunities • Increased Brand Recognition • Positive PR through collective advertising and media • Producers retain complete price setting control for their produce • Quick to establish, under 2 weeks in the Neges case 	<ul style="list-style-type: none"> • Requires less day to day involvement • Limited risk as selling produce direct to the organisation • Development of partnerships that may lead to other opportunities • Increased Brand Recognition • Positive PR through collective advertising and media • Potential contractual guarantee of volume of sales • Quick to establish, under 2 weeks in the Wye Valley case
Constraints on producer	<ul style="list-style-type: none"> • Can require a significant amount of time and effort input • Requires buy in from a range of producers to be effective • Costs associated with joining • No guarantee of sales 	<ul style="list-style-type: none"> • Limited influence on how the organisation works • Less control over which products are supplied and how much is demanded • Participation may be reliant on an invitation

Both systems involve varying degrees of collaboration and the ease and speed of establishing either will vary depending on the involved parties' motivations however both models present a variety of benefits to most producers that likely outweigh the related constraints (Table 1). The most suitable model for an individual business will likely be determined by the appeal of the required level of participation.

6. Conclusion

There has been a clear increase in interest and participation in collaborative food systems in Wales since the outbreak of Coronavirus, demonstrated with the continued rise in number of producers participating in the two case study examples, stimulated largely by the needs of food producers to continue to reach new and existing customers, with many traditional routes to market significantly disrupted. The implementation of these projects has highlighted the vulnerability of the existing food system, its reliance on the hospitality sector, imported food and large corporations and the need to stimulate long term sustainable alternatives to protect producers from future shocks and ensure continued supply of food to feed the nation. The case studies outlined in this paper demonstrate that shock stimulus to implement these producer collaborations are often required, however the individual relationships developed between these businesses will likely exist long-term, either formally through the continuation of these collaborations or informally as a result of the network connections developed. The longevity of these and similar projects remains to be seen despite the stated intentions of these organisations to continue, but they have highlighted the need to address food access issues, from food prices to availability and rurality issues, at a societal and political scale and across a broad spectrum of reasons for poor access to good quality, nutritious and locally produced food.

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References

- BARB (2020) *Broadcasters' Audience Research Board: Weekly top programmes on four screens (from Sept 2018)*. Available at: <https://www.barb.co.uk/viewing-data/four-screen-dashboard/> [Accessed: 3 September 2020].
- BBC News (2020) *Coronavirus: Supermarkets ask shoppers to be 'considerate' and stop stockpiling - BBC News, BBC news*. Available at: <https://www.bbc.co.uk/news/business-51883440> [Accessed: 28 July 2020].
- Clapp, J. and Isakson, S.R. (2018) 'Risky Returns: The Implications of Financialization in the Food System', *Development and Change*, 49(2), pp. 437–460. doi: 10.1111/dech.12376.
- Clarence House. (2020) "The Prince of Wales has shared a message in support of the #PickforBritain campaign, which encourages anyone looking for work during these unprecedented times to consider a job picking fruit and vegetables this summer." *Instagram*, 19 May 2020, Available at: <https://www.instagram.com/p/CAXEmUxglqA/> [Accessed: 4 September 2020].
- Crick, J. M. and Crick, D. (2020) 'Coopetition and COVID-19: Collaborative business-to-business marketing strategies in a pandemic crisis', *Industrial Marketing Management*, 88, pp. 206–213. doi: 10.1016/j.indmarman.2020.05.016.
- Dani, S. and Deep, A. (2010) 'Fragile food supply chains: reacting to risks', *International Journal of Logistics Research and Applications*, 13(5), pp. 395–410. doi: 10.1080/13675567.2010.518564.
- Goodman, D. and Goodman, M. (2009) *Alternative Food Networks*. Elsevier.
- Guzman, P. and Reynolds, C. (2019) 'Food Hubs in the UK: Where are we and what next?', *Food Research Collaboration*.
- Kneafsey, M., Cox, R., Holloway, L., Dowler, E., Venn, L. and Tuomainen, H. (2008) *Reconnecting Consumers, Producers and Food Exploring Alternatives*. Bloomsbury. London.
- Kottila, M. R. and Rönni, P. (2008) 'Collaboration and trust in two organic food chains', *British Food Journal*, 110(4–5), pp. 376–394. doi: 10.1108/00070700810868915.
- Lang, T. (2020) *Feeding Britain: Our food problems and how to fix them*.
- Maye, D. (2018) 'The New Food Insecurity', in *The Routledge Handbook of Landscape and Food*. Routledge / Taylor & Francis, pp. 380–390.
- Nousiainen, M., Pylkkänen, P., Saunders, F., Seppänen, L. and Vesela, K.M. (2009) 'Are Alternative Food Systems Socially Sustainable? A Case Study from Finland', *Journal of Sustainable Agriculture*, 33(5), pp. 566–594. doi: 10.1080/10440040902997819.

- Rayner, J. (2020) 'From panic buying to food banks: how Britain fed itself in the first phase of coronavirus | Food | The Guardian'. Available at: <https://www.theguardian.com/food/2020/jun/21/from-panic-buying-to-food-banks-how-britain-fed-itself-in-the-first-phase-of-coronavirus> [Accessed: 28 July 2020].
- Renting, H., Marsden, T.K. and Banks, J. (2003) 'Understanding Alternative Food Networks: Exploring the Role of Short Food Supply Chains in Rural Development', *Environment and Planning A: Economy and Space*, 35(3), pp. 393–411. doi: 10.1068/a3510.
- Saldaña, J. (2013) *The Coding Manual for Qualitative Researchers*. 2nd edn. London: Sage.
- Sarmiento, E.R. (2017) 'Synergies in alternative food network research: embodiment, diverse economies, and more-than-human food geographies', *Agriculture and Human Values*, 34(2), pp. 485–497. doi: 10.1007/s10460-016-9753-9.
- Stone, J., Rahimifard, S. and Woolley, E. (2015) *An overview of resilience factors in food supply chains*.
- Thomas Lane, E., Jones, R., Jones, A., and Mitchelmore, S. (2016) Exploring the potential of local food and drink entrepreneurship in rural Wales. *Local Economy*. 2016;31(5):602-618. doi:10.1177/0269094216654669
- Vlajic, J.V., van Lokven, S.W.M., Haijema, R. and van der Vorst, J.G.A.J. (2013) Using vulnerability performance indicators to attain food supply chain robustness, *Production Planning & Control*, 24:8-9, 785-799, DOI: 10.1080/09537287.2012.666869
- Welsh Government (2015) 'Well-being of Future Generations (Wales) Act 2015'. Available at: <https://www.futuregenerations.wales/about-us/future-generations-act/>. [Accessed: 11 September 2020].
- Welsh Government (2018a) *Food and Drink Wales Report: Celebrate Wales Food and Drink Toolkit*. Available: <https://businesswales.gov.wales/foodanddrink/how-we-can-help/celebration-wales> [Accessed 11/09/20].
- Welsh Government (2018b) *Food and Drink Wales Report: Food & Drink Wales Cluster Network Booklet*. Available: <https://businesswales.gov.wales/foodanddrink/growing-your-business/clusters> [Accessed 11/09/20].
- Welsh Government (2019a) *Economic Appraisal of the Welsh Food and Drink sector – Update 2018*. Available: <https://businesswales.gov.wales/foodanddrink/about-us/welsh-food-and-drink-numbers> [Accessed 5/09/20].
- Welsh Government (2019b) *Food and Drink Wales Consultation Paper: Our ambition to further develop Wales' food and drink sector*. Available: <https://gov.wales/developing-wales-food-and-drink-sector> [Accessed 11/09/20].
- Welsh Government (2020) *Welsh Food and Drink in Numbers | Business Wales - Food and drink*. Available at: <https://businesswales.gov.wales/foodanddrink/about-us/welsh-food-and-drink-numbers> [Accessed: 28 July 2020].