

# Regional Responses: The Sustainable Food North West Research Collaboration

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This paper describes the conception and initial phase of the North West Sustainable Food Research Collaboration (SusfoodNW). It provides summary findings from exploratory work packages which commenced at the beginning of the initiative and feedback from regional stakeholders concerning the role and challenges for regional academic collaborations and sustainable food research more broadly. As such, it is a collection of reflections and research outputs that aim to illustrate:

- a) The process of academics from neighbouring institutions working together with a regional focus but without significant external resource
- b) Some findings from initial research on the region which aimed to map and understand some of the context for sustainable food in the region and provide a grounding for further research
- c) A snapshot of regional stakeholder opinion in relation to the focus and activities of a regional research collaboration

## 1. Introduction: The Case for Regional Collaboration

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Regions have been increasingly recognised over recent years as important foci to both understand and tackle food sustainability issues. The North West of England is just one of many regions facing increasing pressure and scrutiny over its ability to feed its population in a sustainable manner. Whilst it has some distinctive and thriving food chains, it also faces enormous challenges: food poverty and diet-related ill health are on the rise whilst food waste remains at an unacceptable level. Moreover, the regional food system is a significant source of carbon emissions and arguably provides diminishing socio-economic benefits as national and multinational chains continue to grow at the expense of smaller independent businesses across the sector.

It should also be acknowledged, however, that food is not only at the heart of some of our greatest problems but also a vital part of the solutions. Communities at different scales across the UK are recognising the pivotal role that food plays in addressing the social, environmental and economic challenges that we all face. Positive transformations in how we relate to food are taking shape, supported by a range of networks and initiatives that take a joined-up and increasingly whole system approach to food sustainability by connecting and addressing inter-related issues such as obesity, ill health, poverty, waste, climate change, economic development and environmental damage.

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It was within this context that the Sustainable Food North West Research Collaboration (SusFoodNW) was established. Founded by the University of Central Lancashire and Manchester Metropolitan University in 2015, the initial idea emerged from discussions between researchers and members of Sustainable Food Lancashire, an umbrella body bringing together a range of community-based and other stakeholder organisations to support the movement for sustainable food and mobilise collective action. Subsequent discussions between the two universities revealed strong links with a wider range of civil society organisations and a thirst to forge a collaborative approach in the North West, supported by high-level commitment from within both universities. Following further discussions, it was agreed that the overarching aim should be:

“To contribute knowledge and evidence that can increase understanding of food sustainability and support positive change in our region and beyond by achieving tangible social, economic and environmental impacts.”

During 2015, the two universities held regular meetings and secured pump-priming funding to establish SusFoodNW through the development of three small-scale exploratory research projects. A collaborative agreement was signed between the universities and a website set up ([www.susfoodnorthwest.org.uk](http://www.susfoodnorthwest.org.uk)). Whilst it was agreed that the core of SusFoodNW should be ‘academic’ – focused on facilitating exchange and collaboration between researchers from multiple disciplines within the participating universities – from the beginning there was a strong commitment to bringing together these researchers with key stakeholders from civil society and other sectors in order to co-produce knowledge and facilitate action that promotes sustainable, healthy and socially just food systems. In support of this, a multi-stakeholder event was held in February 2016, attended by over 50 people. This represented the formal launch of SusFoodNW and offered an opportunity to present initial findings from the research projects and to open up dialogue with civil society and other organisations.

The launch event also catalysed interest among other universities in the region and led to follow-on discussions with academics from the University of Salford and Edge Hill University, which joined the Collaboration in May 2016. In addition, the Collaboration has focused on developing joint research proposals. Our first successful partnership bid (between Manchester Metropolitan University and the University of Central Lancashire) was for an evaluation of the social, economic and environmental impacts of the Incredible Edible model, as developed and applied in Todmorden.

The paper sets out the learning from the first phase of our collaboration. We purposely cover both some of the substantive findings from our exploratory research in the region and an account of the act of coming together as a collaboration and engaging with other stakeholders. The two areas are indelibly linked, of course, particularly for applied social science research, which is the anchor for our disciplinary approach as a collaboration. The core theme throughout this paper is the importance of understanding relationships at the regional level and the role of proximity in forging shared actualities and potentialities.

The initial sections of this report summarise the findings from the exploratory research phase, which were designed in part as scoping activities to aid understanding of the current state of sustainable food in the North West of England. This is followed by an account of the snapshot of the concerns and priorities of regional stakeholders, taken as part of our launch activities in February 2016, and some reflections on our experiences of regional collaboration so far.

## 2. SusFoodNW Phase 1 Exploratory Work Packages

The following three discrete work packages were collectively identified by the group as appropriate themes through which to better understand some of the key issues in the region and develop exploratory findings upon which further research can be built. In each case, the emphasis is on scoping ongoing activities and identifying connections and gaps.

### 2.1 How Sustainable is Food in the North West of England?

*Adrian Morley & Andrew Hollingsworth, Manchester Metropolitan University*

#### Background

The aim of this work package was to assess the state of both data and methodologies that can aid the understanding of the food system at a regional level. By identifying key sources of comprehensive and longitudinal information about the food sector, more effective methods for better understanding the region's food sustainability may be derived. The starting point of this work was the recognition that, as modern food production and consumption relationships are invariably global in their reach, the complexity of the regional food system means that attempts to understand it must ultimately trade off comprehensiveness with data utility / accuracy. This section firstly outlines some of the key methods developed for understanding aspects of food sustainability and then reviews existing systematically generated data sources for the food system in the North West of England.

Regions can typically be defined according to natural, socio-cultural or political criteria. For the purposes of this study, the North West of England is defined in accordance with the established English regional definition used by UK Government Office and European Parliamentary Constituency. The region, therefore, comprises of five ceremonial counties: Cheshire, Lancashire, Cumbria, Greater Manchester and Merseyside. Together they cover approximately 14,000 square kilometres and are home to around 7 Million people. According to the last census, over 87% of the population live in urban areas, making the North West the most densely populated region after London (1). In addition to a core urban nucleus located within Greater Manchester, other significant urban areas include the cities of Liverpool, Preston and Chester. Broadly speaking, these urban centres are surrounded by a large rural hinterland, including national parks, and post-industrial towns.

#### Findings

##### Measuring Sustainability

The difficulties associated with measuring sustainability of food systems has been the focus of much debate over the past two decades. In its simplest form, sustainability measurement involves defining key variables to describe systems, assessing their inter-relationships, defining measurable objectives and criteria, and highlighting feedback mechanisms at both the individual and institutional levels (2). During this time, however, a number of different frameworks and indicator tools have been proposed in an attempt to measure sustainability in effectively.

Although a lack of internationally accepted reporting standards for measuring sustainability is certainly seen as a major concern by some (3-6), others have argued that the multitude of tools is in fact a benefit in terms of measuring sustainability (7, 2). More specifically, (2) further argue that using more than one sustainability

measurement not only strengthens the evaluation process by highlighting issues that might not otherwise arise, but also by corroborating (or contradicting) the results obtained by using a single method. Lee and Saen (4) suggest, however, that these tools do not adequately assist in measuring sustainability, especially at an industry level.

The case for developing appropriate metrics in order to measure sustainability receives a great deal of attention within the literature with a focus on the urgent challenges that persistently (if unevenly) impact the food system (2,3,8-12). The fear is that if these impacts are not quantifiable they will not feature in decision-making processes (3). These concerns have been further exacerbated by the recent global economic crisis and increasing environmental degradation and impacts from climate change, referred to by the United Nations Environment Programme's Global Action for Sustainable Consumption and Production initiative as 'mounting challenges' (12,13).

At a business level, there is also compelling evidence to encourage firms to use appropriate metrics to enable them to adopt more sustainable business practices. The motivating case for businesses focuses on improved competitive advantage through innovation and creativity (12), or in some cases, purely staying in business in the case of global pressures (14)). The challenges that restrict business led action include scepticism about the ability to decouple economic growth from environmental degradation (12), difficulties demonstrating corporate contributions (4), and the need to clarify and agree trajectories are equitable, economically, ecologically desirable and achievable (7). In addition, business interests are reluctant to adapt to policy pressures that are perceived as fragile in a resource-constrained economy (11, 14).

Few studies thus far have sought specifically to measure food sustainability at a regional level. Examples include studies conducted in Finland (15), the United Kingdom (16), the Netherlands (17) and China (18). Perhaps because differing regions need different routes towards becoming more sustainable, the existing studies use a wide range of methodologies, including measuring natural resource capacity (19), human carrying capacity (20), environmental carrying capacity (21), and sustainable development indicators (22).

### **Existing Approaches towards Sustainability Measurement**

As sustainability requires reconciling the environmental, social, and economic demands, the metrics used for the measurement of sustainability must necessarily involve the 'three pillars' of sustainability, either explicitly or implicitly. The most commonly used measures are listed in table 1. Most of these performance indicators only measure single dimensions, although indexes such as Global Reporting Initiative (GRI) and ISO 26000 attempt to address the lack of established international standards. A more holistic approach would combine all the relevant indicators into an overall index for performance comparison. Whilst composite indicators are seen as being more insightful in terms of performance monitoring there is currently no unified theoretical or methodological grounding for the creation of a scientifically substantiated system of indicators that encompass data collection, analysis, interpretation and benchmarking (23-25).

**Table 1: Current approaches for sustainability measurement**

| Approach                               | Environmental measures | Social measures | Economic measures | Constraints                                                                                                                                                                                       |
|----------------------------------------|------------------------|-----------------|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Life Cycle Assessment                  | Yes                    | Indirectly      | Indirectly        | Difficulty dealing with the complexity of global food supply chains                                                                                                                               |
| Ecological Foot printing               | Yes                    | Indirectly      | Indirectly        | No standard measure and can over-simplify                                                                                                                                                         |
| Carbon Foot printing                   | Yes                    | Yes             | Yes               | Needs an understanding of emissions in all the parts of the chain                                                                                                                                 |
| Triple Bottom Line                     | Yes                    | Yes             | Yes               | Needs an understanding of emissions in all the parts of the chain                                                                                                                                 |
| Environmental Performance Index        | Yes                    | Indirectly      | No                | Low number of indicators and data quality limitations make cross-country comparison difficult                                                                                                     |
| Other established Socio-economic tools | Yes, some              | Yes, some       | Yes, some         | A plethora of other suggested indicators and/or indicator-based methods have been developed for various sustainability dimensions to deal with such measurement challenges e.g. Energy Evaluation |

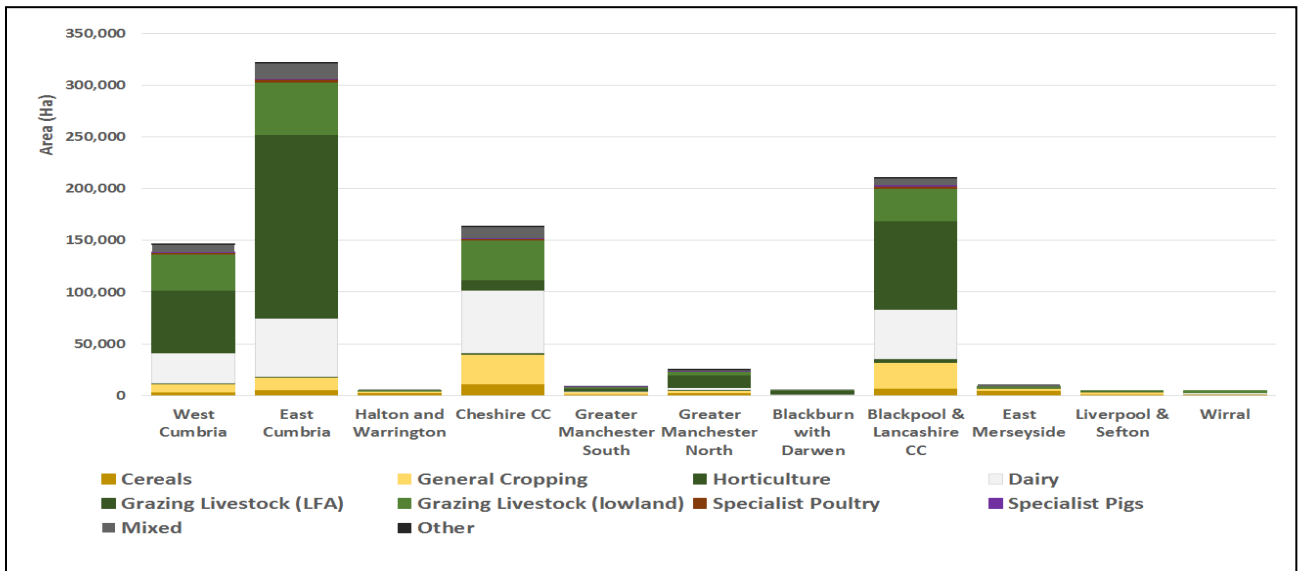
### Measuring Sustainability in the North West of England

This section summarises the main data sources for food in the North West of England and what they tell us about the region.

#### *Agriculture and Land Use*

Data for primary food production are relatively comprehensive, due to the historical importance of ensuring domestic food security along with demands associated with administering the EU Common Agricultural Policy. The main data generation process is the annual Agriculture and Horticulture Survey and the Farm Business Survey. According to this data, there are approximately 12,200 agricultural holdings in the region, predominantly in Cumbria, Lancashire and Cheshire. According to Defra (26), agriculture contributed £807 million in Gross Value Added (GVA) income to the region, accounting for 0.52% of total GVA (compared to a UK average of 0.60%) with the dairy sector being the most profitable. Average farm incomes, however, are lower than England as a whole, except for lowland grazing. The sector employs 32,000 individuals (0.94% of total regional employment, compared with 1.08% for the UK as a whole), with 70% of the sector being family focused. Around two thirds of land in the region (910,000 hectares) is used for food production, with livestock grazing dominating. Figure 1 presents land use figures broken down to main farming types across 11 sub-regions.

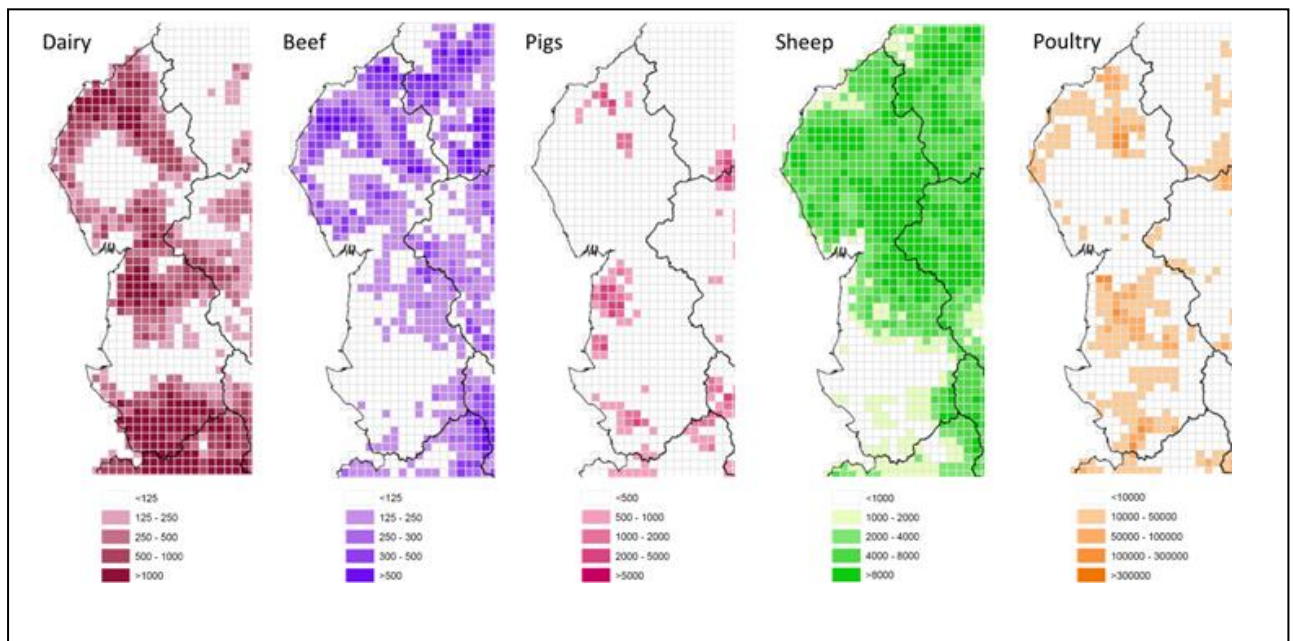
Figure 1: Farmed Area in the North West Region



Source: Defra, 2014 (27)

The EU Farm Structure Survey, incorporated into the Defra survey once a decade highlights, provides a more detailed geographical analysis, allowing for the identification of production hotspots. Figure 2 presents some of the livestock data for the region.

Figure 2: Livestock Production Maps for the North West Region



Source: Defra, 2011 (28). NB: units are numbers of animals.

Data also exists for agricultural land productivity in the region. Compared to the UK as a whole, there is a significantly lower proportion of land rated as either 'Very Good' or 'Good to Moderate' (due to the high proportion of upland areas), and just over a quarter is classed as 'Very Poor' (3 times greater than the UK average). There are also a number of land use restrictions in the region (e.g. 18% within a National Park, 11% within an Area of Outstanding Natural Beauty and 18% is part of a Site of Special Scientific Interest). Moreover, 19% of land is designated as Green Belt land (1). In addition, the North West is generally one of the wettest regions, with average rainfall of 1,180mm (29). Although carbon emissions data for counties is available,

figures exclude livestock emissions. Other local studies (30,31) are available but methodological differences make comparison and therefore longitudinal assessment problematic.

#### *Other Food Sector Data*

There are only a small number of sources for longitudinal data on the Food Industry within the region. The government Inter Departmental Business Register (IDBR) details business count, turnover and employment according to activity type (using UK Standard Industrial Classification (SIC) codes) and geographical location. According to this database, there are 31,035 food businesses in the region, employing 398,807 people and generating an annual turnover of £45,956 Million (2012/13 figure). The largest sector in terms of both business numbers and employment is restaurants and food service, with more restaurants, takeaways and other caterers than farmers in the region. The retail sector is by far the largest constituent part in terms of turnover. Perhaps surprisingly, food wholesalers and agents turnover more money than food manufacturers, although the latter employ more than twice as many people. According to these figures, agricultural production in the region accounts for just 5.4% of total food sector turnover. The food sector is focused on urban areas, with a large number of bakery businesses being influenced by the presence of a small number of multinational production plants. According to this database, there are only 35 fruit growers, 20 fish / seafood processors and 40 dairies / cheese manufacturers in the region (32).

Food consumption data is largely limited to the Defra Family Food Statistics publication, which is drawn from the National Food Survey and Living Costs and Food Survey. Data from 2013, based on 1855 households in the region, suggest that the average person spends £24.37 on food and drink consumed in the home and £7.93 outside of the home each week (excluding alcohol). A further £3.22 and £3.07 is spent on alcohol for home and outside consumption respectively. Average spend data is also collected for major food types. Food consumption is broadly similar to UK consumption as a whole (33). In addition, the Health and Social Care Information Centre calculate fruit and vegetable consumption in accordance to the '5-a-day' programme recommendations as part of the annual Health Survey for England. This data suggests that only 20% of men and 29% of women have the recommended five or more portions a day in the North West (2013 figures).

### **Conclusions and Recommendations**

There generally exists both a data and policy governance gap at the regional level. Despite the wealth of data available, it can be argued that type of data does not help fully understand food systems at the regional level as evidenced by the gaps in the descriptive data given in the first section and the lack of suitability for input into the methodologies in the second section. As the preceding sections demonstrate, systematic data about the food system is partial. Moreover, the data focuses largely on horizontal dimensions (e.g. agriculture, consumption) with virtually no data following supply chains or other production / consumption relationships. In this respect, 'mapping' the food system in the North West in a systematic way, using existing data is problematic.

Obtaining more comprehensive data presents two major hurdles. First, the resources needed to set up monitoring systems are immense and must be borne by either the taxpayer or consumer (through additional business expense). Secondly, there is a more profound ethical issue of harvesting information from the private domain, whether business operations or individual habits. Emerging technologies associated with data collection, processing and communicating (incorporating



privacy concerns) can play a key role in surmounting these hurdles if the political and societal willpower is there.

The question can be posed, however, whether comprehensive 'mapping' is needed in order to understand the food system well enough to be able to effect a transition to a sustainable system? Such is the complexity of food relations that modelling the system is a monumental task, even without the data required to make the model 'live'. Data is needed, however, in order to conceptualise a model or models.

## 2.2 Setting-Based Sustainable Food Strategies in Prisons

*Alan Farrier and Mark Dooris, University of Central Lancashire*

### Background

This study aimed to explore the alignment between and increase understanding of place-based and sector-based sustainable food strategies and initiatives within North West England. Prisons were chosen as the focus as they remain an under researched part of public sector food provision, despite increasing policy interest in growing schemes and other forms of food related skills development. More broadly, prisons have been identified as important organisations for health and sustainability, not only as contexts and vehicles for enhancing wellbeing, but also as partners in multi-sectoral health improvement and as contributors to citizenship development and societal change (34). In the UK alone, there are 136 prisons with a population of over 85,000 (35).

This exploratory research is based on focus groups conducted with catering managers and prison gardens managers in four separate prisons in North West England (one from Category B, C and D and one women's prison). All focus groups were audio-recorded, transcribed and subjected to thematic analysis.

### Findings

The following key themes emerged from the focus group discussions about food, sustainability and health in prisons:

- Activities
- Motivations
- Strategies and Policies
- External Links
- Challenges

### Activities

Sustainable food activities were identified in all four prisons, principally in the form of food growing schemes. These initiatives have largely been stimulated and supported by the regional Greener on the Outside for Prisons programme managed by Groundwork UK and funded by the National Lottery. The prisons have connected with education and training providers to offer City and Guilds NVQ qualifications, enhancing skills development and employability. The plants grown are generally chosen for speed and ease of growth. Produce is used in a variety of ways with some used for associated cookery classes. In addition, farm shops have been set up to sell home-grown and locally sourced produce to staff and visitors. Other activities include recently re-instigating in-house baking.



## Motivations

According to the focus group participants, the most important motivation for growing food on site was the benefit it provides for prisoners in terms of skills development, work-readiness and rehabilitation. Linked to this, there was perceived to be a growing demand for healthy and sustainable food. Some highlighted a reduced ecological footprint and contributing to a more sustainable food economy. In many ways, growing initiatives are a return to previous ways of operating when prison gardens and farms were the norm. However, the focus on food growing was understood to sit uneasily with the existing food procurement contract, which does not readily allow food grown onsite to be used in catering.

## Strategies and Policies

Only one prison had a formal sustainable food policy, linked to a sustainability committee, whilst another was in the early stages of developing a sustainable food strategy. All prison focus groups made reference to the national contract with Bidvest Foodservice, the main provider responsible for all UK prisons, which has a comprehensive sustainability strategy. Catering and Gardens Managers were aware of elements of this such as: selling locally produced food where possible; procuring produce from British farmers; and recycling cooking oil from prison kitchens to use as biodiesel for supply trucks. Although majority of food used in the prison kitchens comes via Bidvest Foodservice, there is a range of choices available for the same product. It is the role of the Catering Manager to test the food options available for quality and value. Although catering managers have ideas for how to make the food system more sustainable, constraints were highlighted. For example, using produce from prison gardens was regarded as requiring lengthy bureaucratic negotiations in terms of ensuring quality/safety and reducing reliance on the external provider. Prison-grown produce is generally used as a modest addition to the existing contract, rather than directly replacing any one element, and only then if there is no fear of its use leading to litigation.

## External Links

The prison staff highlighted a variety of links with external partner organisations. These included NHS trusts, linked to education for healthier eating; a local market, which supplied composting materials; and restaurants, which purchased prison-grown produce. A Category D (resettlement) prison organised family visits to a nature trail in the prison gardens, which was understood to strengthen community ties and enhance rehabilitation. There were also links with the wider community, for example through helping to develop an allotment. Prison networks for both catering managers and gardens managers were also mentioned as a means of sharing learning and offering peer support, as well as exchanging produce using 'soft charging' (e.g. receiving a concrete block from another prison to use as a raised bed).

## Challenges

A range of challenges were identified. In relation to food growing, the set-up costs in terms of preparing the land were highlighted, with one prison having to overcome the soil contamination problem. Prisons were at different stages of securing and sustaining funding for horticulture activities and there were particular concerns about the implications of the current economic context and climate of austerity. Whilst some prisons were recouping money by selling produce, there was a fear that profits might increasingly be absorbed back into the main prison budget. In relation to catering, it was argued that the current infrastructure, scale and seasonality of food growing did not realistically allow gardens to supply the necessary quantity or

range of produce to kitchens – even if the procurement contract permitted prison-grown food to be used. Additionally, due to different security categories, not all prisoners have the same access to cooking outside of the main kitchens. Catering Managers acknowledged the considerable amount of food waste generated by prisons, although they cited efforts being made to mitigate this, primarily through in-house composting.

### Conclusions and Recommendations

Whilst there was limited evidence of prisons being guided by an explicit ‘sustainable food’ policy or strategy, the research revealed a range of activities relating to food, linked to both health and sustainability. The food growing schemes were well established, catalysed and supported by the regional Greener on the Outside for Prisons programme (see 36), and closely linked to education and training opportunities. Catering in prisons is largely determined through a national procurement contract and is currently run by the multinational food service provider with its own sustainability policy in place. Although a number of focus group participants expressed a desire to ‘join up’ activities across the prison, this whole system vision is generally constrained by these contractual obligations and a concern to avoid risks associated with food safety and potential litigation. However, examples were given of community-facing activities such as farm shops, which offer opportunities for selling produce grown on-site to staff and visitors, and foster wider external links.

## 2.3 Short Supply Chains and Counterculture Movements

*Brigit Ramsingh, University of Central Lancashire*

### Background

This exploratory study aimed to identify and investigate the distribution of short food supply chains and other sustainable initiatives and practices in the North West, including those with a goal of food redistribution or food reclamation (e.g. to reduce food waste). The specific areas examined included: farmers’ markets; traditional markets; farm shops and larger stores in the North West which stock local producers; food waste reduction programs; food hubs; food sharing events; and countercultural practices of reclaiming waste through skip or dumpster diving (known as ‘freeganism’).

Data was collected through a mix of fieldwork/site visits, secondary data analysis (incorporating government data and reports, peer-reviewed literature, websites, social media, news media) and a mapping exercise to identify potential case studies for further exploration and stakeholder engagement.

### Findings

The following key themes were identified from the preliminary findings:

- Variable definitions of ‘local’ and ‘sustainable’ and needs for consistency
- Multiple barriers and challenges to producing and consuming sustainable food
- Lack of data and existing analysis preventing the attainment of a comprehensive view of the region
- Difficulties in tracking some types of markets due to their pop-up nature
- Growing interest in food re-distribution via community hubs

## Markets and Urban Gardening

A 2009 study recorded 48 farmers' markets in the North West; 16 country markets; 4 wholesale markets and 158 traditional markets (37). Our review suggests a need for a deeper understanding of this sector including stronger definitions and a refining of categories. The transient nature of some farmers' markets and vendors, in particular, makes it difficult to tabulate how many markets and stallholders exist in the region. Moreover, from our observations, it is unclear how many markets in the North West are true food markets (rather than mixed), and if so, how local the products are (38). According to the definition of 'local' established by the National Farmers' Retail & Markets Association (FARMA), which certifies farmers' markets, 'local' or 'locally produced' can be defined in two ways: Local as a geographic radius; or Local as a 'county boundary' (39). As a radius measure, according to FARMA, food produced within '30 miles [of a farmers' market] is ideal, up to 50 miles is acceptable for larger cities and coastal or remote towns and villages" and a maximum distance of 100 miles is recommended (39). This problematic issue of defining local has been identified previously in a baseline scoping study on sustainable food in Greater Manchester (40). Feeding Manchester also refers to the FARMA criteria and defines "a farmers' market [as] a market in which farmers, growers and producers from a defined local area are present in person to sell their own produce, direct to the public. All products sold should have been grown, reared, caught, brewed, pickled, baked, smoked or processed by the stallholder." (41).

Economic sustainability for both vendors and consumers is a consideration as some vendors consulted in this study expressed concern at the cost of stall rental and/or certification at farmers' markets. Whilst there are connections between markets in the North West and the national Love Your Local Market (LYLM) campaign, which runs its fortnight campaign each May, the LYLM interactive map of markets in the region appears incomplete. Both site-visits and desk-based research suggests that neither definitions of 'local' nor 'farmers' market' is consistent across the region. This supports the need to understand better the concept of 'local' and how it relates to sustainable food in the region.

Further scoping for the region is clearly needed. Mapping data could be pooled together to form a database, drawing upon existing sources such as the Sustainable Food Directory for Manchester which is in a development stage.

## Food Waste

The national Love Food Hate Waste (LFHW) campaign has a clear presence in the region. Officially launched in both Greater Manchester and the Liverpool City Region, the campaign is supported by reps who offer food waste training across these areas. The training sessions include cookery lessons and potential participation in a sustainable food champions network. In addition, several public events have been held across the North West in partnership with LFHW.

There are also a number of dedicated food redistribution centres now operating across the region. At the time of the study, FareShare Centres existed in Merseyside and Greater Manchester and most recently in Preston (Fareshare Lancashire and Cumbria). The Fareshare organisation works with manufacturers, suppliers, retailers to redistribute surplus food to charities. Another organisation Food Cycle has also established hubs in Manchester and Liverpool to 'rescue' surplus food from retailers whilst offering volunteer and training opportunities. There have also been similarly minded 'pop up' events in the region such as Disco Soup in Manchester (June 2015) and Preston (August 2015) via the work of Sustainable Food Lancashire. The Preston Food Partnership (PFP) has gained momentum since 2015 by bringing together many



stakeholders in the region, and recently has been selected by the Open Food Network to serve as a pilot city for supporting community kitchens and food hubs.

Freeganism or 'dumpster diving' appears to be more centred within larger urban centres in the North West (and the UK more broadly speaking) like Manchester and Liverpool; due to legal barriers and obligations of retailers to dispose of waste (and increased use of food redistribution schemes like those mentioned above), however, it is unclear how widespread this practice is in the NW. Media and social media analysis and peer-reviewed literature on similar practices in Europe and North America suggest that there exist potential tension or boundary clashes between those who adopt this practice out of deprivation (for example in deprived urban centres such as Preston) and those driven more by anti-consumerist ideology (42, 43).

### Conclusion and Recommendations

The focus on this preliminary study has been to scope the extent of particular types of short food chains and counterculture movements in the North West of England. This process has revealed definitional and data access issues that restrict a complete understanding of these sectors and their impact in the region. Clearly further research is needed to overcome these barriers and provide a more complete picture of these part of the regional food system. Given the barriers identified, case studies built around interviews with key participants and stakeholders would appear to be a fruitful way forward. More broadly, some key questions remain: How short and sustainable are these supply chains? How do we measure them? What does 'local' mean in the region? What are the impacts of these activities? What opportunities and challenges exist for expansion of such activities? Greater engagement between academics and CSOs will go a long way to answer these questions and help the region as a whole maximise the potential of its food sector.

## 3. Meeting the Needs of CSOs and other Stakeholders

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### 3.1 Background

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Over 50 stakeholders from the region attended our launch in February 2016. We used this opportunity to explore some of the needs, opportunities and barriers they face to furthering more sustainable food. This was primarily achieved through a series of roundtable questions, inspired by our preliminary studies outlined above, that were posed to breakout groups of between 5 & 10 participants. This section presents the main findings of this process and, as such, provides an indication of the views and priorities of the CSO sector in the region. The findings are summarised into themes identifying key barriers, needs, gaps and opportunities. The questions posed are listed in the table 2. The full written responses from the groups are reproduced in Appendix 1.

**Table 2: Breakout discussion questions linked to the Phase 1 exploratory work packages**

| Work Package   | Question a                                                                                                                                        | Question b                                                                                                        |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| Work Package 1 | <b>Q1a.</b> Is a systematic understanding necessary to achieve sustainability?                                                                    | <b>Q1b.</b> Is the system best defined by geography, sector or issue?                                             |
| Work Package 2 | <b>Q2a.</b> How do we enable large organisations to co-operate in solving sustainable food issues at a regional scale?                            | <b>Q2b.</b> How can we feasibly meet the cost challenges which will be encountered in promoting sustainable food? |
| Work Package 3 | <b>Q3a.</b> What opportunities exist for the expansion of existing short food supply chains or food waste reduction activities in the North West? | <b>Q3b.</b> What are some of the challenges and barriers to expanding such activities?                            |

### 3.2 Summary of Responses

#### **Is a systematic understanding necessary to achieve sustainability? Is the system best defined by geography, sector or issue?**

Although nearly all the groups agreed that a systematic understanding is necessary, concerns were raised about a lack of clarity about what sustainability means and the need for it to be defined in an applicable way.

The responses about how to best define the limits of the system were very mixed, indicating a lack of agreement as to the conceptual basis of sustainable food. This was reflected by suggestions to focus on the three sustainability pillars (social, economic and environment), material and monetary flows and consumption led understandings. Recognition of the complexity of the system was almost unanimous across the groups.

#### **How do we enable large organisations to co-operate in solving sustainable food issues at a regional scale? How can we feasibly meet the cost challenges which will be encountered in promoting sustainable food?**

A recurring message was that there effective regional initiatives already exist and it is important to map and build on these rather than attempting to ‘reinvent the wheel’. A number of groups suggest a need to better understand activity in the region. Similarly, the need for a better evidence base was put forward. Other proposals included identifying leaders and working together on procurement issues. The need for a regional food strategy to coordinate effort was also put forward. It was also recognized that a key barrier to influencing and enabling large organizations can be existence /absence of sustainable policy or legislation and more government support may be needed in this area.

The issue of cost elicited less clearer and consistent suggestions. For some groups, the focus was on finding ways to fund initiatives; including diverting money from the Common Agricultural Policy and accessing EU funds, (the event was held prior to the EU referendum). Others focused on making sustainable food cheaper through reducing waste, changing dietary habits, developing skills. The issue of recognising the wider value of food was also raised as a way to accept the higher financial cost of sustainable food.

### What opportunities exist for the expansion of existing short food supply chains or food waste reduction activities in the North West? What are some of the challenges and barriers to expanding such activities?

The responses to this section demonstrated a wealth of ideas among the stakeholders. Examples were provided of existing good practice in the region that should be supported, such as FareShare and the Real Junk Food project, as well as areas that are in need of support such as cooking skills and infrastructure (such as food hubs). Suggestions were made to both connect better with national initiatives and focus on the creation of local models.

Similarly, many barriers were identified by participants, perhaps reflecting frustrations working in this field. Problems of supply and competition from supermarkets were highlighted along with issues related to a lack of supply chain cooperation and support from government. Local authorities were identified as barriers through difficult procurement systems, cuts in services and food safety regulations. Broader issues associated with societal trends including the influence of supermarkets and demand for exotic foods were also raised.

### 3.3 Lessons from the Launch

Overall, a number of key messages were taken from the event. As academics, the input of CSOs and other stakeholders proved to be a valuable insight to the research needs of the region. In addition to the specific comments discussed above related to the work packages, the following action principles can be identified:

1. *Avoid re-inventing the wheel*  
As several CSOs pointed out, there is an existing body of expertise, experience and practice (both present and past) around sustainable food in the North West. It is important to identify, acknowledge and support what works rather than overly focusing on generating new knowledge. 'Mapping' is therefore an important element to take stock of activity and make connections.
2. *Identify and engage with pivotal individuals*  
A clear message was that individual leadership and 'passionate people' are key in driving forward sustainable food initiatives.
3. *Action is key to progress*  
Academic research in this area is often perceived as primarily a 'thinking exercise'. The regional stakeholders emphasised the need for an action-oriented approach to maximise the impact of the research community.
4. *A joined up approach is vital*  
Ultimately, the success of SusfoodNW hinges on both collaboration between academics across institutions and subject boundaries and between academia and the many civil society organisations in the North West active in food sustainability issues.

## 4. Reflections on Regional Collaboration through SusFoodNW

Looking back on the establishment and initial phase of SusFoodNW as a collaboration between two universities, it is possible to make a few observations. Firstly, a key organisational consideration was whether to establish a collaboration between interested academic partners or to broaden this out to include civil society and other organisations. As we were starting from a base with very limited funding and exacting time pressures, we were cautious about being overly ambitious and raising expectations that could not be met. We therefore focused on developing links between academic organisations, with a commitment to engaging further with wider stakeholders during this phase through targeted action such as our launch event and through research processes.

A further concern at the point of establishing the Collaboration was whether to be proactive in seeking engagement of multiple universities in the North West region or to 'start small', forging links between academics who had already expressed interest. Due to a limited and insecure funding base, we chose the latter option – establishing a partnership between the two founder institutions and subsequently broadening this in response to wider interest.

Our decision to secure 'pump-priming' funding from the two founder universities proved important in enabling the Collaboration to become established. The funding allowed allocation of a small amount of co-ordination and administration time for the first six months and also funded limited researcher time to undertake the small-scale research projects. However, whilst the 'pump-priming' funding was welcome, it also resulted in further challenges 'down the line'. Firstly, its time-limited nature meant that we had to find ways to continue to co-ordinate the Collaboration without any allocated funding or staff time. Secondly, the allocation funded insufficient staff time to enable the research projects to be completed within the funding period, requiring us likewise to find ways to complete the projects without allocated staff resources.

Since the launch in 2016, the work packages have moved forward in their data collection, and the identification of key CSOs has been very helpful in ensuring a 'joined up' approach and creating opportunities for potential bids, collaborations, consultations and dialogue. The addition of two new academic partners after the launch (Edgehill and Salford) has further strengthened our potential for attracting resources and expanding the network to include key leaders and passionate people.

Moving forward, the collaboration intends to focus on creating capacity through attracting funding and seeking new collaborators from the member institutions. The exploratory research outlined in this paper will be built upon with the aim of producing academic publications as well as being a conduit for stakeholder engagement.

## Appendix 1: Feedback from the Launch Event

| How Sustainable is Food in the North West of England?              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|--------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Is a systematic understanding necessary to achieve sustainability? | <ul style="list-style-type: none"> <li>• Yes! Needs to be flexible to take into account fiscal/other changes-carbon.</li> <li>• Define Sustainability. Not just carbon. Understanding is very important. A clear destination / agenda / picture would be very helpful.</li> <li>• Need to understand what sustainability is: Has to be practically understood and applicable: Need to be able to communicate the issues in a way that assists action: Needs evidence, but don't be 'too academic' inward looking: Look at work of others, don't reinvent the wheel: Need to share local /regional approaches: Sustainable Food Cities is a reproducible vehicle: Scoping is key, e.g. who has done what and how: Cost effective Toolkit: Local / regional applicability</li> <li>• Yes.</li> <li>• Yes!</li> <li>• Yes. We need an agreed definition of sustainability.</li> <li>• More data collation required now. Consumption data collation more difficult than production. Consumption data changes over time; need to understand what food is coming into the N. West.</li> </ul>                                                                                                                                     |
| Is the system best defined by geography, sector or issue?          | <ul style="list-style-type: none"> <li>• Different Issues in different sectors; individual behaviour. Change possible without systematic understanding?</li> <li>• System defined by social, economic, environment <i>a la</i> Rio not the 3 suggested.</li> <li>• Issues capture people's' imagination, context priority? Is this network about food produced in the NW or food consumed in NW?</li> <li>• Divide into chunks: Cross-sector discussion on record? E.g. what do LEPs [Local Enterprise Partnerships] know: What did regional development agencies know and may be useful?</li> <li>• A complex system – are there only 3 factors? Consider the flow of money/food – follow that as a starting point. What are consumers' views?</li> <li>• How do we achieve a shared vision of what sustainability means and how this impacts on a systematic understanding? Our different jobs / roles/ perspectives around the table were leading us to consider the importance of 'joined up' approaches.</li> <li>• We need to understand it all – geography, sectors, issues.</li> <li>• Value in looking at NW as a geography as similar (on average) to nation. Good examples to use for comparison etc.</li> </ul> |

| Area-based and Settings-based Sustainable Food Strategies                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| How do we enable large organisations to co-operate in solving sustainable food issues at a regional level | <ul style="list-style-type: none"> <li>• How much influence do LAs have on large-scale organizations to facilitate change?</li> <li>• Good examples already exist: leadership, invest in best practice. Find the 'leaders' and back them. Develop evidence base of value in change at strategic level.</li> <li>• Food needs to be more local: Explore possibility of regional sharing of food standards...to help small contracts: Learn from others, e.g. organics, retailers: Develop 'model' standards: Audit what is already happening -in local companies, -in local authorities, -in local branches of national/international bodies: Review structures of institutions which -</li> </ul> |



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|--------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                              | <p>could help shift to more sustainable food, -are currently blocking progress.</p> <ul style="list-style-type: none"> <li>• Write a food and drinks strategy to give some control to the institution: Anticipate that change is slow: Find your allies, e.g. head of finance: Identify people with passion: Getting organizations to collaborate very challenging - find the groups who want to talk: 'Just do it' Don't worry about getting everyone on board: Start and show it works and others will join: Awards: League Tables.</li> <li>• Engagement: Education: Joint procurement - build into procurement: Find good levers: Consider inputs and outputs: Cooperation - Greater Manchester Food Board, -Good Food Greater Manchester, -multi sectoral cooperation.</li> <li>• Sharing information - best practice (Name and shame): Resource and process examples to see how it can work and develop in practice.</li> <li>• Greater Manchester focus and individual local authorities: Devolution promoting GM focus.</li> <li>• Difficult to drive the development of these strategies without national policy/legislation, therefore, more support is required from government - is current policy out of date?: Need information, resources, network: Changes required to tendering, procurement to support sustainability/sustainable suppliers: Regional support networks lacking (Lost 2 key bodies RDA, ADAS - Regional development agency, Agricultural Development Advisory Service).</li> </ul> |
| <p>How can we feasibly meet the cost challenges which will be encountered in promoting sustainable food?</p> | <ul style="list-style-type: none"> <li>• Motives to be sustainable? Helps if it is cheaper!</li> <li>• Whole life costs evidence; including carbon footprint.</li> <li>• Procurement is key: Take a different angle, e.g. health and wellbeing.</li> <li>• EU funding bids to support knowledge sharing.</li> <li>• Redistribute monies that have not already worked: Preservation of Harvest.</li> <li>• Funding sustainability via: -Reducing waste, -Reducing meat, -new recipes, -retraining cooks, -organic conversion in Copenhagen.</li> <li>• Grab CAP funding</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

| Short Food Supply Chains and Countercultural Movements                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|----------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>What opportunities exist for the expansion of existing short food supply chains or food waste reduction activities in the North West?</p> | <ul style="list-style-type: none"> <li>• Awareness through research and examination: initiatives such as Fareshare: giving local communities help to set up: legislation and policy to encourage and reward: localism act.</li> <li>• Fiscal base: carbon tax - this is incentive for consumers to buy more local as alternative will be more expensive: Policies to incentivise local trading: Incentives to invest in regional infrastructure: Bear in mind public sector procurement systems too.</li> <li>• There is demand: food production possible: helps to simplify the many issues: school gardens/prison gardens should supply the schools/prisons: Sustainable Food Lancashire larder.</li> <li>• Example: Real Junk Food – national, offers a model but needs to be applied locally: Inspire application of a model at local level - upskill practitioners: Remove restriction of feeding waste to pigs: Need the science to [illegible] health/food safety restrictions: Use social media campaigns.</li> <li>• Are local and short food supply systems the only answer? / Part of the answer? Growing population → increasing demand for food globally-</li> </ul> |

|                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                   | <p>new markets opening up opportunities for new businesses: Opportunity:<br/>Use food to build social cohesion and community connection: Central processing.</p> <ul style="list-style-type: none"> <li>• Creating infrastructure, e.g. FareShare: “Ugly waste”: Celebrity endorsements, e.g. HFW: Large variations in demand: Variable supply: Brokering: Skills gap--how to cook.</li> <li>• Wholesale markets. E.g. Smithfield market: Including food waste reduction: FareShare: Real Junk Food project.</li> <li>• Hubs in localities to connect supplies, distributors with consumers: Look into getting SFSCs into supplying larger organizations: Crossover between Work Package 2 and Work Package 3: Issues over procurement - where this fits within a sustainable food strategy and supporting SFSCs: Build a case for supporting the local economy, providing local employment by supporting SFSCs.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <p>What are some of the challenges and barriers to expanding such activities?</p> | <ul style="list-style-type: none"> <li>• Supermarkets: power to change consumers’ habits.</li> <li>• Wholesalers have issues with irregular/inconsistent food supply. This could be helped by collaboration, e.g. agricultural coops.</li> <li>• Distribution and logistics: Certification and accountability: Turning ‘short supply chains’ into something meaningful that brings about sustainable food: Very dependent on volunteers: Needs to be robust: It should be paid for: We should not be producing food waste!: Supply chain cooperation: Network production.</li> <li>• Food networks change food culture but have limited impact on the food system.</li> <li>• Local versus choice: Capacity for food production in the NW? How much can our soil produce?</li> <li>• Availability of ‘exotic’ food: Trends and choice, e.g. spiralisers and maple syrup: Skills shortage - disengagement from seasonality: Barriers to start-ups (e.g. food safety regs): Resourcing at Preston - they have stopped food waste collection: Attitudes to waste - traceability/food fraud: Compensation culture, live in fear of food poisoning: Allergies, phobias, preference.</li> <li>• Need to ensure food safety: Scaling up: Logistics, resources, regulation.</li> <li>• Stigma associated with redistribution and reuse of food waste: Need a shift in supermarket practice of marketing/oversupply: Power and saturation of major supermarket chains (local convenience stores): Less opportunities for independent and food retailers.</li> </ul> |

## References:

1. Young, R. and Sly, F. (2011) *Regional Trends 43: 2010/11 Portrait of the North West*, Office for National Statistics, HMSO
2. Browne, D. O'Regan, B. and Moles, R. (2012) Comparison of energy flow accounting, energy flow metabolism ratio analysis and ecological foot printing as tools for measuring urban sustainability, *Ecological Economics*, 83, 97-107.
3. Gerbens-Leenes, P.W. Moll, H.C. and Schoot Uiterkamp, A.J.M. (2003) Design and development of a measuring method for environmental sustainability in food production systems, *Ecological Economics*, 46, 231-248.
4. Lee, K-H. and Saen, R.F. (2012) Measuring corporate sustainability management – a data envelopment analysis approach, *International Journal of Production Economics*, 140, 219-226.
5. Schaltegger, S. and Burritt, R. (2014) Measuring and managing sustainability performance of supply chains, *Supply Chain Management: An International Journal*, 19, 3, 232-241.
6. Khan, E.A. and Quaddus, M. (2015) Development and validation of a scale for measuring sustainability factors of informal microenterprises, *Entrepreneurship Research Journal*, 5, 4, 347-372.
7. Van Passel, S. Nevens, F. Mathijs, E. and Van Huylenbroeck, G. (2007) Measuring farm sustainability and explaining differences in sustainable efficiency, *Ecological Economics*, 6, 2, 149-161.
8. Hayati, D. Ranjbar, Z. and Karami, E. (2010) Measuring agricultural sustainability. In: E. Lichtfouse (ed.), *Biodiversity, Biofuels, Agroforestry and Conservation Agriculture*, New York: Springer.
9. FAO (2012) *Sustainability Assessment of Food and Agriculture Systems*, Rome: Natural Resources Management and Environment Department: Food and Agriculture Organization of the United Nations
10. Van Passel, S. and Meul, M. (2012) Multilevel and multi-user sustainability assessment of farming systems, *Environmental Impact Assessment Review*, 32, 170-180.
11. Boons, F. Baumann, H. and Hall, J. (2014) Conceptualizing sustainable development and global supply chains, *Ecological Economics*, 83, 134-143
12. SCP (2015) *One click away from Sustainable Consumption and Production*, Paris: United Nations Environment Programme/Global SCP Clearinghouse.
13. UNEP (2015) *10-Year Framework of Programmes on Sustainable Consumption and Production*, Paris: United Nations Environment Programme
14. Isaksson, R.B. Garvare, R. and Johnson, M. (2015) The crippled bottom line - measuring and managing sustainability, *International Journal of Productivity and Performance Management*, 64, 3, 334-355
15. Ryyppö, M. (2004) Measuring regional sustainability in Central Finland, *Fourth European Conference for Sustainable Cities & Towns*, Aalborg, Denmark, 9-11 June.
16. Green, K. and Foster, C. (2005) Give peas a chance - transformations in food consumption and production systems, *Technological Forecasting & Social Change*, 72, 663-679.
17. Wiskerke, J.S.C. (2009) On places lost and places regained: reflections on the alternative food geography and sustainable regional development, *International Planning Studies*, 14, 4, 369-387.
18. Wang, C. Wang, Y. Geng, Y. Wang, R. and Zhang, J. (2015) Measuring regional sustainability with an integrated social-economic-natural approach: a case study of the Yellow River Delta region of China, *Journal of Cleaner Production*, DOI: 10.1016/j.jclepro.2015.05.121.
19. Schultink, G. (2000) Critical environmental indicators: performance indices and assessment models for sustainable rural development planning, *Ecological Modelling*, 130, 1-3, 47-58.
20. Graymore, M.L.M. Sipe, N.G. and Rickson, R.E. (2010) Sustaining human carrying capacity: a tool for regional sustainability assessment, *Ecological Economics*, 69, 459-468.
21. Lin, L. Liu, Y. Chen, J. Zhang, T. and Zeng, S. (2011) Comparative analysis of environmental carrying capacity of the Bohai Sea Rim area in China, *Journal of Environmental Monitoring*, 11, 13, 3178-3184.
22. Mascarenhas, A. Coelhob, P. Subtila, E. and Ramosb, T.B. (2010) The role of common local indicators in regional sustainability assessment, *Ecological Indicators*, 10, 3, 646-656

23. Ewert, F. van Ittersum, M.K. Bezlepkina, I. Therond, O. Andersen, E. Belhouchette, H. Bockstallerg, C. Brouwerh, F. Heckeleeii, T. Janssen, S. Knapen, R. Kuiperh, M. Louhichik, K. Olsson, J. A. Turpin, N. Weryf, J. Wienj, J.E. and Wolf, J. (2009) A methodology for enhanced flexibility of integrated assessment in agriculture, *Environmental Science and Technology*, 12, 546-561.
24. Dantsis, T. Douma, C. Giourga, C. Loumou, A. and Polychronaki, E.A. (2010) A methodological approach to assess and compare the sustainability level of agricultural plant production systems, *Ecological Indicators*, 10, 256-263.
25. Ding, Y. de Vries, B. and Han, Q. (2014) Measuring regional sustainability by a coordinated development model of economy, society, and environment: a case study of Hubei Province, *Procedia Environmental Sciences*, 22, 131-137.
26. Defra (2014) Agriculture in the English Regions 2014 – 1<sup>st</sup> Estimate. Department for Environment, Food and Rural Affairs, 17<sup>th</sup> June 2015.
27. Defra (2014a) Structure of the Agricultural Industry. Department for Environment, Food and Rural Affairs, 12<sup>th</sup> September 2014.
28. Defra (2011) Maps of livestock populations in 2000 and 2010 across England. Department for Environment, Food and Rural Affairs, 25<sup>th</sup> November 2011
29. ONS (2016) Region and Country Profiles: Environment 31 October 2012: Annual Rainfall. <http://www.ons.gov.uk/ons/rel/regional-trends/region-and-country-profiles/environment---environment-2012/chd-environment-nw-annual-rainfall.xls> (as accessed 17th Jan 2017)
30. Berners-Lee, M. Hatter, W. Hoolohan, C. (2011) The total carbon footprint of Greater Manchester, Small World Consulting.
31. ESTA (2014) Understanding and reducing greenhouse gas emissions from food consumption and production: Greater Manchester, Environmental Sustainability Technical Assistance.
32. ONS (2015) UK Business: Activity, Size and Location - 2014, Interdepartmental Business Register, Office for National Statistics, 24<sup>th</sup> June 2015
33. Defra (2014b) Family Food 2013. Department for Environment, Food and Rural Affairs, 10<sup>th</sup> December 2014.
34. Dooris, M., McArt, D., Hurley, M. A., & Baybutt, M. (2013). Probation as a setting for building well-being through integrated service provision: evaluating an Offender Health Trainer service. *Perspectives in Public Health*, 133(4), 199–206.
35. Allen, G. & Dempsey, N. (2016) Prison Population Statistics. Briefing Paper Number SN/SG/04334, 4th July 2016. House of Commons Library. <http://researchbriefings.files.parliament.uk/documents/SN04334/SN04334.pdf> (accessed 20th October 2016)
36. Baybutt, M. and Chemlal, K. (2016) Health Promoting Prisons: Theory to Practice. *Global Health Promotion* 23 (Suppl. 1): 67-74.
37. Smith, J. (2009). All types of markets in the UK: Breakdown by GOR. Quoted in: Zasada, Krys (NABMA). November 2009. *Markets 21: A Policy & Research Review of UK Retail and Wholesale Markets in the 21st Century*. The Retail Markets Alliance.
38. Ramsingh, B. and C.A. Wallace. (2015). "Going beyond sights, smells and tastes: shared responsibility for food safety at farmers' markets in the Northwest of England." *Oxford Symposium on Food and Cookery Proceedings: Food and Markets*. Prospect Books.
39. FARMA (2015) National Retail and Farmers' Market Association (FARMA). <http://www.farma.org.uk/> (as accessed May 2014)
40. Ellen, D. (2010). Scoping the baseline of sustainable food consumption and production. Report Commissioned by Food Futures and Environmental Strategy Team, Manchester City Council.
41. Feeding Manchester (2015). "Farmers' Markets". <http://feedingmanchester.org.uk/farmers-markets> (as accessed November 2015).
42. Black, R. (2007). Eating Garbage: Socially Marginal Food Provisioning Practices. In: MacClancey et. al. (Eds). *Consuming the Inedible: Neglected Dimensions of Food Choice*. pp. 141-149.
43. Lancashire Evening Post (2013) "Twilight World: Preston 'bin dippers' avoid paying for meals." 17 April 2013. <http://www.lep.co.uk/news/twilight-world-preston-bin-dippers-avoid-paying-for-meals-1-5588578> (as accessed 17th January 2016)



# Food Research Collaboration

The **Food Research Collaboration** is a project, funded by Esmée Fairbairn Foundation, to facilitate joint working by academics and civil society organisations to improve the UK food system.

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