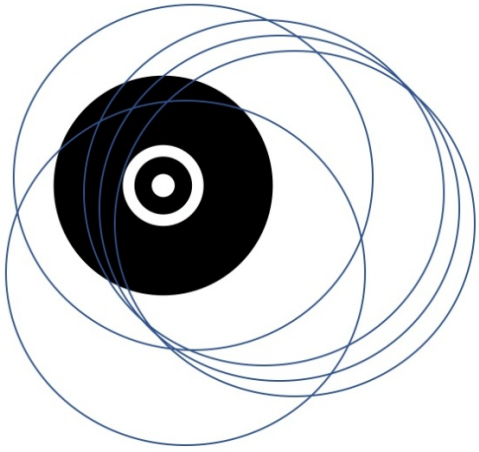
Supermarket food waste

prevent | redistribute | share

Towards a circular economy?



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Inspiring tomorrow's professionals

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The waste of plenty is the resource of scarcity
- Thomas Love Peacock

Contents

Executive summary

- This project report explores the sharing of supermarket food waste in Kirklees, West Yorkshire. Conducted over a nine-month period from September 2017, the research on which the report draws was funded by the University of Huddersfield Business School. The project used qualitative methods to explore whether the sharing of supermarket food waste through NGOs increases the sustainability of the wider food system, or if this trend is a response to its increasing unsustainably.

- Alongside the rise of new values and technologies, notions of 'sharing' and 'circular' economic thinking have been closely aligned in recent years through their joint focus on reducing waste and reusing scarce resources. It is these links and their relationship with the sustainability of the food system that this project report is ultimately concerned with.

- There was a general consensus amongst research participants that it is all but impossible to eliminate food waste completely from supermarket operations and international food supply chains. Even in a sustainable food system, there will always be a degree of surplus food to be redistributed to people in need.

- All the NGOs consulted were reluctant to call the food they received from supermarkets "waste", and the terms "wasted food" and "spare food" were sometimes used interchangeably with the notion of "surplus food". In this context, corporate social responsibility (CSR) is often used to justify the linear model of food production and consumption that generates vast quantities of food waste.

- Independent food banks (IFBs) encounter a number of problems and barriers in their work. These revolve around the type and volume of food they receive from supermarkets, which they have no control over. Conversely, NGOs within the national distribution network (NDN) never accept supermarket "surplus" unless it is in good condition and they have the capacity to redistribute/share it before it becomes "food waste".

- The value of the work being done by NGOs was widely recognized, yet concerns were expressed from both a political and environmental perspective about the normalization of these ways of working.

- Sending less 'surplus' food to anaerobic digestion as 'waste' in order to share and redistribute more food through NGOs was seen by some interviewees as one way of enhancing the links between sharing and circular economic thinking. Other participants argued that these ways of working simply add another level of governance to the existing *linear* model.

- Central government policy is not keeping up with the developments in technology that can drive movement towards a circular economy. As well as redistributing and sharing surplus food from supermarkets regionally, *more* food needs to be produced regionally, both on local farms and through the use of regenerative agriculture and vertical farming, for example, to minimize food waste at source and encourage circular thinking.

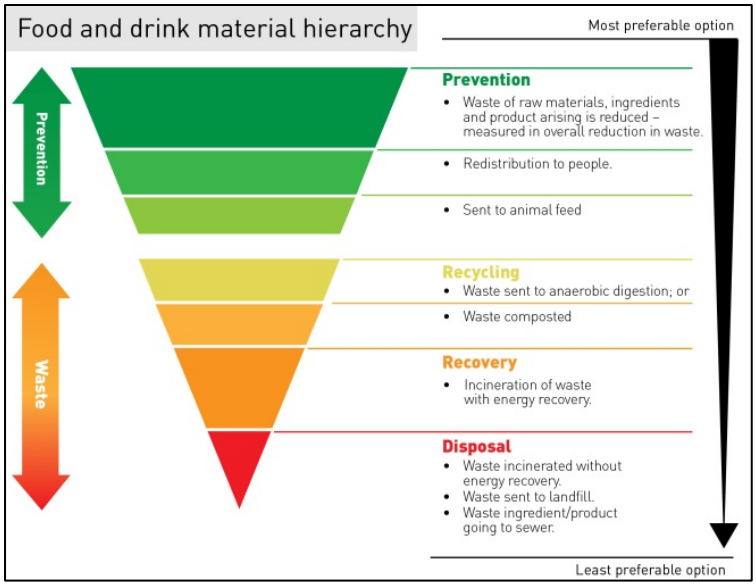
- While it is difficult to envisage a completely circular food system emerging, cities and regions such as Kirklees can help to reduce the burden of supermarket food waste by encouraging circular economic thinking. But better Central Government Policy and sustainable business models are needed to facilitate movement in this direction. Public and private bodies at the regional and national level must navigate the tensions involved as a matter of urgency.

Introduction

The food system is complex and multi-layered, and food production is now widely recognised as a major contributor to greenhouse gas emissions and to the degradation of ecosystems. At the same time, up to '*one third of all food is spoiled or squandered before it is consumed by people'*.[1] In industrial countries, most food is wasted or lost during the retail and consumption phase in line with the over production of cheap food by supermarkets and other supply chain actors. In the UK, the quest for cheap food has been a central element of politics since the repeal of the Corn Laws in 1846, when bringing down food prices to allow the working classes (who at the time spent 50% of their income on food) to eat better emerged as on-ongoing political obsession (Lang 2013). Cosmetic specifications are also problematic and the demand for perfectly shaped 'fruit and veg' contributes directly to food loss and food waste within international supply chains (Feedback 2017). In the UK, supermarkets now control almost every aspect of how the public interacts with food (Feedback 2018).

In 2006, the UK Government suggested that social, economic and environmental benefits could be accrued by the food industry by making better use of surplus and waste food (Defra 2006). One aspect of this was sharing or redistributing food, which sits just below prevention in the food waste hierarchy, and is seen to have the potential to reduce economic and environmental pressures whilst improving public health. To alleviate the burden of waste food and move towards sustainability, many UK supermarkets thus started to donate waste food to a range of non-governmental organisations (NGOs) such as food banks, social enterprises and other food charities.

Figure 1: The Food Waste Hierarchy[2]



Over the last decade or so, sharing or redistributing supermarket food waste has increased dramatically in line with a concurrent increase in the number of people using food banks. Since 2010, the number of people using Trussell Trust food banks in the

[1] http://www.fao.org/food-loss-and-food-waste/en/
[2] http://www.wrap.org.uk/sites/files/wrap/image/Food_and_Drink_hierarchy.jpg

UK has increased from 61,000 to 1.18 million in 2016/17: outside the *national distribution network* (NDN) there are many *independent food banks* (IFBs) and food charities for which no data exists (Loopstra 2018). In 2016, Sainsbury's donated an impressive 3,000 tonnes of waste food to NGOs, yet this equated to just 7% of their surplus overall. In the same year, the Food and Agriculture Organisation of the United Nations stated that more than a third of all food produced for human consumption is still wasted annually – approximately 1.3 billon tonnes (Stuart 2009).

As well as potentially contributing to the development of a two-tier food system, donating supermarket food waste to NGOs such as food banks has the potential to create many other problems (Lambie-Mumford 2017). Transportation and logistics could be problematic, as could the availability of refrigeration and cold storage facilities. Increasing the volume of donated food waste also raises the possibility that NGOs rather than supermarkets could eventually be forced to discard food waste. It is in this context that circular thinking has emerged as a potential solution to supermarket food waste alongside notions of sharing (Lever and Cheetham 2017). Looking beyond the current extractive linear model of industrial food production that generates so much waste, in principle the circular economy aims to redesign products and services to eliminate waste at source (Weetman 2016).[3] It is the links between sharing and circular thinking, and the wider relationship with the sustainability of the food system, that this project report is ultimately concerned with.

Context, methodology and research aims

The report explores the sharing of supermarket food waste in Kirklees, West Yorkshire through a small qualitative case study. Conducted over a nine-month period from September 2017 onwards, the research (funded by the University of Huddersfield Business School) set out to explore the work of NGOs receiving donations of food waste from supermarkets. More specifically, it set out to answer the following research question:

⇒ Does the sharing of supermarket food waste increase the sustainability of the wider food system, or is this trend a response to its increasing unsustainably?

The project had three broader aims, to:

- Explore how and in what ways NGOs working in this area engage supermarkets.
- Examine the specific problems NGOs face receiving and sharing food waste from supermarkets.
- Assess the extent to which these forms of sharing enhance sustainability and move us towards a circular economy.

The project collected data through 10 semi-structured qualitative interviews, which were complimented with discussions, observations and documentary evidence. We recruited participants from regional NGOs[4] within the *national distribution network*

[3] www.ellenmacarthurfoundation.org
[4] We use the term NGO broadly to consider a range of non-governmental organisations involved in food sharing/ redistribution activities, including food banks, social enterprises, and other food charities.

(NDN), *independent food banks* (IFBs), the local authority, a national UK supermarket chain, and an NGO campaigning against global food waste; we also spoke with a local environmental consultant who works closely with UK national Government.

Before interviews, research participants were given assurances about confidentiality and all sensitive material used in the report was back checked. After completion, the empirical interview material was open coded and thematically analysed to identify key themes, which are explored in greater detail in the following sections.

Prevention

There was a general consensus amongst research participants that it is all but impossible to eliminate food waste completely from supermarket operations and international food supply chains. As an interviewee from a leading UK supermarket pointed out:

> *'… there's always this kind of balance between having just enough to meet availability and needs and running out and disappointing customers… If we don't have the product on the shelf, then customers aren't gonna come into our stores and then you end up in that spiral… So I think there's always gonna be a surplus created.'*

Many supermarkets have thus gone into sharing or redistributing food positively, it was argued, in the recognition that this is better than sending it to anaerobic digestion plants as food waste:

> *'I can absolutely see where, you know, where the thought process behind this… that retailers have… gone in to it thinking this is a better way of disposing of food that can be eaten than sending it to anaerobic digestion.'*

Our international NGO participants agreed, with some arguing that even in a '*sustainable food system'* there will always be a degree of surplus food to be redistributed to people in need.

At the same time, however, it was argued that the UK food system actively '*promotes an unsustainable level of food waste',* and that in *'many cases'* food waste results *'from the common practice of supermarkets and the way that they treat their suppliers.'* It was also argued conversely, as we observe below, that supply chain waste is largely invisible, and that this shifts the focus unfairly towards "supermarket food waste". Whatever way one looks at this issue, transparency in supermarket supply chains thus seems to be a critical issue.

From 'surplus' to 'excess' to 'waste'

All the NGOs we consulted during the research were reluctant to call the food they received from supermarkets "waste", although the terms "wasted food" and "spare food" were sometimes used interchangeably with the notion of "surplus food". We prefer the term "excess" food, which only becomes "waste" after it is has first been "surplus" (Evans 2014).

Interviewees from IFBs preferred the term “surplus food”, but it was clear that “surplus” often becomes “excess” (what one interview called “surplus from surplus”) particularly if it has a poor turnaround date and has to be redistributed quickly or disposed of as “food waste”:

> *‘[O]bviously, we don’t want food waste, as a food bank we don’t want to be throwing food away. So when we have surplus from the surplus, we do what we can to pass it on to be a bit of a, almost like a distribution because we just literally ring round and say, we’ve got all of this, come down and collect it, you know.’*

With space and volunteer time at a premium, receiving “surplus food” that can quickly become “excess” or “waste” creates particular problems for IFBs, who are never sure what they will receive from supermarkets:

> *So from a burden point of view, if it all comes in in good condition, it’s completely worth the time for us sorting it, and we have volunteers in to do that. The big burden is when we get things that are on the turn, that we just bag up and throw away and it becomes our food waste basically.*

An interviewee from an NGO in the NDN made a similar point, but as these NGOs never accept “surplus food” unless it is in good condition and they have the capacity to redistribute it, the division between “surplus” and “waste” is defined solely by product dates in this context:

> *‘So there is a very defined cut-off when that food is waste and when it’s not… that cut-off is whatever the date is on the products and that’s not non-negotiable.’*

For one NGO, use of the word ‘surplus’ came from an external marketing communication consultant who advised against the use of ‘bad words’:

> *‘Bad words were waste, it’s negative, it’s a negative connotation because it’s not waste. What we’re talking about is intercepting surplus food to prevent it from becoming waste.’*

NGOs within the NDN also associated the term *“supermarket waste”* with public perceptions of what “food waste” is seen to be, i.e. as coming from supermarkets, when in reality, it was argued, food is wasted throughout the supply chain. As an interviewee stated:

> *‘…what people don’t see is everything that happens before it gets to the supermarket. So it’s always classed as supermarket waste. It’s not, it’s food supply waste, it’s food industry. It’s everything. It’s right down to farmers, it’s your producers, everything.’*

While we agree with this point about supply chain waste, this argument overlooks the lack of transparency in supermarket supply chains and the “*climate of fear”* within which many supermarket suppliers operate as a result of commercial pressures to deliver food to required specifications that change or vary randomly (Feedback 2017).

The nature of relationships between NGOs and supermarkets was reflected in discussions about corporate social responsibility.

Corporate social responsibility

Corporate social responsibility (CSR) was discussed by participants in different ways. An interviewee from an IFB explained how they understood their work with supermarkets in this context.

> *'I think obviously there's a CSR angle and it's, you know, we promote the fact that they support us, and they do… The value of what they give us over the course of the year would be huge. It's a real benefit to us and we promote that.'*

It was also clear that getting more of the *'right kind'* of food at the *'right time'* from supermarkets can be difficult for IFBs.

Another interviewee suggested that IFBs almost have to go 'cap in hand' if they attempt to source more food from supermarkets to expand provision:

> *'I suppose we'd have to go down more the CSR route in terms of saying, I know you don't have the spare anymore, but can you continue to support us? Because we still need to feed X number of hungry people?'*

The closeness of the relationship NGOs in the NDN and supermarkets was quite different in this context, as another interviewee emphasised:

> *'I heard a presentation… recently, where there was someone from Tesco and there was someone from Fareshare… It was almost like… Fareshare is so embedded into Tesco, into their systems and everything. It just felt like they were the CSR of Tesco, I don't know. The work they were doing was brilliant, but it made me feel uncomfortable and I couldn't work out why.'*

We come back to the competing understandings and ways of addressing food waste (and by association food poverty/ food insecurity) below. Before this, we look at the operational dilemmas facing NGOs sharing and redistributing 'surplus' supermarket food across the Kirklees region in West Yorkshire.

Sharing and redistributing 'surplus'

IFBs encounter a number of operational problems and barriers in their work. The main barriers revolve around the types and volume of food they receive from supermarkets, which is most notably related to the perishability of products and the uncertainty of supply. While there is a *'food cloud'* where IFBs can collect *'date sensitive'* surplus from small Tesco stores in and around Kirklees, in general it was clear that IFBs have to take what is offered by supermarkets as and when it's made available. IFBs do their best to address the problems this creates through a close network of smaller food banks and food pantries. While they view themselves strictly as organisations that tackle food poverty/ food insecurity, IFBs nonetheless understand that they are providing a service for supermarkets that saves them a great deal of money. It was

suggested in discussions with Feedback that a community interest company (CIC) could potentially operate in this area, charging supermarkets a fee to redistribute surplus food to IFBs more effectively.

An interviewee from an NGO in the NDN painted a very different picture of their operational dilemmas. In opposition to IFBs, this NGO was positioned as a regional delivery arm for supermarket surplus, as this is where surplus emerges in the food supply chain and hence also where it is redistributed (i.e. regionally):

> *'We're the ones who have to go out and visit them, make sure they're a worthy organisation, all these sorts of things… From our perspective… what we need is food coming through that door on a regular basis, so we can send it back out.'*

While this approach was seen to work well in practice, it was also recognised that a national body is needed if community issues and environmental concerns linked to the over production of food are to be addressed more effectively.

It was also clear that NGOs in the NDN are more in control of their relationship with supermarkets than IFBs, not least because they either accept or decline an offer of surplus food in line with their regional capacity. It was argued that legislation in line with the French model (which has made it illegal to dispose of waste food that is fit for human consumption) could potentially undermine this situation by compelling NGOs to take surplus without the capacity to redistribute it. While it was recognised that more conversations need to be had with retailers to try and find ways to address such issues, transport and logistical considerations were seen as major barriers to the expansion of the current model in this sense.

Another NGO interviewee suggested that there is a real a lack of consistency across the NDN, and that concerns about *'brand reputation'* often hinder and restrict the volume and type of food that is made available to NGOs in various ways:

> *'The redistribution networks are just fragmented and all over the place… I don't think there is one unifying vision that's strong enough to overcome ego and personality and brand reputation for individuals… And everybody's guilty of that.'*

But again, this was not seen as a reason to follow France and legislate against the illegal disposal of surplus food, more that to access surplus stock it is important to build better relationships with companies within the food supply chain.

At the same time, it was argued out that many companies say they have not got surplus stock when they have, and that *'in the books'* surplus is often *'hidden'* as waste to hide any signs of *'inefficiency'* and hence threats to reputation. While some NGOs in the NDN argued that legislation would simply drive this problem further underground, in discussions with Feedback it was argued conversely that transparent independent audits could help to reduce this type of behaviour significantly.

There is now also movement in a new direction within the NDN. Late in 2017, Tesco announced that they were to start "measuring" supply chain waste for the first time,

while early in 2018 Asda announced that they will be working in partnership with the NDN to build new infrastructure that will enable more people to move out of food poverty. We heard anecdotally that Asda went down this path because they realised that many of their employees were in food poverty, and that this was not good for their brand reputation.

Whatever the truth of this assertion, in the coming years Asda is to invest £20m in new infrastructure for the NDN, including transport, fresh food storage facilities, and support services, including debt counselling and job advice. An interviewee from an NGO in the NDN discussed the benefits of these developments in the following way:

> *'So what Asda are helping us with is building the infrastructure to be able to... accept more food, which is not about fuelling Asda's agenda around they wanna push all the food to us... it's about us being able to support more organisations.'*

The question remains, however, whether these new ways of working move the UK towards a circular economy. While expanding NDN infrastructure might help to facilitate the sharing and redistribution of more surplus supermarket food, it is not clear how far this trend this will facilitate movement in this direction.

Towards a circular economy?

In recent years, notions of 'sharing' and 'circular' economic thinking have emerged as ways of thinking about moving towards and beyond sustainability. Alongside the rise of new values and technologies, these ideas are closely aligned through their joint focus on reducing waste and reusing scarce resources (Lever and Cheetham 2017).

Despite recognising the value of the sharing and redistribution work being done by the NDN and their supermarket partners, a number of interviewees expressed concerns about these ways of working from both a political and an environmental perspective. As an interviewee stated:

> *'I think... the sort of sharing economy at a food level, I think it's amazing… I suppose the worry that we've got is the food policy/poverty agenda or industry is becoming normal and no one is really tackling the conditions'*

Another participant suggested that despite widespread concern about financial payments incentivising companies to send surplus food to anaerobic digestion (AD) as waste, such practice is still taking place on a regular basis, thus effectively rewarding bad practice and undermining any movement towards sustainability:

> *'At the moment there are tax incentives and tax breaks for companies to send waste food to anaerobic digestion and not to feed people, which goes against what the food waste hierarchy is. So where the work's been poor is we shouldn't be incentivising companies to throw it away because that means companies are making a financial decision but not a corporate social responsibility decision about the right thing to do.'*

An interviewee from a leading UK supermarket concurred, stating that AD *'is not the most effective way of disposing of something as precious as food.* Indeed, AD is clearly at odds with the idea of preventing food from becoming waste in the first place.

Another participant suggested that by sending less waste food to AD and redistributing more through the NDN the links between sharing and circular economic thinking could be strengthened:

> *'I think one of the biggest challenges to the circular economy in… our sector is anaerobic digestion... And so it's something that people very rarely talk about, but there is product that's perfectly fit to… deliver environmental and social returns. But we can't get our hands on that stock cos it's designated for a better financial recovery through anaerobic digestion.'*

Other participants, however, questioned the likelihood of these developments moving the UK towards a circular economy. But as an NGO interviewee suggested, '*you can see why people might think that it's about the circular economy cos they think stuff's going back around as it were.'*

Doubt was expressed more strongly by an environmental consultant. While an argument can be made that sharing/ redistributing supermarket surplus is about sustainability because it reuses food that would otherwise be wasted, the participant also pointed out that these ways of working add another level of governance to the existing *linear* model, including more costs and carbon emissions.

It was argued further that the redistribution/sharing surplus food model came from political pressure, which supermarkets simply saw as an opportunity to reduce costs:

> *'My personal view and from discussion with supermarkets is they came to this issue… driven by PR and opportunity and reducing costs… Governments at the time really wanted to do something about it. A quick fix was for the supermarkets to actually come under pressure through gathering everybody together at Downing Street… to get a memorandum of understanding that they would provide food waste… Of course, it's still a linear model, you know, it's not a circular economy model.'*

One of the concerns expressed at the start of this report was that NGOs might one day be forced to dispose of surplus food from supermarkets. This is the situation IFBs find themselves in already to some extent, although local authorities (LAs) are also coming under similar pressure. Indeed, it was argued that in the near future (possibly in the immediate post-Brexit period) legislation could be introduced that requires LAs to dispose of supermarket surplus (that cannot be redistributed or shared) as 'waste.'

An interviewee noted the pressure Kirklees Council came under to work in this way when they tried to initiate a sharing economy in 2015. If they were offered surplus supermarket food to share with/ redistribute to people in need through IFBs, this created problems if the council and/or IFBs did not have the capacity to redistribute and share it quickly:

'So if Sainsbury's is giving me something that's gonna go off in a day or two and I don't have a van that I can distribute to certain residents, what is the point?'

In this situation, the only option available is waste disposal, and as Kirklees Council does not have access to an AD plant, food waste is often incinerated, thus further embedding the *linear* model. As an interviewee from a leading UK supermarket suggested, '*everything seems to land on local authority's plates',* when in reality what we need is better *'central government policy'.*

This was also recognized by an environmental consultant, who argued that while we now have the technology to move towards a circular economY, central government policy is lagging far behind technological innovation. Given the lack of movement in this area, the UK government is currently making funds available for innovations in circular economic[5] thinking and for the development of commercially viable sustainable business models. These initiatives are much needed, as an interviewee commented:

'And that's certainly what I'm hearing and talking to people in Defra and Innovate and BIS, particularly, is the business case modelling. You look also on the wider press from the agritech funders what they're funding globally as well as in the UK. It's not just innovative solutions, it's innovative business models, and I don't think we talk about that enough in the UK.'

What would a regional circular economy look like?

Circular economic thinking was evident during the Second World War, when circular production and design principles were imposed on manufacturing companies by local governments (Moreno et al 2016). Governments also promoted urban farming in cities to address concerns about increasingly scarce resources. Today, people are once again worried about the increasing scarcity of resources, and governments are once again promoting circular thinking and design as a way of changing and sustaining food production and consumption methods (Weetman 2016).

Cities and urban areas such as Kirklees are critical to the development of a circular economy for a number of reasons, not least because by mid-century over 6 out of more than 9 billion people are expected to live in cities and urban areas (UN, 2013). This will have mixed consequences for the environment. While the concentration of service industries means that there will be less distance to be covered to deliver goods and services, thus reducing emissions, there will also be heightened pollution. At the same time, resources are under threat from agricultural usage, with global projections indicating that agricultural land use can only be increased by another 2% (FAOSTAT, 2012). Add to this the negative environmental effects of agriculture, particularly greenhouse gas emissions, soil degradation and declining water supplies, and it quickly becomes clear that we need to find new ways of producing food closer to the population in order to have a neutral or indeed a positive impact on the environment.[6]

[5] https://ktn-uk.co.uk/interests/sustainability-circular-economy

[6] 'The Pig Idea' from Feedback posits that redirecting food waste to animal feed would free up additional farming land to grow crops rather than animal feed (https://feedbackglobal.org/campaigns/pig-idea/)

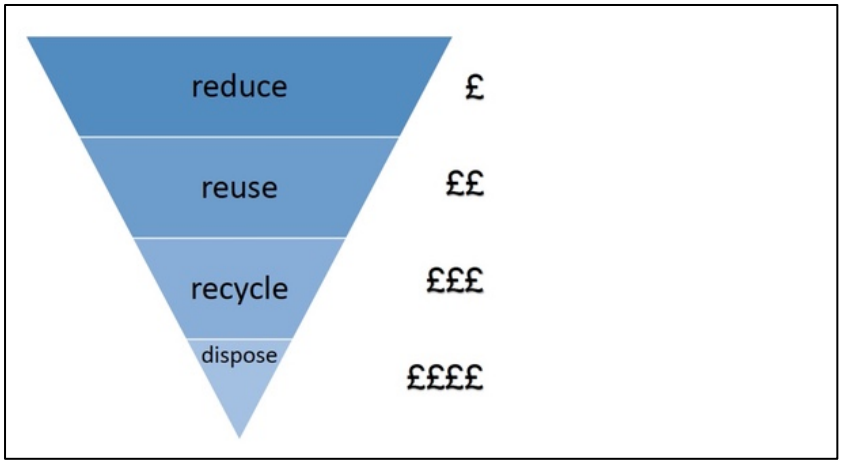
As well as addressing the social consequences of the *linear* model of food production by redistributing/sharing supermarket and supply chain surplus, an interviewee argued that agricultural production needs to move in new directions. More consideration needs to be given, it was argued, to regenerative agriculture and vertical farming projects in cities and urban areas to minimize food waste at source and reinvigorate depleted biological nutrient loops[7] (perhaps overseen, in this case, at the Leeds City Region level).

In the early 21st century, cities around the world have been attempting to reconfigure a range of interlinked issues that further the development of urban food systems (Lever 2016; Sonnino 2014). Over a decade ago, Manchester City Council (2007) outlined features of the current *linear* model that these developments could potentially help to transform:

> *'At present … the model is a chain in which food is produced outside the city, brought in, sold, consumed and the waste and packaging disposed of, generally outside the city again … There is considerable scope for … creating a closed loop [circular] system [that] would attempt to reconnect the city to the food it consumes and reduce the environmental impact of food consumption'* (Manchester City Council 2007).

In the intervening decade, as we have seen, a regionally organised food distribution network has emerged in the UK, in some way strengthening the links between sharing and circular thinking by redistributing surplus supermarket food in cities and urban areas. Yet our research raises questions about the extent to which this approach moves us away from the current *linear* model of food production and consumption; the ongoing use of financial payments to incentivise AD illustrates the complexities involved. Going forward, policy levers and financial incentives could be used more widely to encourage circular flows (Weetman, 2018) and movement away from the *linear* thinking embedded in the food waste hierarchy.

Figure 2: A waste hierarchy to encourage circular flows?



While it is difficult to envisage a completely circular food system emerging, there is no doubt that cities and regions such as Kirklees can help to reduce the burden of

[7] www.ellenmacarthurfoundation.org

supermarket food waste and encourage movement in this direction. We should remember, however, that the food system is complex and multi-layered and that to move forward effectively all food system stakeholders need to collaborate more closely. Going forward, public and private bodies at the regional and national level must navigate the tensions revolving around supermarket food waste and circular thinking as a matter of urgency. Combined with the environmental pressures and resource constraints we face, "Brexit" has the potential to increase transport costs and tariffs significantly, thus emphasising still further the potential benefits of implementing circular economic principles more widely.

Conclusions

- There is a distinct lack of transparency in UK supermarket operations and international supply chains.
- Definitions of food waste reflect the social, political and organisational dilemmas faced by NGOs involved in sharing and redistributing activities.
- The linear model of food production and consumption facilitates the problem of food waste and current solutions to it.
- Corporate social responsibility is used to justify the linear model of food production and consumption.
- It is not clear how far the current model of sharing and redistributing supermarket surplus via NGOs moves us towards a circular economy.
- The current model of redistributing and sharing supermarket food waste does not address the reasons for the overproduction of food within food supply chains.
- As well as offering opportunities to move towards a circular economic model, financial payments incentivising anaerobic digestion reinforce linear thinking around the food waste hierarchy.
- Cities and regions such as Kirklees can help to reduce the burden of supermarket food waste by encouraging circular thinking.
- Central government policy lags behind the developments in technology that can enable movement towards a circular economic model at the regional and national level.

Recommendations

- Public and private bodies at the regional and national level must navigate the tensions revolving around supermarket food waste and circular economic thinking as a matter of urgency.
- Research needs to better understand the barriers and blockages to implementing circular economic principles in the food system.
- Better central government policy, commercially viable, sustainable business models must be developed to encourage circular thinking.
- Policy levers and financial incentives should be used more widely to encourage circular flows within the food waste hierarchy.
- Feasibility studies and demonstrator projects emphasizing good practice are needed at the city, regional and national level.

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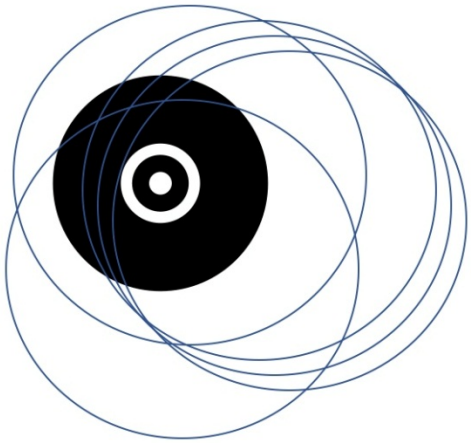

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