THE POTENTIAL OF CIRCULAR FOOD WASTE SYSTEMS IN TACKLING THE CLIMATE CRISIS

JUST FOOD & CLIMATE TRANSITION.

WOMEN'S ENVIRONMENTAL NETWORK

JUST FACT LEARNING BRIEFING, AUGUST 2025

Contents

Introduction

This report shares our collective learning about circular food waste systems from the Just Food and Climate Transition Programme (Just FACT). We hope it can be a useful resource for people who are interested in how community based knowledge and infrastructure can support circular, sustainable food waste systems within UK boroughs.

Learnings are drawn from a range of sources including: interviews, workshop quotes, partner reports, reflective blogs, podcasts and meeting discussions. They build on the reports of the Blueprint Architects; "Seeds for a Revolution" and "Recipes for Revolution". The Blueprint Architects are an evolving group representing community leaders, activists and residents engaged in the food system of Tower Hamlets.

Thanks to Blueprint Architects, Compost Mentis, Cranbrook Community Food Garden, House of Annetta, Limehouse Town Hall, Limborough Community Food Hub, Mile End Community Garden, Oitiij-jo Collective, MAD LEAP, Platform London, Providence Row, R-Urban Poplar, and Stepney City Farm for their contributions

A second and final edition of this report will be published in January 2026 at the end of the Just FACT programme.

About the Just FACT programme

Just FACT is a 5-year partnership programme led by Women's Environmental Network (Wen) with research from Platform London. It is made up of a network of 26 people and projects in Tower Hamlets and is funded by The National Lottery Community Fund (TNLCF)'s Climate Action Fund.

Our vision is to create an environmentally sustainable and socially just food system in Tower Hamlets. In other words, we want to see a food and land system that gives people the right to healthy, culturally appropriate food produced through socially just and ecologically sound methods.

Context

Each year, around 10 million tonnes of edible food is discarded across households, supermarkets, and the hospitality industry, much of which could have been eaten. This waste occurs at every stage of the food supply chain, from farms and manufacturers to retailers and households. Not only does this represent a loss of valuable resources, but it also results in large quantities of greenhouse gas emissions - approximately 18 million tonnes of CO2e annually.[1]

If it were a country, wasted food would be the third largest source of greenhouse gas emissions in the world, after China and the USA, according to the UN.[2]

The majority of food waste comes from households (60%), around 6.4 million tonnes. Food that could have been eaten but gets thrown away (4.7 million tonnes) is worth around £80 per month for the average family with children. Hospitality and food services (1.1 million tonnes) and the retail industry (0.2 million tonnes) also contribute.[3]

As part of efforts to tackle food waste, The Environment Act 2021 ruled that local authorities will need to make separate food waste collections from households from April 2026. Tower Hamlets has until 2027 because of its specific challenges. Mandatory food waste collection from schools came into place in April 2025, as has the requirement for businesses to separate and arrange collection of food waste.[4]

Tower Hamlets challenges

Tower Hamlets is the most densely populated and fastest growing borough in England and Wales. On average, 112 people live on a football pitch size area compared to the national average of three people.[5] Around 30% of the rubbish households throw away in Tower Hamlets is food waste.[6] Currently, food waste collection is only available to street-level properties, with a small number of blocks of flats trialling food waste collections, yet over 80% of households live in flats and use shared waste and recycling bins.

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[1] WRAP, 'Household Food and Drink Waste in the United Kingdom 2021-22', (2023). Available at https://www.wrap.ngo/resources/report/household-food-and-drink-waste-united-kingdom-2021-22
[2]Food and Agricultural Organization (2015). Available at: https://openknowledge.fao.org/server/api/core/bitstreams/7fffcaf9-91b2-4b7b-bceb-3712c8cb34e6/content
[3] WRAP, 'UK Food Waste & Food Surplus – Key Facts, Updated November 2023' (2023). Available at https://www.wrap.ngo/sites/default/files/2024-01/WRAP-Food-Surplus-and-Waste-in-the-UK-Key-Facts%20November-2023.pdf
[4] DEFRA, 'Guidance on ensuring food waste collection services for households' (2024). Available at https://www.gov.uk/guidance/ensuring-good-waste-collection-services-for-households
[5] ONS, 'How life has changed in Tower Hamlets: Census 2021' (2021). Available at https://www.ons.gov.uk/visualisations/censusareachanges/E09000030
[6]Tower Hamlets Council, 'Food waste collections'. Available at https://www.towerhamlets.gov.uk/lgnl/environment_and_waste/recycling_and_waste/food_waste_collections.aspx

Lack of indoor storage space can make it hard for residents to keep waste separate within flats. Achieving consistently good separation of domestic waste is likely to be difficult, as evidenced by flats producing half the amount of recycling as houses with individual bins.[7]

Through the Just FACT programme, we have seen that there is a lot of community knowledge about how to avoid food waste at home, in community settings, and in local retail. There is also great potential to repurpose food waste into compost, fertiliser or bioenergy, from composting in community gardens and city farms to the anaerobic digester of Mad LEAP and R-Urban Poplar.

[7] Tower Hamlets Council, 'Don't let our future go to waste' (2018). Available at https://www.towerhamlets.gov.uk/Documents/WasteStrategy_final.pdf

Community-based approaches to tackling food waste in Tower Hamlets

The waste hierarchy shows the most to least sustainable ways to tackle food waste. Prevention is best, followed by redistribution of food to people, then recycling e.g. via composting. Recovery through the incineration of waste with energy recovery comes next, with incineration or landfill at the bottom. Anaerobic digestion is typically classified under 'Recovery' as it recovers energy from waste, however, it also recycles nutrients, water and fibre - with nutrient recovery accounting for its biggest carbon saving.

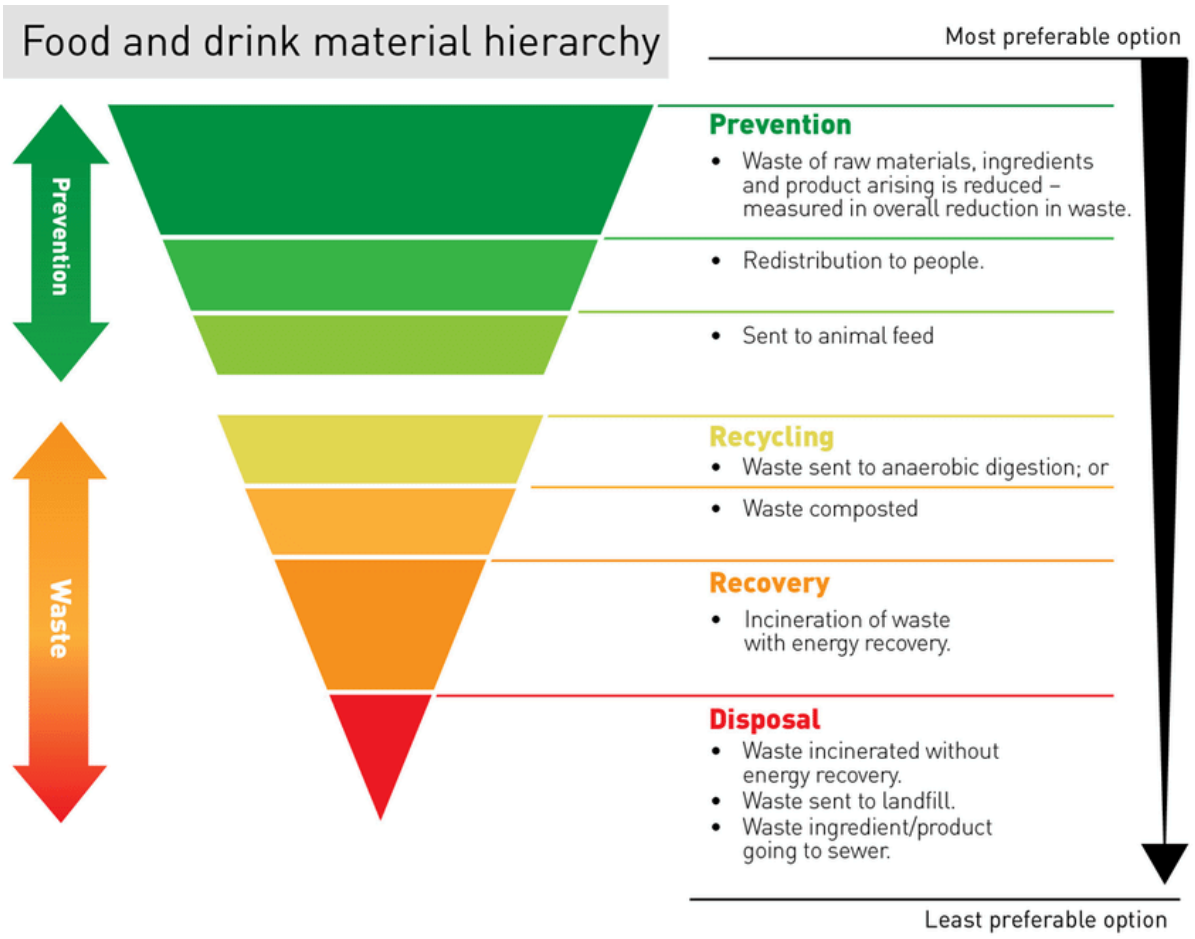


Figure 1: WRAP: Food and Drink material hierarchy

The following table offers examples of community-based approaches to tackling food waste within the Just FACT programme, with reference to broader recovery and disposal approaches used in the wider borough.

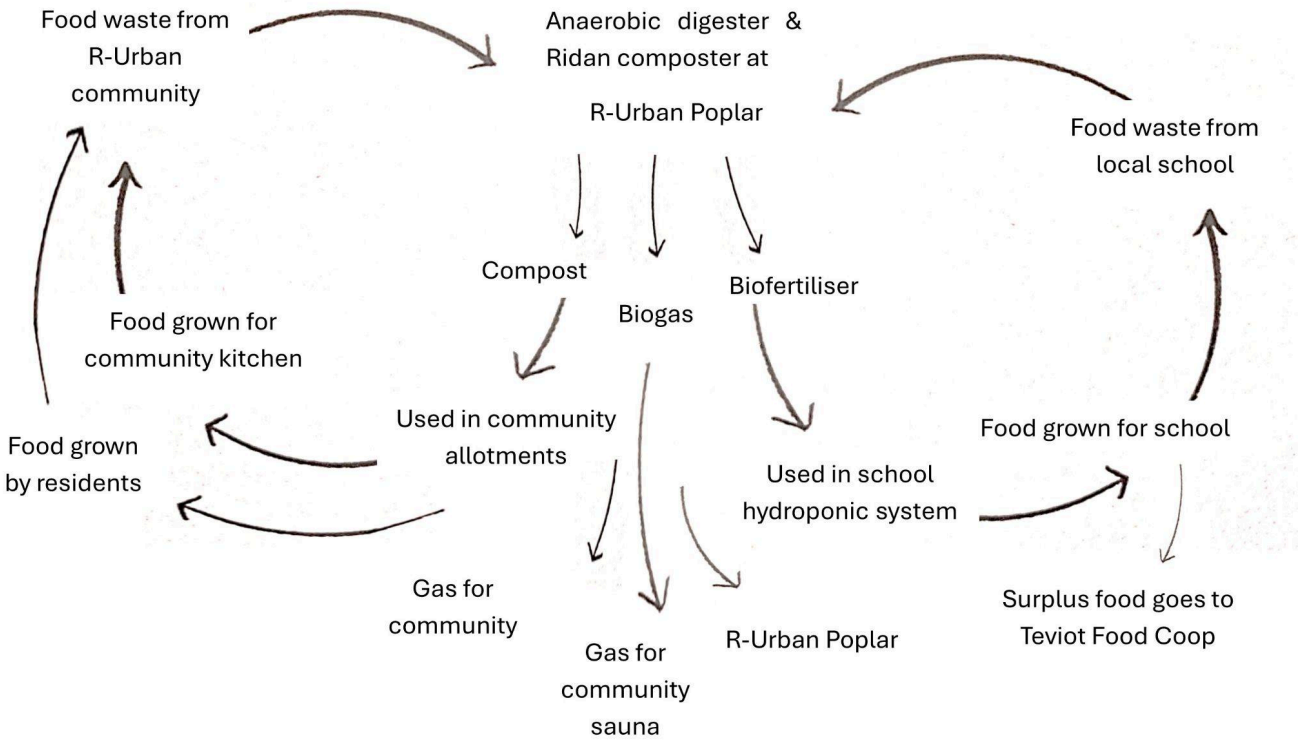
Approaches to tackling food waste in Just FACT Adapted from WRAP: Food and drink material hierarchy[8]	
Prevention	
Waste of raw materials is reduced	Workshops to share traditional preserving and pickling practices (Oitij-jo) Mapping sources of local waste and creating spaces of shared learning about how to prevent or recycle (House of Annetta, Limborough Hub, R-Urban Poplar) Buying only to meet local demand (Tower Hamlets Food Coops) Residents bring food from home approaching its sell by date to make dishes together at weekly meal (Limborough Hub)
Redistribution to people	Rescuing food for communal meals (House of Annetta) Redirecting surplus food that would have gone to waste, to projects in need (St Hilda's Food Coop) Redirecting surplus to local lunch clubs (Limborough Hub)
Recycling	
Waste composted	Wormery and composting workshops (R-Urban Poplar, Stepney City Farm) Garden trainee scheme using waste from the kitchen and across the organisation (Providence Row) Residents bringing waste to community gardens to be composted (Society Links, Cranbrook Community Food Garden, R-Urban Poplar)
Recovery	
Waste sent to anaerobic digester	Local residents, schools and community kitchen supplying anaerobic digester with their food waste (R-Urban Poplar, Mad LEAP)
Energy recovery	Food waste from approximately 20% of households collected by council and sent to processing facility, turned into compost and used by farmers as a fertiliser[9]
Disposal	
Waste incinerated without energy recovery, waste sent to landfill, or waste into sewer	No waste collected by Tower Hamlets councils is sent direct to landfill[10] It is possible that paid waste collection services used by local businesses send food waste to landfill or incineration *CHECK*

[8] Environment, Food and Rural Affairs Committee, 'Food Waste in England' (2017). Available at https://publications.parliament.uk/pa/cm201617/cmselect/cmenvfru/429/429.pdf
[9] Tower Hamlets Council, 'Food Waste Collections'. Available at https://www.towerhamlets.gov.uk/lgnl/environment_and_waste/recycling_and_waste/food_waste_collections.aspx
[10] Tower Hamlets Council, 'What we do with your waste'. Available at https://www.thcommercialwaste.co.uk/what-do-we-do-with-your-waste

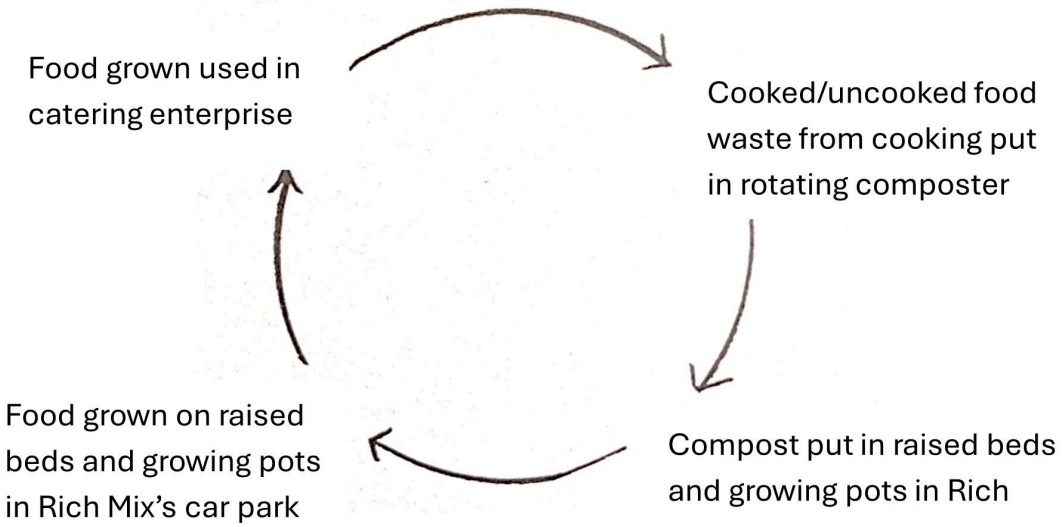
Examples of circular food waste systems in Tower Hamlets

Circular food waste systems are ways of managing food and food waste that aim to keep resources in use for as long as possible, instead of letting them go to waste. In a circular system, food is grown, eaten, and any leftovers or waste are reused in helpful ways—rather than being thrown away and sent to landfill.

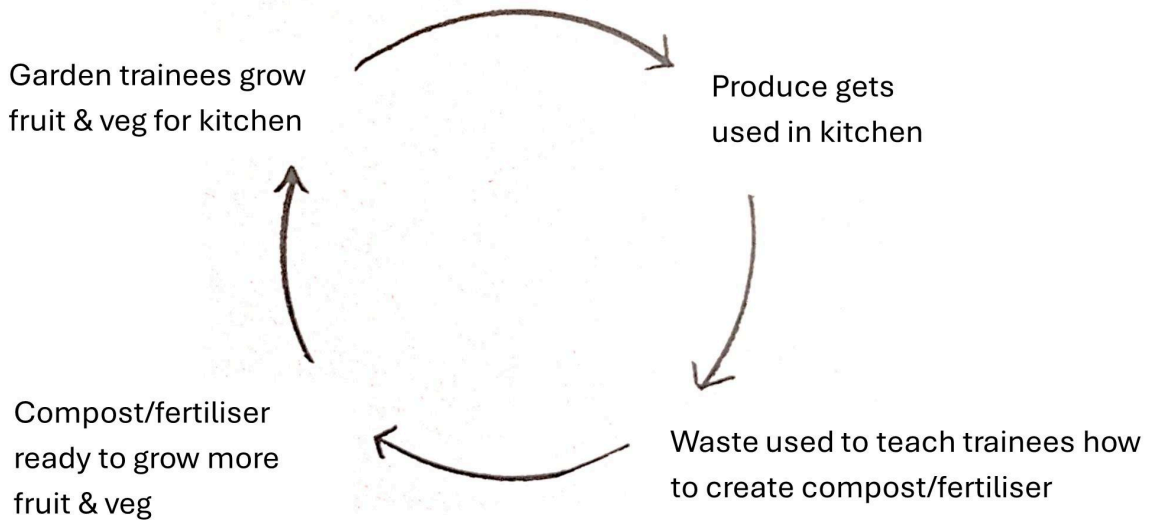
R-Urban Poplar and Mad Leap



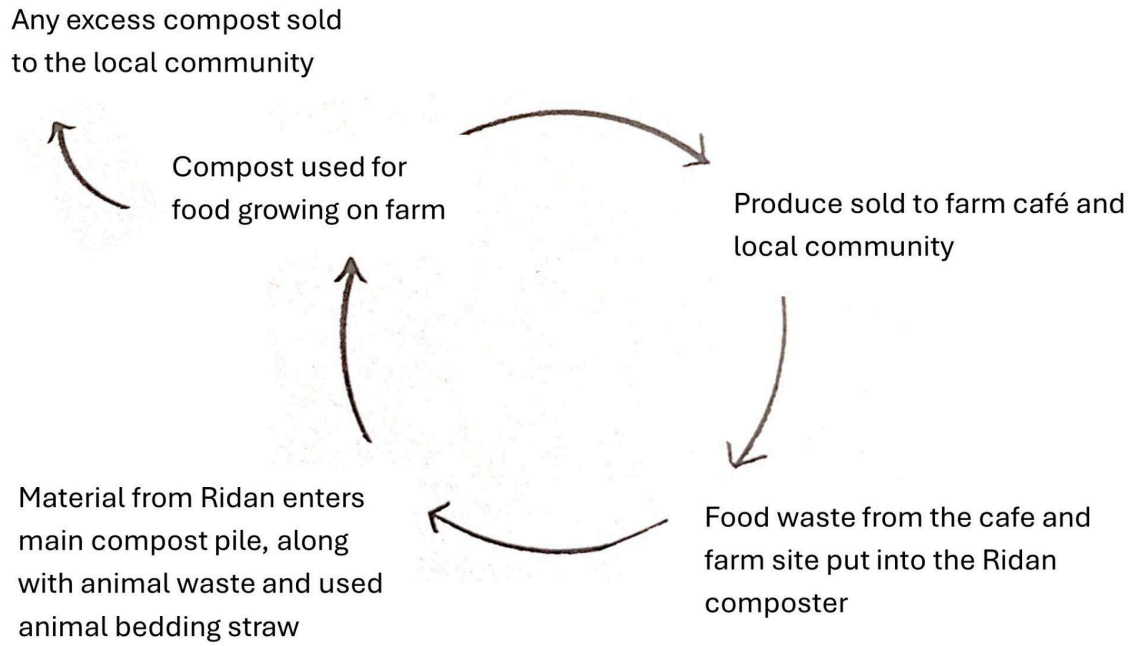
Oitij-jo Collective



Providence Row



Stepney City Farm



Digging deeper: Case studies

Prevention

Minimising waste through community food coops

St Hilda's East food coop have helped to reduce waste by:

- Ensuring that any fruit and vegetables left over that can't be kept fresh to sell the following week are redirected to St Hilda's Day Centre to be cooked in their lunch club.
- Offering 50p discount baskets if there's produce close to its expiration date.
- Bulk buying and selling at cost price without packaging which enables customers to take what they need rather than having to buy pre-packaged goods which may be more than they need, and result in food waste.

> *"I cancelled a veg box from another company as I like the flexibility of choosing just what I need which helps avoid waste."*
>
> - St Hilda's customer

Workshops to share traditional preserving and pickling practices

OITIJ-JO Collective's Bottling Futures project used methods for preserving food that are sustainable for the climate and good for health and well-being. This includes traditional practices of fermenting, pickling and preserving, so communities can access fruits, vegetables and other products 'out of season' or when not available. Through a series of workshops, 246 residents took part in cultural sharing of recipes including Somali aanjero, Chinese pickles and Eastern European sauerkraut. Oitij-jo found that people are 'time poor', and often consider buying products to be a more cost effective way to do things. However, collective pickling was enjoyed.

> *"Thank you for the opportunity, I really enjoyed myself. I was very happy to share about my culture and the food we eat. Everyone enjoyed eating the aanjero, when i did the workshops.* ***Although it takes time to prepare, it is very satisfying when everyone tucks in and eats it****."*
>
> - Saida, who shared her aanjero recipe at a workshop

> *"We have learnt so much about food waste, trying different parts of plants- such as rhubarb,* ***vegetable peel seasoning, alternative ways with leftover fruits and of course pickling.****"*
>
> - Bernadette, Soil Sisters programme manager for women in East London refuges

Following on from the success of the project, OITIJ-JO was encouraged to aim to become a zero waste kitchen. All waste in the kitchen was composted. The compost was used to grow a garden, with the vegetables grown used in the kitchen.

Mapping neighbourhood waste to create spaces of shared learning and eating
House of Annetta supports action on housing, migration, and space. Their project aimed to map local food systems and practise food redistribution. Walking around Spitalfields, they discovered how food waste was handled. They found that some markets collected traders' waste and sent it for biofuel or composting, while other businesses lacked a strategy. They installed infrastructure like food storage shelves and a compost bin on their site, and shared recipes from recovered produce at gatherings including fruit cheong, chili oil, and kagzi pickles. Researchers were invited to share insights at breakfasts. Finally, a week-long festival connecting spatial justice and food ran with 'perpetual stew' feeding 50 people each night, with surplus food added to the cooking pot each night.

Recycling

Bringing waste to community gardens

Adding a compost bin to Berry lane outside of Cranbrook Community Food Garden increased the volume of food waste donated to the garden. As a result the garden added new Hot Bins to the garden, which will increase their composting capacity from 300l to 2000l - increasing speed and effectiveness of process and creating capacity for more food waste donations.

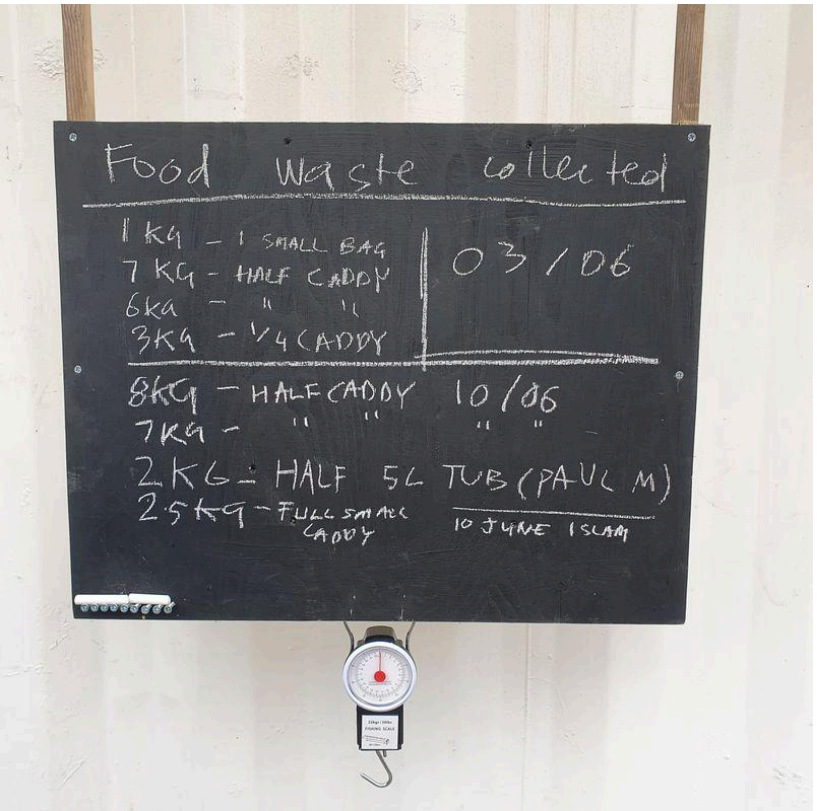
> *'For people that live in the area**, the council is not providing a service for food waste** [on the estate]. And they are very happy that we do and because of that. We are now forced to get bigger bins.'*
>
> - Nicola, 'Berry Lane' Project Co Leader

Making composting accessible through Bangladeshi team members

Through a Just FACT grant, Stepney City Farm team employed two Bangladeshi growers. They hoped to help their food growing enterprise to better meet local needs, as many of their allotment holders are Bangladeshi, and to learn from and include people with experience of traditional farming and growing techniques. Sajia and Tahmina delivered a Sylheti-language composting workshop, developed with the lead grower Danielle and attended by 12 allotment holders. Following the composting workshops, allotment holders are now more consistently and efficiently composting their food waste on their own plots.

> *"**I love how the farm recycles garden waste matter and the animal's waste by composting it and putting it back on to the growing beds**. There's no need to purchase anything as we're actively adding nutrients to the soil. I have also been able to witness the food cycle first hand. We know living things depend on other living things for food."*
>
> - Tahmina, food growers

> *"I can communicate a little bit but **it's great to have somebody Bengali, and if they're not there then we have to continue struggling.** When you guys weren't there I used small words and managed. If you're there it's better."*
>
> - Allotment holder



Recovery

Anaerobic digestion and composting on a disused parking lot:
Using shipping containers housed in a disused car park, R-Urban Poplar provides space for green experimentation for solutions to London's biggest environmental challenges, such as poor air quality and waste management. A key aim of their project is to build a localised circular food system. This involves working with MAD LEAP CIC - another Just FACT project partner - to develop anaerobic digestion (AD) and composting systems to deal with local food waste on the Teviot Estate. The digestate (fertiliser) from the AD, and compost from the composting units, will be used to grow food in the allotment spaces on the site, and the gas produced will power the community kitchen, a boiler and a community sauna on-site.

Over the life of their Just FACT project, the R-Urban team have collected over 4,000kg food waste that otherwise would have been incinerated, brought to the site by 12 families on the estate and including the waste that the garden produces. Not only has this saved nearly 50kg of CO2e emissions by being composted rather than incinerated (composting produces less emissions than incineration, per kg food waste), it has also produced compost which is being used in their food growing areas.

The average household produces 341kg food waste / year[11]. And according to WRAP, up to 60% of food waste could be compostable. So the amount of potentially compostable food waste per household is 204kg / year. There are 535 homes on the Teviot Estate where R-Urban Poplar is based. So if all homes on the estate were to compost their food waste, that would be 109 tonnes of potentially-compostable food waste.

If the same amount of food waste was digested annually, it would yield 15,571m3 biogas (93,428 kWh) and 98T biofertiliser. The upgraded AD system to be installed later in 2025 along with the existing Ridan (in-vessel composter) will be able to manage approximately 43% of the potential total output. While the capacity could be expanded in a modular way as more waste is captured, efforts will simultaneously be made to help households waste less through targeted community engagement, workshops and environmental education.

[11] https://www.wrap.ngo/resources/report/household-food-and-drink-waste-united-kingdom-2021-22

What works well

- Community run cooperatives who can order to hyperlocal demand, where residents can more easily only buy only what they need
- Bringing communities together to prevent food waste collectively though cooking, eating and preserving workshops
- Composting workshops on community garden sites have been popular
- Workshops that support cultural learning exchange around food waste prevention
- Employing staff on food waste initiatives who speak community languages and shared cultural backgrounds

What are the challenges

- Residents bringing food waste from their homes to community processing sites has had low uptake and the reasons for this need to be better understood
- Residents are time poor, and this is one reason that adopting practices like preserving and fermenting food in their routines is hard to achieve
- Collecting and processing food waste can be reliant on volunteers whose attendance can be more ad hoc than employees
- Technological innovation, particularly around implementing micro anaerobic digesters requires piloting at the community-scale to reach their full potential in handling significant quantities of food waste locally
- Gaining necessary permissions to build composting sites from local authorities can slow down new projects
- There is a continued reliance on charitable grant funding, and many projects are trying to find economically sustainable models that also create local jobs

Recommendations

Increase community engagement around food waste prevention and recycling

Develop culturally-appropriate public health messaging that meets residents' concerns about food recycling: Residents have legitimate concerns about how storage of food waste may attract vermin to where they live and these need to be addressed in the design of food waste collection. They have also flagged that specific times of year should be targeted for workshops and public health messaging aimed at waste prevention like Ramadan and Christmas.

Support initiatives that bring communities together to make the most of food: Many organisations are doing brilliant work to engage residents in food waste prevention through cooking, preserving and composting workshops. Such initiatives readily support healthy eating initiatives, providing double impact. The council can support by funding schemes or offering free access to kitchen spaces.

Support communities to set up Food Cooperatives: Food Cooperatives prevent food waste and also reduce plastic compared to mainstream supermarkets. Depending on the model, councils can provide venues to hold stock for groups or fund community worker roles for local people.

Incentivisation and feedback: Finding ways to benefit local people through the recirculation of bioresources (e.g. free seedlings, compost etc.) and making the value of waste visible through community food waste management hubs will also help food waste recycling to become a more accepted part of mainstream behaviour. Regularly feeding back data on the positive climate impacts of their actions may help encourage more people to participate and alleviate climate anxiety.

Increase the amount of household waste handled at local community composting sites.

Support home and estate-based composting: Tower Hamlets council offers discounted compost bins/wormeries to residents, and groups of residents can get free hotbins, wormeries and compost bins for their estate that they self-manage.[12] These schemes should be better advertised and supported. The council could fund composting workshops from community partners like R-Urban and Compost Mentis that help residents feel confident to compost. These workshops could also advertise the subsidies and support on offer from the council for food waste recycling. This would provide economic support for local, community-based enterprises, able to leverage existing community networks, while potentially providing a more cost-effective delivery option, while contributing towards council objectives around community engagement, training and employment.

[12]Tower Hamlets Council, 'Home composting and wormeries'. Available at: https://www.towerhamlets.gov.uk/lgnl/environment_and_waste/recycling_and_waste/home_composting.aspx

Increase the number of community composting sites with hot composting facilities: If a portion of waste collected by waste management services began to be delivered to community composting sites, the number of sites with hot composting infrastructure would need to increase. From conversations with partners at Tower Hamlets Food Summit 2025, we learned that new sites to deal with household food waste would be well placed in schools and faith places.

Interested organisations would need support from professionals to assess whether the site is suitable for composting facilities and to train staff to maintain the technology. It would also be best if sites have food growing facilities, so they can easily use the compost created and distribute surplus to local people.

Schools would save waste management costs and achieve climate action outcomes - more relevant now as all schools must have 5-year climate action plans in place by the end of 2025. They could also incorporate composting and circular food topics into the curriculum and monitor how much CO2 they are saving by reducing food and waste miles, replacing peat-based compost and sequestering more carbon in soils.

Composting for small community gardens and schools could be overseen by a paid coordinator serving a network of community composting sites to share costs, ensuring best practice, maintaining healthy composting processes and helping develop local expertise, as many small composting sites have failed over time due to lack of consistent support and expertise.

Incentives could encourage residents to bring food waste to composting sites directly. A voucher or discount in exchange for a weekly bag being dropped off at a community composting site could be trialled. Alternatively, free seedlings or compost could be given away. Partners have expressed interest in a model similar to bottle returns in US and Germany, where a small payment is made in exchange for return of bottles. It was also suggested that the council could consider providing a 'community garden' bin on each estate that gets transported to a local composting site by waste management services.

Explore financial mechanisms to support community-led food waste processing initiatives complement centralised food waste management services: R-Urban Poplar and MAD LEAP are currently reliant on residents dropping off their food waste to their site, or volunteers collecting waste from local schools. In advance of Tower Hamlets' planned launch of food waste collections for flats across the borough (2027), MAD LEAP will pilot food waste collection at the Teviot Estate, combining it with community engagement to promote food waste reduction and raise participation, following the waste hierarchy. This will provide an opportunity to test business model assumptions to determine at what scale community food waste management might become viable, and assess the environmental and social impacts.

So far, modelling the business case for community-led food waste processing has led to several potential approaches, currently under investigation:

1. For sites generating/accessing smaller quantities of food waste, composting is the most viable option as it is relatively low cost, although care must be taken in the choice of composter if food waste containing animal by-products is to be composted. Food waste management savings could cover capital costs in 5-6 years, depending on scale but would not cover operational costs, which would need to be

absorbed by the host site. See the section above on increasing community composting sites and possible workarounds.

2. For sites generating/accessing larger quantities of food waste, two pathways have been identified involving community-scale optimised AD and in-vessel composting. The figures given below are indicative at this stage and need validation:
    a. For site processing between 300-800 kg p/d, the waste management and fossil fuel savings could cover ongoing operational costs but existing financial mechanisms would need to be explored to support capital costs e.g. carbon offset funds, Section 106, Community Infrastructure Levy, and recycling credits. If community-led waste management saved council waste management costs and helped meet community engagement, food waste reduction, training and employment targets, perhaps those benefits could be translated into financial support.
    b. For sites processing 800 kg/d and upwards, a 4-10 year payback (or less depending on capacity) could be achieved covering both capital and operational costs. E.g. current modelling shows a payback of under 6.5 years for a one-off optimised AD system processing 1,800 kg p/d with an ROI of 15.46 and estimated CO2 savings of 438T p/a.

Our aim is to find a win-win solution that benefits councils, community enterprises and communities themselves to achieve the best outcomes all round. For example:

- Councils fund local enterprises with established local reach help households waste less through targeted community engagement, workshops and environmental education;
- Reduced food waste means that less infrastructure is needed to process it, reducing capital costs;
- Existing financial mechanisms are leveraged to cover capital costs where necessary, increasing processing capacity, community buy-in and green training and employment opportunities;
- Establishing a replicable model supports uptake across neighbourhoods, multiplying the community and environmental benefits of localised, circular bioresource management.

Community research could hold some of the answers: Knowing more about what might help residents to recycle their food waste would benefit any trials or adaptations to services ahead of the deadline for food waste collection in Tower Hamlets. Community research, led by residents with the support of organisations like Wen, Toynbee Hall, Platform London or Bromley by Bow Centre could provide insights to set the council up for success.

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Just FACT (Just Food and Climate Transition) coordinated by Wen brings together communities and partners across Tower Hamlets to create the building blocks for an environmentally sustainable and socially just local food system.

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