



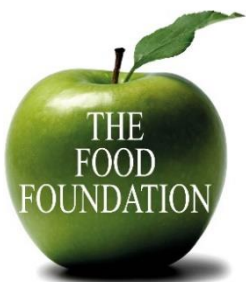
This report discusses how the Smart City agenda can be leveraged to tackle all forms of malnutrition, drawing on a range of case studies from around the world

# Smart Nutrition Cities

## Building on what's gone before

*The Food Foundation*

2018



**TATA TRUSTS**

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# Abbreviations

AGRUPAR	Participatory Urban Agriculture Project
BFPI	Baltimore Food Policy Initiative
BINDI	Birmingham India Nutrition Initiative
eTm	electronic town meeting
FAO	Food and Agriculture Organisation
GAP	good agricultural practice
GBSF	Government Buying Standards for Food and Catering Services
MPA	Milan Pact Awards
MUFPP	Milan Urban Food Policy Pact
NHS	National Health Service
PAC	Policy Action Coalition
RFEA	Resident Food Equity Advisor
SNAP	Supplemental Nutrition Assistance Program
UK	United Kingdom

# Executive Summary

The Birmingham India Nutrition Initiative (BINDI) is a 'Nutrition Smart City' initiative, which involves the development of relevant policies and practices through a learning partnership between Birmingham, United Kingdom (UK), and Pune, India. The two cities are developing a platform to enable joint learning, experience sharing and pilot specific initiatives. This report and the case studies within are intended to be used as inspiration for the developing BINDI partnership.

The process of urbanisation is closely linked to dietary transition, and as the global urban population grows, city environments will become increasingly important for helping to promote healthy and adequate diets. Globally, many cities have committed to reshaping the city food system, with approaches ranging from urban agriculture to planning for healthier retail to social justice initiatives that aim to link the poor more directly into productive urban livelihoods.

There are also an estimated 300 cities globally that want to become 'smarter' and develop more liveable city environments through data, technology and energy efficiency (Anthopoulos, 2017). As with urban food initiatives, the Smart City covers a wide range of definitions and approaches. Many of these are outlined in the 'Background' section.

The purpose of this report is to document and learn from cities where the concepts of urban food and Smart Cities have been jointly applied. Our definition of a 'Nutrition Smart City' is one that uses data and technology to change the way that food is produced, processed, distributed and consumed. It considers food quality and equitable access, disrupting food systems that are not sustainable or that contribute to food insecurity and malnutrition.

The case studies in this report cover the domains of governance, social and economic equality, food production, food supply and distribution, food waste and sustainable diets and nutrition—the six topics in the [Milan Urban Food Policy Framework for Action](#). Collectively, the case studies illustrate how cities can adopt approaches that use procurement, planning and a range of e-platforms and applications to drive changes in production, supply and production of food whilst contributing towards 'Smart' and nutrition goals. They also demonstrate the fundamental overarching role that people can play in ensuring the right priorities and plans are put in place and in driving leadership and policy coherence.

This report makes a case for building on the experiences of cities which are improving their food system and/or are becoming Smart and makes a case for Nutrition Smart Cities, which tackle all forms of malnutrition (undernutrition and overweight and obesity) through adopting Smart approaches. Our review found few examples of cities which are adopting Nutrition Smart approaches, though there is a considerable body of experience which can be drawn upon from urban food initiatives and Smart Cities.

The case studies presented demonstrate that Smart approaches can be applied across the supply chain, from enhancing food production in urban and peri-urban areas to the engagement of citizens in the development of food policy, with the goal of improving nutritional outcomes. Moreover, they show that it is possible to align the goals of healthier and more sustainable food systems in multiple ways through city food policy and to do this in a manner which harnesses technological innovation and new sources of data to drive more efficient systems. The case studies show that cities can act in multiple ways, even if they do not have a supportive national policy framework. These lessons learned will be applicable to other cities in a variety of contexts.

Through collaborating on this report, the members of BINDI have made a start on developing their learning partnership. The body of experience globally is developing day by day, and BINDI will undoubtedly uncover new examples which can be learnt from as the partnership progresses.

# Introduction

The Birmingham India Nutrition Initiative (BINDI) is a learning partnership between Birmingham, United Kingdom (UK), and Pune, India, wherein both cities are committed to developing Smart policies and practices to help tackle all forms of malnutrition. In BINDI's development phase, The Food Foundation is working with city authorities in both locations to design the partnership based on stakeholder and citizen engagement and global evidence.

This report, developed to support BINDI, aims to inspire and inform action at the city level to tackle all forms of malnutrition. It brings evidence and experience from beyond Birmingham and Pune to inform and inspire city officials as they develop the partnership together. The case studies and analysis herein will also be valuable to other cities, especially the 171 signatories to the [Milan Urban Food Policy Pact \(MUFPP\)](#), and the other cities that form part of India's national Smart Cities Mission (India).

The report provides background on the growing challenge of urban nutrition and why it needs concerted attention from city authorities. It then discusses what is meant by 'Smart Nutrition' policies and practices and examines the existing work going on at the city level that can be leveraged for a Smart Nutrition agenda, namely the urban food movement and the Smart City movement. It considers specifically how these two strands of city development can be brought closer together, leveraging the respective capacity and leadership within each. Then it presents a series of case studies to provide examples of Smart Nutrition actions at the city level and draw out some key conclusions from this body of experience.

## Methodology

To identify the relevant case studies, a team from the Food Foundation began by reviewing applications for the Milan Pact Awards (MPA), shared confidentially with us by the MUFPP Secretariat. For more details, the team contacted those cities whose work included Smart Nutrition elements, as described below, including Austin, Baltimore and Copenhagen. Informal interviews with global food-policy stakeholders—including the United Nations Food and Agriculture Organization (FAO), MUFPP, [The RUA Foundation](#), [EAT Forum](#), [JSI's \[John Snow, Inc.'s\] Building Health Cities Initiative](#) and [The Food Safety and Standards Authority of India](#)—helped identify case studies and to provide background context on urban food initiatives. Lastly, the team conducted an internet search for 'food smart' projects, resulting in several more case studies. To gather additional details about the case studies, the team reviewed existing documentation in the published and grey literature, and where possible spoke to representatives from the case study cities.

The team conducted interviews with various organisations: RUA Foundation, MUFPP, JSI, FSSAI and the EAT Forum. Subsequently, the team collected information and began drafting case studies. Information about Austin, Copenhagen and Baltimore came from MPA applications and Baltimore reviewing and editing its own case study. The MUFPP Milan Secretariat provided detail for the case study featuring the City of Milan's exercise to engage citizens around food systems. The team identified the Johannesburg case study from European Union (EU) documentation and the Latin American case studies were taken (with permission) from FAO's website. FAO has since launched its [Urban Food Actions Platform](#) (September 2018), providing other examples of innovative action related to urban food policies also aligned to the MUFPP themes.

### Box 1: How did Birmingham and Pune get together?

The City of Birmingham signed the Milan Urban Food Policy Pact in 2015 and in 2016 received recognition for its efforts to tackle dietary inequality. At the 2016 MUFPP meeting, a request was made for cities to partner with one another to galvanise efforts towards healthier, more sustainable food systems. Birmingham has strong relationships with India through diasporic communities, and an initial partnership with an Indian city was considered a natural alliance by Birmingham's leadership and partners, including the Birmingham Smart City Alliance. The Tata Trusts suggested partnering with Pune Municipal Corporation, a leading Smart City in India.

The initiative's start-up is being facilitated by The Food Foundation and funded by the Tata Trusts and the UK Department for International Development (DFID) through its Maximising the Quality of Scaling Up Nutrition Plus (MQSUN+) project. MQSUN+ provides technical expertise in multisectoral nutrition policy and programming to DFID and Scaling Up Nutrition countries.

## Background

### Urbanisation and nutrition

Cities are growing incredibly fast. More than half of the world's population live in cities; by 2050 two-thirds are projected to do so. One in four people lives in cities of more than a million inhabitants. Twenty-four of the world's 31 mega cities (more than 10 million inhabitants) are in the south (United Nations, 2016).

The pace of urbanisation is closely linked to dietary transition. As people move to cities they become more exposed to a range of new sources of unhealthy food through supermarkets, street vendors and fast food outlets. Whilst a move to the city can also increase the availability of healthy food, the cheapest options accessible to those on a low income tend to be more unhealthy (Hawkes, Harris and Gillespie, 2017). With urbanisation and rising incomes, people consume more animal-source foods, refined grains, sugar, fats and oils and processed foods. This is closely associated with increasing rates of overweight and obesity and a range of diet-related noncommunicable diseases. Moreover, many of those moving into the city from rural areas come having been exposed to undernutrition (manifested as stunting, wasting or micronutrient deficiency). The dietary transition is particularly risky for these people, who experience worse outcomes from weight gain after early experiences of undernutrition (Eriksson, 2005).

Tackling malnutrition at the city level is typically a focus for health departments. Understanding and positively influencing food environments requires intersectoral action (WHO, 2014). The 'Smart City' movement has evolved in response to rapid urbanisation and provides an example of such. This model of urban development is described as a triple or quadruple helix. The former refers to academic institutions, business and local government working together to create a space for innovative and transformative action. The latter refers to the additional involvement of citizens or citizen groups (Dameri, 2017). In either case, municipalities and local authorities provide overall leadership and motivation for engagement. Local governments lead the urban food initiatives described below, reflecting the Smart City way of working.

## Urban food initiatives

Whilst globally there are few examples of countries or cities which have reversed the trends towards overweight and obesity, those that are making progress—such as Amsterdam—are transforming the food environment and making healthy choices easy and accessible (European Commission, 2018).

Local authorities have varying levels of control over the food system. However, many have policy levers that could allow them to shape the city food system to deliver healthier and more sustainable outcomes for their residents. These levers include driving procurement and purchasing from nearby producers (stimulating urban production), determining the quality of the food which is served in public institutions (e.g. schools, care homes, prisons), regulating advertising in public spaces (such as on transport networks) and controlling the licensing and safety of food outlets. These levers span the food supply chain and leave city authorities with considerable scope to impact the food environment and residents' diets, even if national policy frameworks are inadequate. Cities, therefore, have the potential to help prevent overweight and obesity and concomitant noncommunicable diseases, as well as undernutrition and food-borne illness.

In many cities, these local authorities are strongly committed to reshaping the city food system, though whether their efforts are aimed at preventing malnutrition is variable. The focus of action differs from place to place and can include:

- Urban agriculture initiatives aimed at shortening supply chains and reducing environmental impact.
- Improvement in food environments and support of healthier dietary practices.
- Planning of initiatives that seek to address access to land for food production and for healthier retail.
- Social justice initiatives that aim to link the poor more directly into productive urban livelihoods through the creation of food networks, etc.

There are also several international networks linking cities around food. For example, the **MUFPP** (Milan Urban Food Policy Pact, 2015) began during the 2015 Milan Exposition and now involves 171 cities. The MUFPP is based on mayoral signatories to a [pact](#). It runs an annual networking and learning event and an awards scheme to help to stimulate action and learning. MUFPP sees itself as helping to encourage regional city networks on food policy and also contributes to other city networks from a food perspective, specifically C40 (see below), [United Cities and Local Government](#) and [Local Governments for Sustainability](#), formerly [International Council for Local Environmental Initiatives](#) (ICLEI). MUFPP has a [partnership](#) agreement with the FAO, which is working with the initiative to finalise a 42-indicator framework. At the last MUFPP meeting (Tel Aviv, 2018), FAO launched the '[Urban Food Action](#)' platform which provides a comprehensive database of resources relating to urban food policies. MUFPP Secretariat (based in Milan) also links directly into the [Eurocities Food Working Group](#), which is primarily a vehicle for cities to access funding for urban food initiatives.

The [C40 Food Systems Network](#), launched in 2016 and developed in partnership with the EAT Foundation, is an action-oriented network to help cities achieve solutions to their most pressing food-system challenges. Building on the work commenced in the MUFPP, the Network is helping accelerate member cities' development of sustainable food systems that promote healthy diets whilst reducing greenhouse gas emissions and climate risks. Growing from an initial 14 cities, the Network now has 42 active members. It is structured around four focus areas:

- 1) Food procurement (addressing purchases that are controlled by the municipality).
- 2) Food production (including urban agriculture).
- 3) Food distribution (including markets, wholesale, resilience, transport and logistics).

- 4) Food waste (promoting the food waste 'pyramid': reduction, recovery for people, recovery for animals and compost/fertiliser, with landfill as a last resort).

Like MUFPP, the network has a focus on establishing and disseminating amongst the network a set of common principles (including best practices, benchmarks and metrics derived from the data collected).

The **European Commission** has also taken a direct interest in the city food agenda. In 2015, as part of the European Year for Development, it financed the [Food Smart Cities for Development](#) project, which ran until the end of 2016 and linked 12 urban areas over three continents on city food policy (Milan Urban Food Policy Pact, 2016). The project aimed to foster the role of cities in changing the food production and consumption paradigm—reducing food waste, promoting healthy diets and encouraging the purchase of food produced with respect for the environment, human rights and workers' dignity, all seen as local actions that can trigger global change.

The project had three main objectives:

- 1) To raise public awareness on the impact of European cooperation policies, with emphasis on decentralised cooperation in food security and sustainable development.
- 2) To strengthen the role of European cities as facilitators in the promotion of sustainable development, focusing on global food security strategies.
- 3) To encourage partner cities and civil society organisations to participate in the debate concerning the post-2015 development agenda.

Whilst the name of this project suggests a direct link between Smart Cities and the urban food agenda, in fact, the project used a loose interpretation of 'Smart' and was not constrained to approaches that align directly with the Smart City agenda, as outlined in the next section.

Therefore, whilst many cities are tackling the food system, their experience in aiming for and delivering nutrition goals is much more limited.

## The Smart City agenda

Whilst many cities are developing policies to improve their food systems, many more, an estimated 300 cities (Anthopoulos, 2017), are wanting to become 'smarter' and develop city environments which are more liveable by harnessing data, technology and energy efficiency. As with urban food initiatives, the Smart City covers a wide range of definitions and approaches.

The British Standards Institute (BSI) describes a Smart City as 'the effective integration of physical, digital and human systems in the built environment to deliver a sustainable, prosperous and inclusive future for its citizens' (Anthopoulos, 2017).

Smart Cities UK defines such cities as follows:

*A Smart City is a place where the traditional networks and services are made more efficient with the use of digital and telecommunication technologies, for the benefit of its inhabitants and businesses....*

*The Smart City concept goes beyond the use of [information and communication technology] for better resource use and less emissions. It means smarter urban transport networks, upgraded water supply and waste disposal facilities, and more efficient ways to light and heat buildings. And it also encompasses a more interactive and responsive city administration, safer and secure public spaces. (<https://www.smartcityuk.com/>)*

Whilst in India, Smart Cities are defined as follows:



*In the imagination of any city dweller in India, the picture of a Smart City contains a wish list of infrastructure and services that describes his or her level of aspiration. To provide for the aspirations and needs of the citizens, urban planners ideally aim at developing the entire urban eco-system, which is represented by the four pillars of comprehensive development-institutional, physical, social and economic infrastructure. This can be a long-term goal and cities can work towards developing such comprehensive infrastructure incrementally, adding on layers of 'smartness'.*

<http://smartcities.gov.in/content/innerpage/what-is-smart-city.php>

Core elements of these definitions include an attempt to use technology to drive greater resource efficiency and coherence in services. This efficiency is often supported by new forms of data availability and access across different stakeholders in a city context. In addition, both definitions emphasise a strong role for citizens in shaping the Smart City priorities in a given location.

## **Towards Nutrition Smart Cities**

This document aims to compile existing experience of city-level initiatives from around the world which align the goals of tackling all forms of malnutrition (by improving the city food system) with the modus operandi of the Smart City approach. Whilst there have been some modest attempts to directly link Smart approaches with food (e.g. (Romero-Borbón, Larios and Romero, 2015)), there have been no attempts to define a Smart Nutrition agenda for cities.

Building on the information above, our working definition is that a Nutrition Smart City uses data and technology to change the way that food is produced, processed, distributed and consumed. It considers food quality and equitable access, disrupting food systems that are not sustainable or that contribute to food insecurity and malnutrition. Nutrition Smart Cities are by nature multisectoral, developed by entrepreneurs, nutritionists, public health experts, agricultural experts, policymakers and civil society members committed to a sustainable, healthy food future.

## Case Study Introduction

The subsequent sections of the report present a series of case studies that are in keeping with the goals of both Smart Cities and the tackling of malnutrition using a food-systems approach. The Milan Urban Food Policy Framework for Action contains six topic areas, to which the case studies in this report align. These include governance, social and economic equity (both of which considered under a category of “people”), food production (under a “production” category), food supply and distribution, food waste (under “supply chains”) and finally sustainable diets and nutrition (under “consumption”).

**Governance** refers to the coherent and sustained leadership that is required to make citywide changes to food systems. Actions include facilitating collaboration across city agencies, enhancing stakeholder engagement and mainstreaming a rights-based approach to citizen engagement. The cities of Milan and Belo Horizonte feature as case studies, demonstrating good governance and citizen engagement. Baltimore and Austin (MPA winners in [2016](#) and [2017](#), respectively) also provide examples of effective stakeholder engagement.

**Social and economic equity** aims to promote equity across the food system, for example by using cash and food transfers to protect vulnerable populations and promote decent employment for all. The case studies from Austin and Baltimore demonstrate how to increase healthier food access to the most vulnerable groups. In Pune, a hospital case study demonstrates how free health care and nutritious food support the poorest groups. The hospital relies on donations from grassroots organisations and philanthropists, as well as local government support.

**Food production** refers to a sustainable food city system that promotes and strengthens urban and peri-urban food production and processing and integrates urban and peri-urban agriculture into city resilience plans. A key action is to enable secure access and tenure to land. The case study from the metropolitan district of Quito captures this domain. They launched a Participatory Urban Agriculture Project (AGRUPAR), which has 1,072 active gardens with an annual food crop production estimated at 400 tonnes.

**Food supply and distribution** actions include assessing the flow of food to and through cities and supporting food storage, processing, transport and distribution technologies. A case study from Johannesburg demonstrates how to improve and expand support for infrastructure related to market systems. Support and training in areas such as food safety, waste prevention and management is also provided to smaller producers.

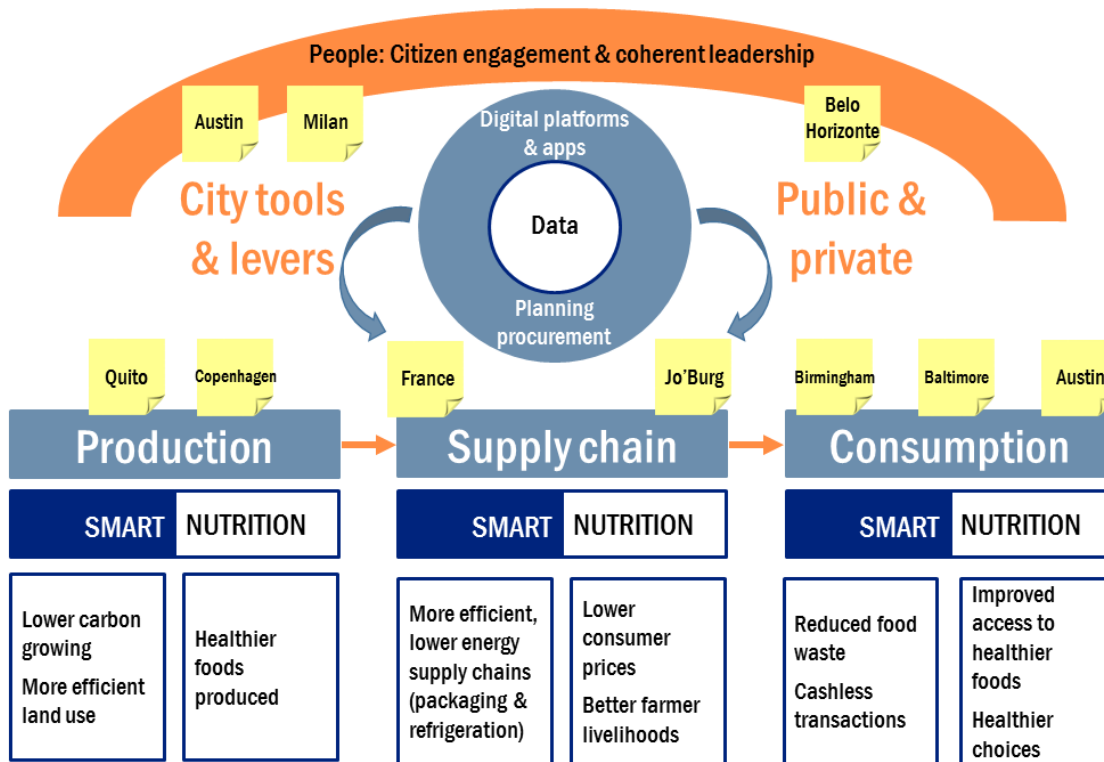
**Food waste** strategies are improved by collaboration with the private sector. Of many technology-/application-based food waste solutions, Winnow is a mobile phone application that won *The Guardian* sustainable business of the year award in 2016. Chefs are using the Winnow system to halve food waste and reduce costs.

**Sustainable diets and nutrition** positions nutrition as part of the food supply chain, not just at the consumption end. Actions relating to this category include addressing noncommunicable diseases, adapting standards, developing sustainable dietary guidelines and exploring regulatory instruments. Encouraging joint action by health and food sectors is considered key. This domain is captured in the case study from Copenhagen (an MPA winner in 2017), which adapted public-sector food and drink standards in 2002 with a goal of achieving 90 percent organic food across the city’s public-sector food supply.

Collectively, the case studies illustrate how cities can adopt approaches which use procurement, planning and a range of e-platforms and applications (often informed by intersectoral data and maps) to drive specific changes in production (Copenhagen and Quito), supply (Johannesburg) and consumption (Birmingham, Austin and Baltimore) of food whilst contributing towards Smart City and nutrition goals.

**Figure 1** is a summary of where the case studies feature in such a framework and illustrates the fundamental overarching role that people play in ensuring the right priorities and plans are in place and in driving leadership and policy coherence. The case studies are led by two which explain how citizen engagement and good governance have been put into practice (Milan and Belo Horizonte).

**Figure 1. Case studies' placement.**



# Case Study: Citizen engagement on food policy (People)

## Milan

**Policy/project name:** Milan Food Policy/Governance of the Urban Food System for a Sustainable Food City (Milan Urban Food Policy Pact, 2016, 2017)

**Location:** Milan, Italy

**Population:** 3,277,524

**Target group:** Citizens of Milan

## Aims

The aims of the Milan policy and governance are to:

- Involve citizens in multi-stakeholder governance of the food system.
- Inform citizens of city dynamics related to food.
- Give visibility to food policy-related projects.
- Identify priorities for food policy.
- Establish a dialogue between stakeholders.
- Create and address a set of actions—co-delivered by the public and local authority.

## Implementation

### *Setting goals and gathering knowledge*

In 2014, the Municipality of Milan worked with the Cariplo Foundation to develop the City's Food Policy. This five-year partnership aims to coordinate all policies that relate to food, including community, welfare, education, environment, well-being and international relations.

A key component of the partnership is to conduct in-depth research into the strengths and weaknesses of the Milan food and agriculture system. The partnership also mapped social, economic and institutional stakeholders.

### *Developing new and shared objectives through public consultation*

Objectives development involved experts, institutions, enterprises, associations and citizens. One of the most important stages towards food policy was the public debate on issues, projects and ideas about food in Milan. The city board, civil society organisations, start-ups, companies connected to nutrition and international communities based in Milan debated the future food strategy.

Milanese citizens were asked to propose approaches to the Food Policy's themes. Meetings were held in the nine areas of the city. Posters throughout the city promoted the consultation.

During an electronic town meeting (eTm) at the end of the consultation, concrete recommendations emerged about the draft of a new food strategy for Milan.

### *Municipality's approving objectives*

The strategy was then submitted to the Executive Board and the City Council of the Municipality of Milan, which approved the Milan Food Policy on 5 October 2015. The administration enacted a set of formal commitments, including the appointment of a food policy advisor who reports directly to the mayor and works across all departments.

### *Implementing Milan Urban Food Policy*

The Policy was one of the project's materialisations. Milan is now leading the implementation of citywide food policy and is guiding other European cities as Chair of the Working Group Food Group. In 2015, the Policy became an international pact, signed by 165 cities (representing more than 450 million people).

## **What's Smart about this case study?**

The project created an online platform to raise awareness and to encourage stakeholder engagement. It conducted an online consultation to assess citizen consumer habits and priorities for the improvement of Milan's food system. Priorities were identified based on the response to 11 multiple choice or sorting questions, including population health, environmental impact, income for farmers, support for ethical businesses, access to nutritious foods, local food, public catering, waste and food education.

An eTm held at the end of the consultation included 150 citizens convening in the city hall to discuss the priorities for the policy. eTm is a deliberative comparison tool in which each small group has access to a computer through which to send feedback for synthesis by a central computer, which shares back the information. Questions relating to feedback are projected onto a large screen. Participants use a remote control to respond to these questions, allowing consideration of individual preferences as well. The day ends with an instant report containing all the results.

In the Milan eTm, citizens divided into small groups and shared their thoughts about food, sustainability and nutrition, through the help of a facilitator. Discussion highlights were then summarised into a set of questions, and the participants were invited to express their votes electronically. The results of the voting contributed to shaping the Milan Food Policy's priorities. The '10 issues' of the Milan food system identified by stakeholders are described in **Figure 2**.

**Figure 2. The '10 Issues' of the Milan Food System.**



Source: (*Economia e Sostenibilità*, 2016)

## **Learn More**

A brief history of the Milan Pact can be found here <http://www.milanurbanfoodpolicypact.org/>

For further information about the technical details of the citizen engagement exercise, contact the MUFPP Secretariat <http://www.milanurbanfoodpolicypact.org/contacts/>

# Case Study: Leadership and governance (People)

## Belo Horizonte

**Policy/project name:** Belo Horizonte Secretariat for Food Policy and Supply (Tufts, 2015)

**Location:** Belo Horizonte, Brazil

**Population:** 2.4 million

**Target group:** Low-income citizens of Belo Horizonte

### Aim

The goal is to establish a dedicated food and food security agency within the city government to improve social justice and ensure equitable food access.

### Implementation

Belo Horizonte is the fourth largest city in Brazil. In 1993, in the context of high levels of poverty, food insecurity and undernutrition, it established a food and food security agency within the city government. The agency seeks to take three main actions:

- Develop policies that assist poor families to supplement their food needs.
- Work with the private sector to bring food to areas of the city previously without commercial outlets, regulate prices and control quality (monitored by university researchers).
- Increase food production and supply, including providing technical and financial incentives for small producers and developing links between producers and consumers.

The agency has divided its work into six workstreams:

- Subsidised food
- Food and nutrition assistance
- Food supply and market regulation
- Urban agriculture
- Consumer education
- Job and income growth.

Specific programmes have included:

- Free distribution of enriched flour.
- Free school meals for ages 6 to 14 years.
- Provision of food items to government-funded and charity-run daycare centres.
- A government-run restaurant with nutritious meals at affordable prices.
- An established network of mobile food outlets offering basic items at lower prices.

- Sales of a low-cost basket of 22 items (food plus other essentials) directly to low-income families.
- A list, published twice a week, of 45 basic household items and where they can be purchased for the best prices.
- A programme in which rural producers are assigned fixed sale points throughout the city with prices and quality regulated.
- An initiative connecting rural producers to hospitals, restaurants and caterers.
- School and community vegetable gardens.
- Planting of orchards in low-income neighbourhoods.

### **What's Smart about this case study?**

The case of Belo Horizonte demonstrates how a coordinated citywide programme for food policy can achieve results. Since the agency has been in place, undernutrition in the city has been nearly eradicated, and child mortality has fallen by nearly 75 percent. The agency has been able to achieve these successes with only 1 to 2 percent of the municipal budget.

Establishing the agency required political will, particularly the commitment of the mayor at the time of its establishment and supportive policies and structures at the national level, including the national Zero Hunger strategy. Another key success factor is that the agency is driven by a team of civil servants who are dedicated to working on the issues of food and food security.

Though Belo Horizonte has yet to explicitly employ technological solutions in its approach, it has been Smart in its coordinated citywide approach. However, several specific programmes undertaken by Belo Horizonte could be facilitated with technology. Technological solutions, such as an application or an online network/platform, could aid the programmes seeking to establish connections between producers and consumers/institutions. The city-generated list of low-cost food goods and the network of mobile food outlets could also be digitised into an app for citizens to use.

### **Learn more**

Other food governance case studies: <http://fondazionefeltrinelli.it/app/uploads/2016/05/The-Governance-of-City-Food-Systems-The-Cases-Study-from-Around-The-World.pdf>.

The history of Belo Horizonte's food system: <https://sites.tufts.edu/belohorizonte/belos-food-system-history/>.

# Case Study: Procurement to drive more sustainable production (Production)

## Copenhagen

**Policy/project name:** Organic Conversion Project (FoodLinks, 2013; *Copenhagen Smart City Presentation*, 2015; Copenhagen Capacity, 2017; FAO, 2018)

**Location:** Copenhagen, Denmark

**Population:** 1.99 million (583,000 in the city itself)

**Target group:** 2,000 public-sector catering kitchens in five municipalities

### Aims

The key aims of the Copenhagen project centre around:

- Ambitious strategies for healthier (less meat, more fresh, seasonal and local vegetables and fruits and less food waste) and sustainable public-sector procurement (in kindergartens, nursing homes, schools, sports arenas and workplace canteens).
- Concern for the protection of groundwater was one of the main reasons behind the political decision leading to the change.

*The possibility for a municipality to literally 'put their money where their mouth is' and pursue sustainability goals through public spending might seem obvious, and still, the examples of cities that have pursued an ambitious agenda, are few and far between.*

*MUFPP award application made by Copenhagen*

### Implementation

Since 2002, the Copenhagen Municipality has had a food strategy which aimed to achieve 90 percent organic ingredients across the entire city's public food system, reaching an average of 88 percent in 2016. The city council instituted this policy and its target as a part of Copenhagen's sustainability strategy. The policy aims to secure clean drinking water for the city, as many water sources in Denmark are contaminated with pesticides. The aim is also to strengthen the market for organic and sustainable food in general. The 90 percent organic strategy has been a dual effort of both training and up-skilling kitchen staff and simultaneously restructuring the methods of procurement to ensure supply of quality organic ingredients. The following steps were taken to reach this significant citywide goal:

- Political decision and goal target of organic conversion set.
- A team of civil servants charged with developing the organic procurement process.
- Allocation of resources for vocational training of kitchen staff.
- Involvement of stakeholders across the departments of the municipality.
- Reorganisation of food procurement and extensive market dialogue.



- High-quality standards and specific demands for sustainable and organic food in tenders.
- Involvement of stakeholders in tender process.
- Yearly evaluation of organic purchasing to track development and devise strategies for further development.

### What's Smart about this case study?

Copenhagen aims to be carbon neutral by 2025, and Denmark aims to be fossil fuel independent. These commitments created 'a motivation for developing Smart Cities and paves the way for large-scale testing of Smart City solutions in real-life urban environments'. Copenhagen's four Smart City goals are to be:

- A green and blue city.
- The world's best city for cyclists.
- A carbon-neutral capital.
- A clean and healthy city.

In relation to these four, the city aims for 20 percent organic food consumption, with the city council leading the way with at least 90 percent organic food in public-sector canteens.

### Box 2: Other 'smart' procurement solutions

#### Catering at Sassoon General Hospital in Pune

The Sassoon General Hospital's renovated 'state-of-the-art kitchen' provides breakfast and an evening meal for 1,200 patients. It is considered a model for other city hospitals, being equipped with high-capacity steamers, boilers, coolers and a mechanised roti maker which can prepare 1,000 roti an hour. The kitchen upgrade was paid for by donations from the Ganapathi Trust (a temple trust, which also covers the cost of treatment for homeless patients), corporations and pensioners (Society of Friends of Sassoon Hospitals). The raw materials/food is donated by the Ganapathi Trust. Undernourished children are admitted with their parents into the hospital, and nutrition education support is offered by hospital staff.

#### Winnow: A mobile application that won *The Guardian* sustainable business of the year award in 2016

The Winnow system is being used by chefs to halve food waste and reduce costs:

- Food waste is thrown away in the usual way into any bin, which is placed on a smart weighing meter technology.
- Touch screen is used to identify the food thrown away and at what stage.
- Cloud software analyses and records the day's waste—menu integration allows system to automatically record several key metrics.
- In real time, staff are shown the value of each item thrown away, driving behaviour change.
- Daily reports are sent to staff inbox to pinpoint key opportunities to target waste.
- Winnow customers (including Ikea, Compass, HSBC, Wellcome Trust, ISS) typically save 3%-8% on cost.

Winnow on how to [cut waste in the public sector](#).

Winnow case studies [span all sectors](#).

### Box 3: Other 'smart' procurement solutions, cont'd

#### **National Health Service Supply, Brakes and 3663 are making it easier for buyers to access foods and drinks compliant with Government Buying Standards for Food and Drink** (Public Health England, 2017)

The UK public sector spends about £2.4bn per annum procuring food and drink catering services, representing approximately 5.5% of UK food-service sales. Organisations serving or selling foods to adults can enable positive changes to the nation's diet by reducing foods high in saturated fat, salt and free sugars and increasing provision of higher-fibre foods, fruit, vegetables and fatty fish. These organisations include government departments, hospitals, residential care homes, local authorities, prisons, other workplaces, community venues, such as temples and museums, and educational establishments, such as universities and further-education colleges.

The National Health Service (NHS) set up a 'Supply Chain' portal to make it easy for these entities to procure goods and services that meet government standards, including the Government Buying Standards for Food and Catering Services (GBSF). This allows organisations like hospitals to purchase food that is healthier and more sustainable. Public-sector food suppliers like Brakes and 3663 highlight foods that are GBSF compliant. Some suppliers are working to ensure that buyers from catering operations keen to build GBSF criteria into their procurement decisions can access information that makes it clear which products comply.

#### **Implementing the GBSF in Hull**

With creative menu planning, meticulous attention to detail and a can-do attitude, Jill Venables, Head of Facilities at Hull and East Yorkshire Hospitals NHS Trust, has made healthier, more sustainable eating easier by ensuring full compliance with GBSF in-patient, staff and visitor catering.

Menus at Hull Royal Infirmary and Castle Hill Hospital offer 'Hey, it's healthy' meal options, such as pork schnitzel or chilli con carne with seasonal vegetables, potatoes or rice and fresh fruit salad. Vegetarians and vegans can choose main courses such as 'mushroom and spelt risotto' or 'vegetable medley bake' (with optional low-fat cream sauce). The healthy options are lower-calorie dishes with menu boards including information about fat, saturated fat and calorie content. A salad bar offers the choice for a salad from fresh options—such as grated carrot, sliced cucumbers or beetroot, sweetcorn, tomato and boiled eggs—or premade salads, such as 'mackerel and beetroot' or 'roasted vegetables with couscous'. A fruit bar promotes lower-cost, healthier desserts, such as low-fat yoghurt with toppings including fresh, dried or compote fruit.

The patient meal service is mostly cook-freeze, bought in ready-made dishes and then served onto plates on the wards. A wide range of therapeutic diets, including energy-dense ones, are made on site. Jill works with branded catering companies on the NHS Supply Chain list, which can provide menu options that meet specifications in the GBSF, and patient meals are analysed to ensure nutritional needs are met. That includes meeting specific nutritional criteria around the salt and saturated fat content of many product ranges, including meat/meat products, hard yellow cheese, milk, breads, soups, cooking sauces, biscuits/cakes/pastries and oils/spreads. More than 50% of breakfast cereal options meet salt and sugar reduction targets, as well as being higher in fibre.

Not satisfied with these improvements, Jill also ensures that patients, staff and visitors are offered foods produced to higher environmental and ethical standards, including organic milk, fair trade tea/coffee and sustainable fish. Retail outlets now sell smaller portion sizes of confectionery, savoury snacks and sugar-containing drinks. The higher standards have a cost, but Jill has worked with menus to save in some areas. For example, producing mashed potato and fruit crumbles in-house (rather than buying outside and bringing in) saves almost £60,000 per year, which can go towards innovations. Jill has put spreadsheet-based monitoring systems in place to track how menus meet standards; these are available to any health care caterer. She says: 'Why shouldn't NHS patients eat really well? With careful monitoring and creative thinking, it really is possible'.

## Learn more

Changing public sector food procurement:

[http://www.foodlinkscommunity.net/fileadmin/documents\\_organicresearch/foodlinks/publications/Foodlinks\\_report\\_low.pdf](http://www.foodlinkscommunity.net/fileadmin/documents_organicresearch/foodlinks/publications/Foodlinks_report_low.pdf).

Being smart about public-sector procurement: <https://www.mckinsey.com/industries/public-sector/our-insights/improving-public-sector-purchasing>.

Sorensen, N. N., Tetens, I., Loje, H., & Lassen, A. D. (2016). The effectiveness of the Danish Organic Action Plan 2020 to increase the level of organic public procurement in Danish public kitchens. *Public Health Nutrition*. <https://doi.org/10.1017/S1368980016001737>.

'Tackling food waste around the world' (an article on food-waste apps in The Guardian):

<https://www.theguardian.com/sustainable-business/2017/feb/06/food-waste-apps-global-technology-leftovers-landfill>.

*Healthier and More Sustainable Catering: A Toolkit for Serving Food to Adults*. Updated 2017.

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/648743/healthier\\_and\\_more\\_sustainable\\_catering\\_adult\\_toolkit.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/648743/healthier_and_more_sustainable_catering_adult_toolkit.pdf).

# Case Study: Efficient land use and livelihoods support (Production)

## Quito

**Policy/project name:** Participatory Urban Agriculture Project (AGRUPAR) (FAO, 2014)<sup>1</sup>

**Location:** Quito, Ecuador

**Population:** 1.4 million

**Target group:** 12250 urban and peri-urban farmers and 380 community-based organisations

## Aims

In support of urban livelihoods, to support communities to access and cultivate on allotments known as 'huertas,' land which has not been earmarked for development. The practise began in the El Panecillo areas and soon expanded to become a municipal programme aimed at improving the food security of vulnerable populations in Quito's urban, peri-urban and rural vicinities.

## Implementation

AGRUPAR is operational in all eight administrative zones of metropolitan Quito. Agriculture is practised by community groups, families and schools; in centres for the elderly, single mothers, abandoned children, migrants and refugees; in social rehabilitation and health centres; in centres for the disabled and in religious communities. The project has helped establish 1,072 active gardens—including 140 community gardens, more than 800 family gardens and 128 gardens in schools and other institutions—as well as 314 livestock production units. Annual food production is estimated at 400 tonnes.

Project participants include rural people who have migrated to the city and for whom gardening and raising animals is a means of surviving in an often-hostile environment and maintaining their traditional knowledge. Many others are underemployed workers who take up agriculture to save money on food purchases and make extra income from the surplus sales. Around 86 percent of participants are women.

The average income of households joining the project is around US\$350 per month, well below the minimum needed to feed a household, the benchmark for which is set at \$600. Most participants have completed only primary school. Joining AGRUPAR usually requires the formation of a group of at least six people—friends, relatives, neighbours or residents of institutions—who apply for assistance in establishing their garden. They need to have enough space for an in-ground plot or for micro-gardening, access to clean water and the commitment of at least 12 hours a week to care for their crops.

The staff of AGRUPAR then provide seeds and seedlings, conduct technical training on agricultural production and help to develop participants' management skills. People who maintain an active garden can access further training in nutrition, food processing and marketing and the breeding of animals. Between 2004 and 2012, the project provided training for more than 7,350 people. Services are provided under a symbolic pricing policy, with each training session costing \$0.50 per person. The municipality's annual contribution to AGRUPAR—some \$250,000 a year—meets the cost of training,

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<sup>1</sup> This case study draws directly from FAO's <http://www.fao.org/ag/agp/greenercities/en/ggclac/quito.html>. Permission has been granted to reproduce.

technical advice and logistics. It also covers part of the costs of seed, inputs and equipment and animals, such as poultry, guinea pigs and bees. However, whilst Quito's city government remains the main source of funding, around half of the investment in productive infrastructure—such as micro-greenhouses and small sheds for animal husbandry—comes from participants.

The project estimates that 47 percent of garden produce is sold; the rest is kept for home consumption. Participants earn at least \$55/month from the sale of surplus produce and make a further saving of at least \$72/month on food purchases by consuming what they grow. Total savings are 2.5 times the value of the government's human development voucher of \$50/month for vulnerable households.

Market opportunities are also emerging with Ecuador's 'inclusive business' movement, which encourages large businesses to link up with small-scale suppliers, such as farmer organisations—provided their produce meets quality standards, is delivered on time and is accompanied by an invoice. But those opportunities present many urban farmers with a dilemma: entering profitable value chains creates tax obligations and could mean the loss of the human development voucher.

Urban agriculture has helped diversify the diet of urban farmers and their families. Surveys have identified more than 100 types of fresh and processed products in family diets, including vegetables, herbs, roots and grasses, flour and canned meat. AGRUPAR worked closely with researchers to identify and disseminate potato varieties that are better adapted to urban conditions and have high levels of zinc and iron.

## **What's Smart about this case study?**

The project actively promotes production that meets Ecuador's standards for organic agriculture, which require holistic production systems that enhance biodiversity, biological cycles and soil health, prohibit the use of genetically modified organisms and control pests without chemicals. AGRUPAR is registered as a producer/marketer of organic produce nationally and shares the cost of certification with producers.

More than 90 percent of gardens are less than 500 square meters, and a little over half are less than 100 square meters. The cost of establishing a basic urban garden at the smaller end of that spectrum, for organic production, is around \$80, including tools, seed, fertiliser, fencing and access to water. Incorporating drip irrigation and a micro-greenhouse costs an additional \$480. By 2013, drip irrigation systems had been installed in 70 gardens, and growers were using around 100 micro-greenhouses.

Crops grown in the city's *huertas* range from potatoes, maize and quinoa to vegetables—mainly Swiss chard, broccoli, cabbage, tomatoes and carrots—as well as aromatic plants, spices and fruit, such as lemons, passion fruit, babaco and blackberries. Gardeners are encouraged to use environmentally friendly cultivation practices: maintaining soil health with compost and green manure, rotating crops, protecting soil with cover crops and live barriers and irrigating with potable water or harvested rainwater. Animal husbandry is promoted as a source of income, protein and manure.

Where little land is available for horticulture, AGRUPAR promotes alternatives such as vertical gardens on walls and micro-gardening in recycled containers, e.g. bottles, boxes and tyres, which permits food production on terraces, balconies and patios.

Amongst the environmental benefits of urban agriculture is the conservation of biodiversity; some 50 edible plant species are maintained in Quito's urban gardens. In addition, each gardening family recycles on average 12.5 kg of kitchen scraps weekly as compost. An estimated 1,820 tonnes of organic wastes are recycled each year by AGRUPAR project participants. The increased availability of fresh produce also means less need to transport it from rural areas, which generates fuel savings and reduces air pollution.

Since an estimated 30 percent of urban Quito is vacant land, development of agriculture in the city will also require a review of its cadastre to identify municipal areas that could be allocated for agricultural use and measures to extend the concession of urban space to producers.

# Case Study: e-Platforms to drive efficiency, safety and support farmer livelihoods (Supply chains)

## Johannesburg (Joburg) Metropolitan Market

**Policy/project name:** Joburg Metropolitan Market (Joburg Market, 2009; Joburg Market (Pty) Ltd., 2009)

**Location:** Johannesburg, South Africa

**Population:** 3.5 million

**Target group:** Farmers across South Africa

### Aims

To build a smart, fresh produce trading hub that is globally competitive.

Joburg Market is the country's largest food hub that serves about 5,000 farmers from across South Africa. The farmers send their fresh produce to the Market to be traded to a large buyer base, comprising a daily average of about 10,000 retailers, distributing agents for retailers, wholesalers, exporters, processors, caterers, informal traders and those buying for household consumption.

### Implementation

The Market has its origins in what was then called Market Square in the centre of Johannesburg in 1893. As the city grew, the Market also attracted huge volumes of both producers and buyers, prompting authorities to move it to Newtown, west of the city centre.

By 1972, the Market was literally bursting at the seams in the confined space in Newtown, and again there was a need to find a spacious site that would accommodate the expanding producer and buyer base of the Market. Consequently, the city of Johannesburg decided on the present site in City Deep.

Later still, the Greater Johannesburg Metropolitan Council decided that it needed to confine its interests to core activities, a decision that led to the forming of the iGoli 2002 plan.

The Joburg Market, then known as the Johannesburg Fresh Produce Market, was deemed a noncore function of the Metro Council and was corporatised in July 2000, becoming the Johannesburg Fresh Produce Market (Pty) Ltd. The Johannesburg Metropolitan Council, however, remained the sole shareholder of the Market'

By 2009, the Market had become highly successful and a leading player on the African continent in the fresh-produce sector. To enhance its brand and new reputation, a decision was made to change the company name from Johannesburg Fresh Produce Market to a simpler Joburg Market, with a new logo.

### What's Smart about this case study?

Joburg Market serves about 5,000 farmers from across South Africa who send their fresh produce to the Market to be traded to a large buyer base, comprising a daily average of about 10,000 retailers, distributing agents for retailers, wholesalers, exporters, processors, caterers, informal traders and those buying for household consumption.

Suppliers to the Joburg Market (approx. 15,000) are currently registered on their database. Suppliers import a small volume of food from other countries, but most of the produce is grown locally.

Joburg Market provides a sales distribution platform for farmers to sell their produce through the market, offering the physical infrastructure and an information technology system where all transactions (deliveries, sales, returns, etc.) are recorded.

With over one million tonnes of fresh produce traded via the Market every year, the Joburg Market regards protection of consumer safety as 'non-negotiable'. To this end, the Market has introduced a Food Safety Programme to ensure that fresh produce is handled and treated under hygienic, safe and traceable conditions throughout the supply chain. A dedicated quality assurance department manages the programme with qualified inspectors who perform end-point inspections on all products entering the trading floor and products already on the floor for their perishability. Joburg Market has also built an in-house laboratory that routinely tests products for the presence and amount of pesticide residues to ensure that the produce that ends up on the dinner table is safe for human consumption.

Though most of Joburg Market's major producers are GLOBAL GAP (Good Agricultural Practice) certified, most of their small-scale growers are uncertified or may not even have some sort of on-farm G.A.P. system. Joburg Market is now implementing a local GAP so that emerging growers can begin implementing some form of GAP at entry-level and advance to GLOBAL GAP with time.

## Learn more

About Joburg Market: [www.joburgmarket.co.za](http://www.joburgmarket.co.za).

More on this case study and other agri-urban initiatives: [http://urbact.eu/sites/default/files/agri-urban\\_state\\_of\\_the\\_art.pdf](http://urbact.eu/sites/default/files/agri-urban_state_of_the_art.pdf).

Information about Johannesburg's City Development Strategy: <http://mirror.unhabitat.org/downloads/docs/JohannesburgSummary.pdf>.

### Box 4: Virtual food hubs—supporting small producers

#### Business case study (URBACT, 2016)

La Ruche qui dit Oui ([www.laruchequiditoui.fr/](http://www.laruchequiditoui.fr/)) was set up in 2010 in France to provide a web platform for farmers, producers and consumers who want to buy and sell agricultural produce. A weekly message saying what local fresh and processed products are available, and an order can be placed in a reply message and paid via bank transfer. Fresh products are delivered within a day from placing the order by the farmers. The platforms improve the efficiency of local commerce, increase farmers' income and reduce the price of local products due to smaller profit margins, fewer transport and packaging costs and no advertising expenses.

*'Facebook groups enable direct sales with high profit margins for the farmer, quality products at a low price for the consumer and completely transparent supply chains'.*

# Case Study: Planning to support access to healthy food (Consumption)

## Baltimore healthy food environment strategy

**Policy/project name:** Baltimore Food Policy Initiative (Baltimore Food Policy Initiative, 2016; Johns Hopkins, 2018)

**Location:** Baltimore, Maryland

**Population:** 621,849

**Target group:** People living in Healthy Food Priority Areas (1/4 of the residents, 30 percent of all children, African Americans, who have disproportionately low access to healthy food)

### Aims

The Baltimore Food Policy Initiative (BFPI) is an interagency collaboration headed by the Food Policy Director of Baltimore City. Founded in 2010, the initial aims were to 'improve health outcomes by increasing access to healthy, affordable food in Baltimore City's food deserts' and grow the economy by

- Supporting resident-driven processes to guide equitable food policy, priorities and resources.
- Improving small grocery, corner and convenience stores.
- Retaining and attracting supermarkets.
- Increasing the ability of the public markets to anchor the healthy food environment.
- Implementing supply chain solutions that support healthy food distribution and small businesses.
- Maximising the impact of nutrition assistance and meal programmes.
- Supporting urban agriculture, emphasising historically disenfranchised populations and geographies.
- Addressing transportation gaps that impact food access.

### Implementation

In recent news, in January 2018, BFPI released a new food environment report, maps and briefs, which changed the terminology from food deserts to Healthy Food Priority Areas and changed the 'Food Desert Retail Strategy' to the 'Healthy Food Environment Strategy'.

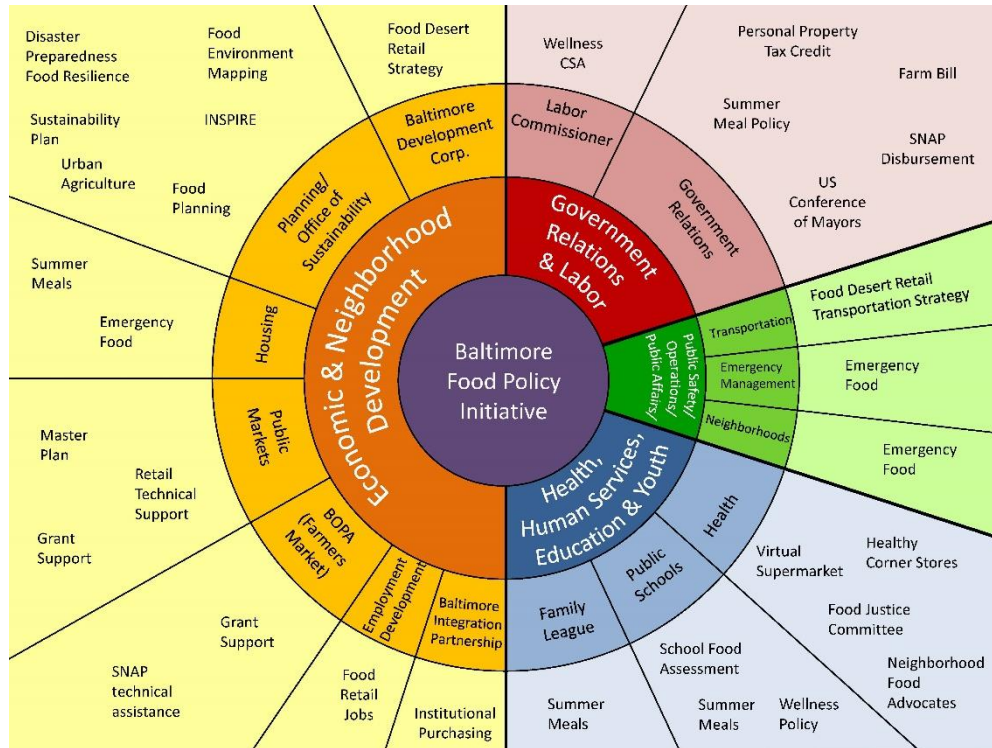
Food Policy Action Coalition (PAC) is the community-based arm of BFPI, and the 60+ members are invested in issues ranging from food policy, food justice, childhood hunger, food access, nutrition, obesity, food retail and research in food systems. Meetings, held six times a year, allow members to share updates, learn from presentations and converse in breakout sessions so they are better equipped for their food systems work.



**Setting up an interagency collaboration**

The BFPI was established in 2010 as an interagency collaboration between the Department of Planning, Office of Sustainability, Baltimore City Health Department and Baltimore Development Corporation to ‘improve health outcomes by increasing access to healthy affordable food in Baltimore City’s food deserts’. **Figure 3** shows how equitable, nutritious, food access is the responsibility of more than one department.

**Figure 3. Contributions to the Baltimore Food Policy Initiative.**



Source: (Baltimore Food Policy Initiative, 2016)

SNAP Supplemental nutrition assistance programme <https://www.fns.usda.gov/snap/supplemental-nutrition-assistance-program-snap>

CSA Community Services agriculture <https://hgbemployeewellnesscsa.wordpress.com/>

BOPA Baltimore Office of Promotion and the Arts <https://www.promotionandarts.org/>

INSPIRE Investing in Neighbourhoods and Schools to Promote Improvement, Revitalisation and Excellence <https://planning.baltimorecity.gov/planning-inspire>

**Setting up a stakeholder group**

Food PAC comprises over 60 organisations and individuals who work across the food system and come together for collaboration and learning six times each year. Organisations currently include non-profits, universities, hospitals, farms, businesses and residents.

**Redefining ‘food desert’**

Many governments do not take the concept of food deserts seriously. In some cities, food access is defined by transport maps, i.e. most people have access to food if they have access to transport. There is no focus on the quality of the food. Baltimore based their definition on the distance to supermarket, median household income, vehicle availability and an ‘average healthy food availability index’. In January

2018, the phrase ‘food desert’ was changed to ‘Healthy Food Priority Area’ to acknowledge the connotations that referring to something as a desert can carry and to broaden the conversation to examine more of the systemic issues that create food-access challenges.

### *Setting up projects to create healthier, more sustainable food systems in areas of need*

As a result of passing a supermarket tax credit, a supermarket was built in a neighbourhood that was previously a Healthy Food Priority Area for over 5,000 residents.

A virtual supermarket was also set up for seniors and disabled residents to order online. Supplemental Nutrition Assistance Program (SNAP) benefits can be used by residents to pay for online food at the time of delivery. SNAP benefits offer nutrition assistance to millions of eligible, low-income individuals and families. The approach being used by Baltimore serves as a model for a national pilot of online SNAP benefit payment.

Homegrown Baltimore is the city government’s urban agriculture programme and includes an employee wellness Community Supported Agriculture programme, farming in vacant areas of the city and support for farmers markets. Efforts are currently focused on ensuring that people can afford the food that is on sale in areas that most need healthier options.

### *Receiving international recognition for work around food access*

Baltimore received the highest honour at the MUFPP Awards in 2016.

### *Focusing on citizen engagement*

Since the release of the 2018 Food Environment Map and Report, Baltimore has focused on citizen engagement to inform the development of its healthier food environment strategy. This includes:

- Engaging Resident Food Equity Advisors (RFEAs) in policymaking.
- Bolstering networks through the Food PAC.
- Supporting nongovernmental and grassroots efforts.

Using food as a lens to understand structural inequalities, the Baltimore Food Policy Initiative engages RFEAs to drive more equitable food-policy outcomes. In 2017, RFEAs became the newest addition to Baltimore’s food-policy structure and now set the policy agenda for BFPI and Food PAC. This process uses resident voices to shape transformative food policies in communities that long have been excluded from equal access to fresh, healthy, culturally appropriate foods.

## **What’s Smart about this case study?**

### *Mapping the food environment*

[The Baltimore Food Policy Initiative](#) works with the [Johns Hopkins Center for a Livable Future](#) to produce food environment maps which support research and analysis of the food system. The maps reveal differential access to healthy food across the city. The Baltimore Food Policy Initiative also produced briefing memos for each [City Council District](#) and [State Legislative District](#) to help inform policymakers. Users of the map can also zoom in to a specific neighbourhood or address and click to identify community food projects, like urban farms.

Baltimore-grown food is highlighted at diverse locations across the city, including high-end restaurants, neighbourhood farm stands, mobile markets, specialty stores and markets that accept SNAP benefits (formerly known as food stamps).

The map also includes photos and links to websites, creating a visual story around agriculture in Baltimore: <https://gis.mdfoodsystemmap.org/map/>.

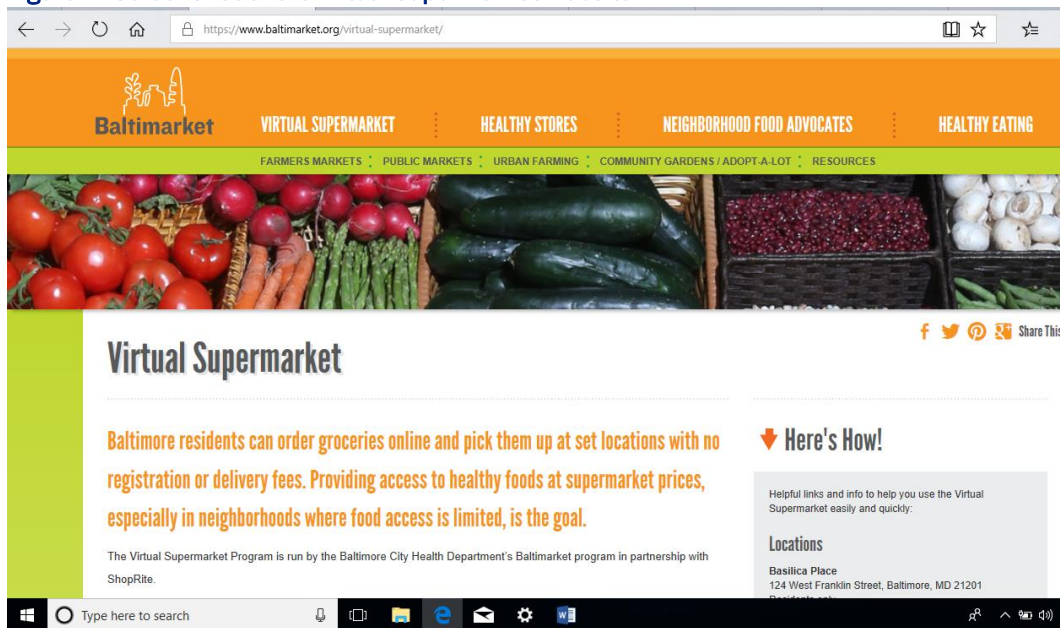
*'Nuanced maps help researchers, policymakers, public health practitioners, planners, community leaders and the business community better understand the realities and complexities of the issue of access to healthy food'.*

[Mapping Baltimore City's Food Environment, 2018 report](#)

### ***Implementing a virtual supermarket***

The virtual supermarket (**Figure 4**) provides a good example of how technology can be used to enable healthier food access even when the users are not technically proficient. The communities identified as having the least access to healthier food are older African Americans. The short video clip explains how an online ordering system was set up for them.

**Figure 4. Screenshot of the virtual supermarket website.**



Source: (Baltimore City Health Department, 2017)

### **Learn more**

Baltimore's most recent Food Environment Maps report: <https://planning.baltimorecity.gov/baltimore-food-policy-initiative/food-environment>.

The development of a Healthy Food Environment Strategy: <https://planning.baltimorecity.gov/baltimore-food-policy-initiative/healthy-food-retail>.

How Baltimore is promoting growing and eating locally: <https://planning.baltimorecity.gov/baltimore-food-policy-initiative/homegrown-baltimore>.

How Baltimore is engaging citizens: <https://planning.baltimorecity.gov/resident-food-equity-advisors>.

# Case Study: e-Platforms to support access to healthy food (Consumption)

## Austin

**Policy/project name:** Austin Healthy Food Access Initiative (Taylor, 2018)

**Location:** Austin, Texas

**Population:** 947,890

**Target group:** African American and Hispanic groups in areas of deprivation, who have poor diet-related health outcomes

### Aims

The Austin initiative goals are to:

- Improve food security and social equity.
- Reduce diet-related ill health amongst target groups.
- Increase supply of and promote demand for healthier food.

### Implementation

- Conducted a Food Environment Analysis of each district in Austin—based on the model set up by Baltimore, working with Johns Hopkins University.
- Passed, in 2016, a City Council resolution to develop recommendations for improving access to fresh, healthy and affordable food and provide a status update on SNAP enrolment.
- Provided grants to food-retail sector.
- Included grocery stores, food hubs, mobile food retailers, farmers markets and neighbourhood food-buying cooperatives for involvement in selling healthy food, particularly in low-income communities.
- Streamlined application<sup>3</sup> for community gardens in deprived neighbourhoods.
- Doubled the value of food stamps (SNAP) for when fruit and vegetables are bought.
- Initially piloted the 'Double Dollar Incentive Program' at farmers markets and extended it to traditional retail. (*The Food Foundation* has produced a report, ['Eating Better for Less'](#), which looks at ways in which fruit and veg consumption can be incentivised with price discounts at point-of-sale, drawing on examples from the United States.)
- Created a nutrition and food health-education campaign through a communications/marketing business, which was then delivered by community development workers.
- Incorporated food access into comprehensive development, public safety and transportation planning efforts to create 'Safe Routes to Markets', which "*prioritises the planning and development*

*of dense, mixed-use, affordable housing and multiple mobility options to ensure that low-income community members have sufficient access to healthy food retailers. In addition to developing new sidewalks, bike lanes and bus routes, the city explored additional avenues for increasing safety in areas that are both high-crime and high-food insecure” (Taylor, 2018)*

- Used a budget for this initiative of \$1.5 million.

### **What’s Smart about this case study?**

Austin’s Healthy Food Access Initiative involved a highly collaborative process and extensive public engagement, as well as research of peer-city best practices to develop recommendations to improve access to nutritious, affordable, culturally appropriate foods.

To increase the efficiency and accuracy of Austin’s Food Environment Analysis study, which is based on the Baltimore City’s collaboration with Johns Hopkins University, Austin modified the ‘Healthy Food Availability Survey’ to better reflect Austin’s unique circumstances and built a digital survey application using Survey 123 for ArcGIS. This allowed for the survey of more than 900 food-retail establishments throughout Austin and surrounding areas in less than three months with minimal data errors. It also allowed Austin to expand the scope of research efforts to include surveys of food pantries throughout Austin, as well as a consumer behaviour survey to assess individual food-purchasing decisions and challenges. Austin’s innovative data collection approach has allowed a more extensive survey than was possible in Baltimore.

### **Learn more**

Office of Sustainability’s info on improving food access in Austin:  
<https://www.austintexas.gov/page/food-system-improving-food-access>.

Recommendations to improve access to fresh, nutritious food in areas experiencing the highest rates of food insecurity: [http://austintexas.gov/sites/default/files/files/Sustainability/07-27-16\\_Memo\\_to\\_MC\\_re\\_Response\\_to\\_Food\\_Access\\_Resolution\\_20160303-020\\_....pdf](http://austintexas.gov/sites/default/files/files/Sustainability/07-27-16_Memo_to_MC_re_Response_to_Food_Access_Resolution_20160303-020_....pdf).

# Case Study: e-Platforms to support healthier choices (Consumption)

## Birmingham

**Policy/project name:** Fast Food Shift – Takeaway (Shift Design, 2013, 2017)

**Location:** Birmingham, UK with insight from Tower Hamlets (Food for Health Awards), Hackney (Just Eat Trial, Healthier Catering Commitment)

**Population:** 1.2 million

**Target group:** Low-income families, often single-parent households earning less than £17,000/year

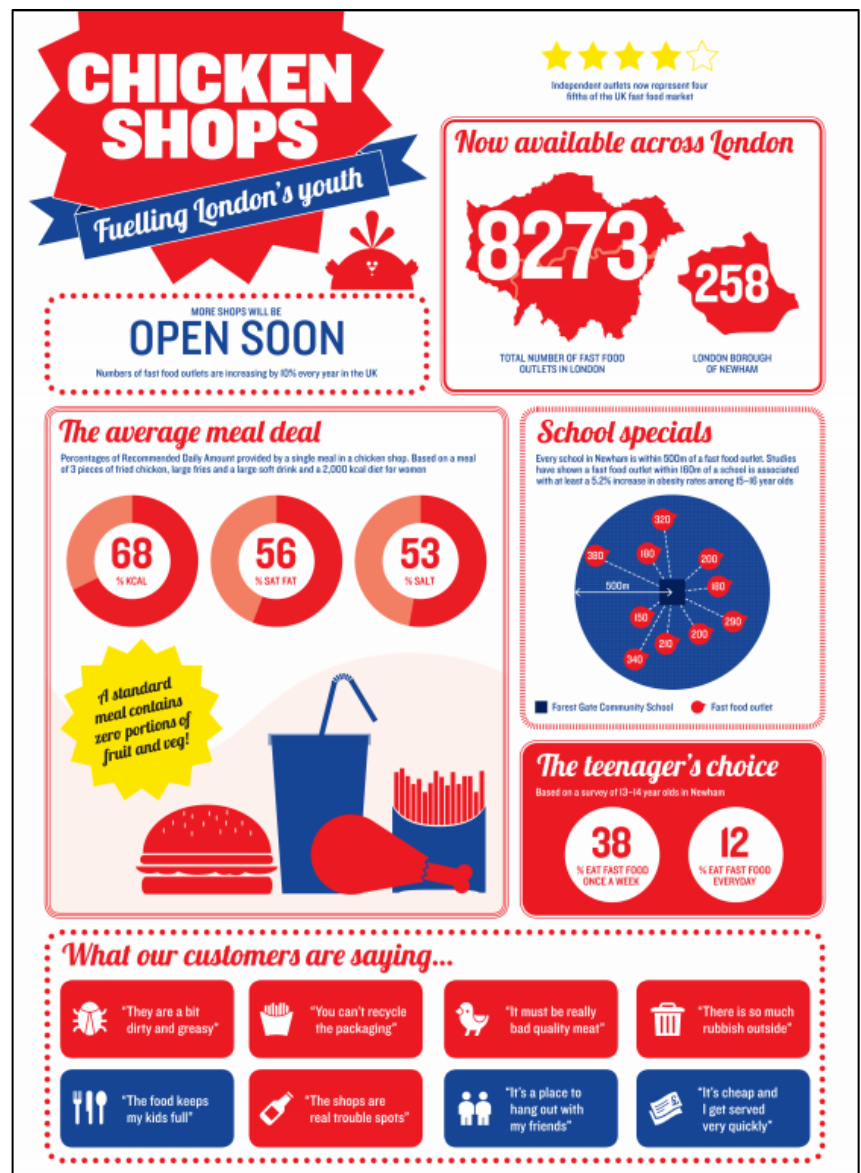
### Aims

Birmingham introduced a Supplementary Planning Document to restrict the growth of the fast food sector around schools. Shift Design was commissioned to support existing providers of fast food to modify the recipes (reduce portion size, total fat and salt) of popular fast food meals, e.g. fried chicken, pizza or kebab meals. The project also aims to introduce new, healthier entrants into the market to dilute the current fast food estate. The infographic (Figure 5) shows the prevalence and effect of fast food outlets.

### Implementation

Shift carried out ethnographic research with target families in Tower Hamlets. Data were collected from week-long food diaries, location mapping, ‘day-in-the-life’ / local walkabouts, ‘eat-alongs’, ‘shop-alongs’, kitchen tours and contextual interviews. The research highlighted ‘need states’, i.e. the motivation for buying fast food as well as the process of purchasing food. The research showed that takeaway food was purchased regularly by

Figure 5. Impact of Fast Food Outlets



Source: (Shift Design, 2013)

most families via online platforms and that the food is delivered to their homes. An internal workshop with industry experts was held to consider healthier alternatives to existing market options. Initial concepts were deconstructed and developed further before being presented to families. A 'market disrupter' is currently being planned and will be piloted in the Birmingham areas.

## **What's Smart about this case study?**

Shift identified that takeaway consumption and the prevalence of restaurants serving fast food are correlated with unhealthy weight gain. All secondary schools in the UK are within 500 meters of at least one takeaway outlet, and the fried chicken market is now worth £15 to £20 billion.

Young people and families are also able to access fast food online, so Shift Design is focusing on developing apps that may disrupt the existing market to encourage healthier choices.

*Takeaway and hot delivered food is increasingly an everyday meal source for families, yet the dishes were meant as occasional treats. How can we accelerate the market's adaptation to provide 'better everyday takeaway'?*

*Chris Holmes, Project Lead, Shift Design*

Shift research identified 'everyday takeaway' as an opportunity space. This is an important acknowledgement at a time when six million consumers are using applications like 'Just Eat' to order in food. Six digital concepts were tested with families. They approved of a concept described as an alternative takeaway service which delivers '*meals full of goodness to satisfy the whole family's craving*'. The application is to be loaded with credit for a family meal plan to allow food purchase for a whole month.

## **Learn More**

Stealthy Healthy Changes: Designing tweaks to fast food outlets to improve health and maintain profits  
<http://shiftdesign.org.uk/designing-changes-fast-food-outlets-improve-health-maintain-profits/>

## Conclusion

This report makes a case for building on the experiences of cities which are improving their food system and/or are becoming Smart and makes a case for Nutrition Smart Cities, which tackle all forms of malnutrition (undernutrition and overweight and obesity) through adopting Smart approaches. Our review found few examples of cities which are adopting Nutrition Smart approaches, though there is a considerable body of experience which can be drawn upon from urban food initiatives and Smart Cities.

The case studies presented demonstrate that Smart approaches can be applied across the supply chain, from enhanced food production in urban and peri-urban areas to the engagement of citizens in the development of food policy, with the goal of improving nutritional outcomes. Moreover, they show that it is possible to align the goals of healthier and more sustainable food systems in multiple ways through city food policy and to do this in a manner which harnesses technological innovation and new sources of data to drive more efficient systems. The case studies show that cities can act in multiple ways, even if they do not have a supportive national policy framework.

Through collaborating on this report, the members of BINDI have made a start on developing their learning partnership. The body of experience globally is developing day by day, and BINDI will undoubtedly uncover new examples that can be learnt from as the partnership progresses.



## References

- Anthopoulos, L. (2017) 'Smart utopia VS smart reality: Learning by experience from 10 smart city cases', *Cities*. Elsevier Ltd, pp. 128–148.
- Baltimore City Health Department (2017) 'Baltimarket Virtual Supermarket Program'. Available at: [https://www.youtube.com/watch?time\\_continue=15&v=QjxmzNiQfnw](https://www.youtube.com/watch?time_continue=15&v=QjxmzNiQfnw) (Accessed: 9 January 2019).
- Baltimore Food Policy Initiative (2016) *Baltimore Food Policy Initiative (BFPI): Organizational Structure*. Available at: <http://ow.ly/zAkk301W6Tu>.
- Copenhagen Capacity (2017) *Smart City in Greater Copenhagen*. Available at: <http://www.copcap.com/set-up-a-business/key-sectors/smart-city> (Accessed: 9 January 2019).
- Copenhagen Smart City Presentation* (2015).
- Dameri, R. P. (2017) *Smart City Implementation: Creating Economic and Public Value in Innovative Urban Systems*. Genoa: Springer. Available at: <https://books.google.com/books?id=BkoWDQAAQBAJ&printsec=frontcover#v=onepage&q&f=false>.
- Economia e Sostenibilità (2016) *Innovative Urban Food Related Solutions*. Available at: <https://foodthecities.files.wordpress.com/2017/01/estc3a0-urban-food-policy-portfolio.pdf>.
- Eriksson, J. G. (2005) 'The fetal origins hypothesis--10 years on', *BMJ (Clinical research ed.)*. BMJ Publishing Group, 330(7500), pp. 1096–7.
- European Commission (2018) *Health Equity Pilot Project (HEPP) Amsterdam Healthy Weight Programme Case Study*.
- FAO (2014) *Quito: Growing greener cities in Latin America and the Caribbean*. Available at: <http://www.fao.org/ag/agp/greenercities/en/ggclac/quito.html>.
- FAO (2018) 'Copenhagen: organic conversion in public kitchens', p. 2018.
- FoodLinks (2013) 'Revaluing Public Sector Food Procurement in Europe: An Action Plan for Sustainability'.
- Hawkes, C., Harris, J. and Gillespie, S. (2017) *Urbanization and the nutrition transition*. Available at: <http://www.ifpri.org/publication/changing-diets-urbanization-and-nutrition-transition>.
- Joburg Market (2009) *Joburg Market food quality meets safety*. Available at: [http://www.joburgmarket.co.za/news\\_14.php](http://www.joburgmarket.co.za/news_14.php).
- Joburg Market (Pty) Ltd. (2009) *Ownership, Joburg Market*. Available at: [http://www.joburgmarket.co.za/aboutus\\_ownership.php](http://www.joburgmarket.co.za/aboutus_ownership.php).
- Johns Hopkins (2018) *Baltimore City's Food Environment Report: 2018 Report*. Available at: [https://www.jhsph.edu/research/centers-and-institutes/johns-hopkins-center-for-a-livable-future/research/clf\\_publications/pub\\_rep\\_desc/baltimore-city-food-environment-report2018.html](https://www.jhsph.edu/research/centers-and-institutes/johns-hopkins-center-for-a-livable-future/research/clf_publications/pub_rep_desc/baltimore-city-food-environment-report2018.html).
- Milan Urban Food Policy Pact (2015) *Milan Urban Food Policy Pact*. Available at: [http://sustainablefoodcities.org/Portals/4/Documents/Milan Urban Food Policy Pact and Framework for Action\\_10\\_06\\_15.pdf](http://sustainablefoodcities.org/Portals/4/Documents/Milan Urban Food Policy Pact and Framework for Action_10_06_15.pdf).
- Milan Urban Food Policy Pact (2016) *Food Smart Cities for Development Recommendations and Good Practices*. Available at: <http://www.milanurbanfoodpolicypact.org/2017/02/22/fsc4d-recommendations/>.
- Milan Urban Food Policy Pact (2017) *Milan Pact Awards 2017*. Available at: <http://www.milanurbanfoodpolicypact.org/wp-content/uploads/2016/11/MPA-2016-winning-good->

practices.pdf.

Public Health England (2017) 'Healthier and more sustainable catering: a toolkit for serving food to adults'. Available at:

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/648743/healthier\\_and\\_more\\_sustainable\\_catering\\_adult\\_toolkit.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/648743/healthier_and_more_sustainable_catering_adult_toolkit.pdf).

Romero-Borbón, D. L., Larios, V. M. and Romero, L. F. (2015) 'Smart Cities white paper Smart Food: Toward an Integrated Supply Chain in a Smart City'. Available at: <https://docplayer.net/12434678-Smart-food-toward-an-integrated-supply-chain-in-a-smart-city.html>.

Shift Design (2013) 'Chicken Shops Infographic'. Available at:

[https://shiftdesign.org/content/uploads/2013/10/SHIFT\\_Infographic-chicken-shops.pdf](https://shiftdesign.org/content/uploads/2013/10/SHIFT_Infographic-chicken-shops.pdf) (Accessed: 9 January 2019).

Shift Design (2017) 'Stealthy Fast Food: Phase 2 Evaluation Report'. Available at:

<https://shiftdesign.org/content/uploads/2017/12/Stealthy-Fast-Food-Phase-2-Evaluation-Report.pdf>.

Taylor, J. (2018) *Austin, Texas Seeks to Make Healthy Food Available for Everyone* NYC Food Policy Center. Available at: <http://www.nycfoodpolicy.org/austin-texas-seeks-make-healthy-food-available-everyone/>.

Tufts (2015) *Belo's Food System: A Food System Planner's Paradise*. Available at:

<https://sites.tufts.edu/belohorizonte/>.

United Nations (2016) *The World's Cities in 2016 Data Booklet*.

URBACT (2016) 'Agri-Urban Baseline Study: The local food in urban forks'. Available at:

[http://urbact.eu/sites/default/files/agri-urban\\_baseline\\_study\\_final.pdf](http://urbact.eu/sites/default/files/agri-urban_baseline_study_final.pdf).

WHO (2014) *Intersectoral action for health*. World Health Organization. Available at:

[http://www.who.int/kobe\\_centre/interventions/intersectorial\\_action/en/](http://www.who.int/kobe_centre/interventions/intersectorial_action/en/).

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