FARMING AND THE CITY: USING AN URBAN LANDSCAPE TO SUSTAINABLY LOCALISE THE FOOD SYSTEM

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ACKNOWLEDGEMENTS

First and foremost, I would like to thank the Winston Churchill Memorial Trust for believing in my passion and giving me the chance and freedom to explore a topic that I feel is important not just on a local level but on a global scale. This once in a lifetime opportunity has contributed to both my professional and personal development of which I’m sure will continue for years to come. My warmest thanks go to the businesses and organisations in the USA who allowed me to observe and learn from their innovative ideas and be inspired by their hard work and determination to change the world for the better. I would like to thank SXSWeco for the generous grant to attend their sustainability conference, and to Food Tank for having me as a delegate at the Farm Tank Summit. To the people I met along the way: from the AirBnb host in Sacramento who put a hand drawn map to the local farmers’ market under my bedroom door, to the Mexican taxi driver in Austin who shared his fond childhood memories of tomato growing; your unique stories and unexpected enthusiasm for my goals kept me focused and energised. And finally to friends and family; thank you for your continued support, and for putting up with my tales of chickens on rooftops and aubergines in parks!
EXECUTIVE SUMMARY

This report presents an overview of urban farming, examples of successful business models, and observations and findings from my seven week WCMT Travelling Fellowship in the USA. I visited twenty six businesses, projects and organisations across five different states to gain a greater understanding of the development of urban farming and researched how shortening and simplifying food systems has a fundamental effect on the community.

The overall aim was to consider how these ideas, models and practices can be applied to the UK to address growing concerns around food sustainability.

FELLOWSHIP OBJECTIVES:

- To witness how farmers and growers are adapting and developing traditional farming methods to sustainably produce and distribute food, and directly shorten food systems in an existing urban landscape
- To gain a deeper understanding of the motivations behind commercial and community urban growing
- To observe the impact urban farming has on communities through both food production and social value
- To explore whether organic growing methods are a consideration when producing food for low income areas
- To investigate what funding options are chosen by commercial scale farms and whether urban farming as a business is financially sustainable
- To expand my knowledge on how urban agriculture fits in to the larger agricultural structure

OVERVIEW OF KEY FINDINGS:

- The urban landscape is a sufficient platform to support the production and distribution of food on both a commercial and community level
- The collective motivation for the development of urban growing on all scales is to sustainably produce healthier food for the urban community
- The benefits of localising food systems goes beyond the health and environmental impact. Urban farming supports the local economy through job creation, urban renewal, and education, and assists in fostering a stronger sense of community
- Organic growing practices are used by the majority of businesses and projects, however due to the complex certification process, not all organisations are officially organically certified
- For commercial scale growing, start up capital primarily comes from private investment and fundraising, and if strong local relationships are built, urban farming has been proven to be financially sustainable
To focus my research, and with clearly defined objectives in mind, I selected specific cities based on their unique specialist area of urban agriculture. The diverse geographical locations assisted in creating an overview of the urban farming movement in America. The route and itinerary was designed to coincide with the late Summer, early Autumn growing season.

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**ITINERARY**
NEW YORK CITY, NEW YORK

With over 8.4 million inhabitants, New York City has the highest population of any city in the United States. Numerous businesses and projects are working with the current infrastructure to develop new ways to produce and distribute food for a growing population, whilst addressing health issues and environmental concern. This has made New York City one of leaders in urban agriculture. My primary aim in New York was looking at the logistics and benefits of rooftop farming.

PORTLAND, OREGON

Portland, a city widely known as the ‘Green Capital of America’ has been designed for liveability through committing to green infrastructure practices and sustainable management. It was the first city in the US to implement an effective climate action scheme which included tree planting policies and green storm water solutions. Portland is committed to supporting local food initiatives and developing the local food movement. My focus in Portland was the farmers’ market networks and looking at how the city connects rural farmers to the urban consumer.

SACRAMENTO, CALIFORNIA

Nicknamed ‘the salad bowl of America’ for its year round Mediterranean growing climate, California’s state capital Sacramento, is the largest agricultural producer in the nation. 1.5 million acres of farms and ranches grow more than 120 crops for markets in the USA and abroad. The ‘Farm to Fork Capital’ is at the forefront of developing and promoting local food systems, offering year round farmers’ markets, a sustainable culinary scene, and a thriving calendar of food focused events. The Sacramento City Council have backed initiatives to support urban growing and it was looking at their urban farming ordinance that I was most interested in during my time in the city. In addition, I was a delegate at the 2016 Food Tank Farm Tank Summit.

AUSTIN, TEXAS

With an estimated city population of 931,830 and over 2 million in the metropolitan area, Austin continues to be one of the fastest growing cities in the USA. Pioneering health food giant Whole Foods opened its first store in the Texas State Capital in 1980, paving the way for what has become an eco-conscious, sustainability focused city. As a grant recipient, my time in Austin was spent attending the SXSWeco conference as well as looking at the city council backed urban livestock and bee keeping ordinance.

CHICAGO, ILLINOIS

Chicago is the third largest city in America with over 2.7 million inhabitants. It is home to many world renowned urban farming businesses who are adapting traditional farming methods to work with the city’s existing infrastructure. These revolutionary models are addressing sustainable food systems as well as tackling food literacy and food injustice in a diverse environment. In Chicago my focus was on businesses demonstrating vertical farming methods.
AEROPONICS

Similar to that of hydroponics, aeroponics is a climate controlled, soil free growing method that supports indoor food production. Rather than the plants sitting in water, the hanging roots are sprayed periodically with a nutrient rich mist, conserving even more energy and water than hydroponics. This method allows plants to be grown in towers and hanging structures which is advantageous in confined areas and unconventional spaces.

AQUAPONICS

Aquaponics is an extension of hydroponics, incorporating aquaculture (fish) to complete a controlled re-circulating system. The nitrogenous waste from fish and aquatic creatures acts as a natural fertiliser for the plants, which in turn purifies the water for the fish. Therefore in addition to harvesting greens, fruits and vegetables, fish too can be cultivated from this system.

COMMUNITY SUPPORTED AGRICULTURE (CSA)

Community supported agriculture is a partnership between the farmer and the community where by the consumer pays an up front fee to support the farm, in exchange for a share of farm produce. The consumer receives fresh, local, produce and the farmer benefits through shared risk, a more stable income and a stronger relationship with the community.

ORGANIC FARMING

Organic farming refers to a method of crop and livestock production free from artificial and chemical herbicides and pesticides, growth hormones, genetically modified organisms and antibiotics. Organic methods support natural ecosystems and consider soil health, animal welfare and environmental impact.
As consumers in the western world, we are accustomed to all foods being available to us at all times. Year round the supermarkets are fully stocked with fruits, vegetables, meat and dairy products which all originated from a farm. Each food item has been on a specific journey to get from the farm to the plate and over the past five decades these food systems have grown longer and more complex due to the development of intensive farming methods used to counteract an expanding global population.

The origins of intensive farming stem from the post World War II Green Revolution, where research and advancements in agricultural technologies expanded food productivity to an industrial level. What began as an effort to produce high yield varieties of crops for famine stricken countries expanded into global scale food production including monoculture, factory farming and crop engineering methods. Large scale production requires large scale distribution, with produce now travelling across countries and continents to reach the consumer.

Large scale food systems unfortunately have had a detrimental effect on the environment. Industrial food production uses considerable amounts of chemicals, fossil fuels and freshwater resources and produces high amounts of greenhouse gases which are a contributor towards climate change. The chemical fertilisers and genetically engineered seeds contribute to loss of biodiversity and in some cases, the contamination of water sources. Large scale food distribution requires an excessive number of vehicles to transport food across borders and oceans, again depending on fossil fuels and releasing greenhouse gases into the atmosphere. Industrial food systems have a high dependency on oil. Therefore the price and availability of our food is dictated by the price and availability of oil.

Aside from production and distribution there are many other elements to the food system which may not automatically be considered by the consumer due to lack of transparency by large agri-businesses and retailers. Animal welfare, antibiotic use, workers rights, organics, harvesting, processing, packaging, pricing, labelling, marketing, waste, political climate and economic impact are all relevant elements to consider when choosing what food to buy and where to buy it from.

"THE INDUSTRIAL FOOD SYSTEM IS DESTROYING NATURE AND HUMAN HEALTH AND MUST BE STOPPED IF WE DON'T WANT TO FACE A HUGE COLLAPSE. IT CONCENTRATES WEALTH, EXTRACTS RESOURCES, EXPLOITS HUMANS AND LIVESTOCK, AND FOSTERS DIET-RELATED DISEASE"

Michael Dimock
Urban Farming is the method of producing and distributing food in a city or heavily populated area to feed local inhabitants.

Growing in cities is not a new concept. During World War I and World War II, ‘Victory Gardens’ or ‘War Gardens’ were planted on private and public land in an effort to ease the pressure on public food supply. Not only did these gardens grow food for urban residents but they contributed to uniting communities during a time of adversity.

Over the past decade the interest in urban agriculture has grown dramatically as an advocacy response to the unsustainable systems of intensive agriculture. Sourcing from local growers and producers teaches the consumer to eat seasonally and builds a bond between the food, the farmer, the consumer and the community.

There are many benefits to urban farming and urban agricultural practices, primarily from shortening and localizing the food system. Bringing the grower and the consumer closer together not only reduces the impact on the environment, but increases the availability of fresh, healthy produce while supporting and investing in the local economy.

With regard to health, close to 38% of adults in the USA are obese. Since 1980, the childhood obesity rates (ages 2 to 19) have tripled — with the rates of obese 6 to 11 year olds more than doubling (from 7% to 17.5%) and rates of obese teens (ages 12 to 19) quadrupling from 5% to 20.5%.¹ Obesity levels in the UK have more than trebled in the last 30 years and, on current estimates, more than half the population could be obese by 2050.² A contributing factor to the rise in obesity rates is the lack of access and availability to healthy food. Food produced through intensive farming is generally processed to enable a longer shelf life due to the time it takes from harvest, through processing, packaging, distribution, retail and to finally arrive on the consumer’s plate. Also a lack of education around healthy food choices, and an increase in the availability of unhealthy food products is also a factor. According to a recent report by the UK Government’s Foresight Programme, ‘studies have shown the environment has a major influence on the decisions people make about their lifestyle. Known as “obesogenic environments”, these are places, often urban, that encourage unhealthy eating’.³

The employment, education and lifestyle opportunities draw people towards metropolitan areas. Currently 82.6% of UK inhabitants and 81.6% of USA inhabitants live in urban areas.⁴ More than half the global population live in cities, with this expected to rise by a further two billion in the next twenty years.⁵ If we are already struggling to provide enough healthy food to city residents, how are we expected to cope as this number keeps rising?

In addition to diminishing health rates, and a growing population, we only have approximately a three day supply of food in our supermarkets and food stores at any one time. Unpredictable weather, natural disasters, fuel shortages and strikes could wipe out our food supply on a national scale. Therefore finding sustainable ways of producing food in cities and towns could have a major impact on urban food security, by providing consistent year round access to safe, local, affordable food.
BROOKLYN GRANGE

Brooklyn Grange operate the world’s largest soil based rooftop farm over two unique sites in New York City. Constructed in 2010, the flagship farm in Long Island City sits on the roof of the 43,000 square foot, six story Standard Motor Products headquarters, a building owned by film maker and businessman Jeff Rosenblum. The second farm occupies a larger space of 63,000 square foot at the historic Brooklyn Navy Yard. Between the two sites, Brooklyn Grange produce over 50,000 pounds of fresh, organic produce a year which is sold through two farm stands, a hyper local CSA, and wholesale to over twenty restaurants in the city.

Following the economic crash of 2008, a small group of New York residents abandoned their corporate jobs to fight for a better food system by finding an environmentally supportive way of growing food in the most densely populated city in America. Shying away from the constraints of being a registered not for profit, the Brooklyn Grange team ambitiously planned for a commercially sustainable business from the outset, raising capital through fundraising and small private investment.

Finding an initial site had its challenges with essential criteria that needed to be met. This included size, access, sun exposure, and most importantly a structure that could hold the weight of 1.2 million pounds of saturated soil. Additionally, finding a landlord who understood the concept was an equal challenge.

Fortunately there are benefits for both the building owner and the city to having a farm on an urban rooftop. The green roof system at the flagship farm consists of a root barrier layer, separation fabric, drainage plates, filter fabric and 8” of Rooflite intensive care soil, and acts as an effective insulator for the building below. The farm keeps the building cool in the Summer and warmer in the Winter reducing energy consumption and associated costs. In addition urban green roofing reduces the amount of waste water flowing into the city’s waterways and is an aid in storm water management. The two farms manage over one million gallons of storm water each year.
With a mission to increase public awareness of food and farming issues, Brooklyn Grange continue to expand and develop the business. In recent years they have launched an urban apiary, placing over forty beehives on rooftops across New York City. They produce their own brand of honey, as well as providing an installation, training and an apiary maintenance service.

Workshops, events, and private hires boost the farm’s revenue stream as well as acting as an outlet to promote their business goals and objectives. The team have become experts at developing strategic partnerships to drive forward their mission through advocacy and social justice. The two registered non profits City Growers and The Urban Farm Recovery Project are great examples of how Brooklyn Grange use commercial profit to benefit the community through social support and education.

After successfully operating for over seven years, not only is Brooklyn Grange contributing to local food sustainability, but the farm founders are specialists in their field, providing global green consultancy services, and supporting worldwide advances in urban farming.

CHICAGO O’HARE AIRPORT

In 2011 Chicago O'Hare became the first airport in the world to incorporate an aeroponic farming system into their infrastructure. On the mezzanine level of terminal 3 they use 26 towers to grow a range of pesticide and chemical free greens and vegetables including habanero peppers, swiss chard, green beans, purple basil and edible flowers. The Tower Garden aeroponic towers require 90% less space and water than soil based growing methods⁶ and from this intimate area, O'Hare are able to harvest between 10 and 15 pounds of produce a week. This low maintenance system supplies a number of on site restaurants, providing fresh local, organic food to travellers and staff passing through the airport.

As one of the busiest airports in the world, these towers alone cannot reach the demand of the quantities needed by all restaurants, however a secondary benefit to the farm is education. This publicly accessible tower garden is an invitation for visitors to learn about alternative growing methods and the importance of consuming locally sourced foods. According to the City of Chicago Department of Aviation, 'Producing and purchasing locally grown foods supports their commitment to sustainability by strengthening the local economy and job market, providing a unique learning opportunity for travellers, and reducing urban sprawl, traffic congestion, habitat loss, and pollution from the transportation of produce'.⁷

In addition to the aeroponic farm, in 2011 O’Hare became the owners of the first major on-airport apiary in the USA. An area of previously un-developable land is now home to over 75 beehives and one million bees. To date the apiary has produced over 1600 pounds of honey which is used in the restaurants and also packaged for purchase in the airport shops. The Chicago Department of Aviation partnered with the North Lawndale Employment Network (NLEN) to create a programme providing green industry job training and work experience for ex offenders and disadvantaged people. In addition to producing local honey and creating a habitat for bees to thrive, this particular programme has helped over 400 Chicago men and women get back into work.
In 2011 Gotham Greens opened the first commercial scale urban greenhouse facility in the United States with a 15,000 square foot hydroponic rooftop farm in Greenpoint, Brooklyn. Rejecting conventional soil based growing methods, Gotham Greens favour innovation, technology and science to tackle ecological issues in the food system. The hydroponic system enables the same amount of greens to be grown in a half acre rooftop greenhouse as on a 10 acre conventional farm. Around 15 different varieties of salad greens, herbs and tomatoes are grown and distributed directly to over 20 local restaurants and over 150 retailers and partners within a 50 mile radius of the farm sites.

Gotham Greens have a 24 hour turnaround from farm to shelf making freshness the primary selling point for their produce. In the colder months New York primarily imports leafy greens from California or Mexico which compromises on food freshness and quality, as well as having a high environmental impact. Therefore a further advantage of growing in this innovative way enables the company to produce greens for 12 months of the year, consistently providing local fresh food for the community.

Food system transparency is a much debated global topic, with retailers and consumers becoming increasingly interested in both the production and ethical elements of the food journey. Gotham Greens take pride in both their values and methods labelling every product ‘Greenhouse Grown’, ‘Pesticide Free’, ‘Sustainable Agriculture’, ‘Urban Farming’ and ‘Premium Quality’ which inadvertently provides the consumer with a food literacy education.

The success of their flagship farm above the Greenpoint Wood Exchange building attracted positive attention from farmers, environmentalists and press around the globe. The second farm emerged from a ground breaking partnership with worldwide natural food retailer Whole Foods, to become the first ever commercial rooftop farm to be integrated into a retail store. The 20,000 square foot greenhouse sits on the roof of a two story supermarket building in the middle of a residential area in Gowanus, Brooklyn. Incorporating a farm into the production, distribution and direct to consumer retail element has created possibly the shortest commercial food system possible. The greens are grown, harvested, and packaged in the rooftop greenhouses, then sold two floors below on the shelves of the supermarket. This method requires minimal labour, has no impact on the environment through transportation and distribution, and offers the customer the freshest produce possible.

Between 2014 and 2016 Gotham Greens were able to expand to a further two sites, totalling 170,000 square feet of rooftop growing space. For their fourth farm, Gotham Greens expanded beyond New York occupying a 75,000 square foot space on the roof of the Method Product manufacturing plant in Chicago, a company specialising in eco-friendly cleaning goods. The greenhouse represents the world’s largest and most productive rooftop farm to date producing over 10 million lettuce heads annually.
Grassroots not-for-profit Growing Power is an established food justice organisation, founded in 1993 by urban agriculture revolutionary Will Allen. Allen’s mission to provide community access to healthy, safe and affordable food has successfully addressed food insecurity and unemployment in under supported neighbourhoods. Growing Power deliver youth training programs, internships and employment opportunities in a vast range of agricultural areas including anaerobic digestion for food waste, bio-phyto remediation and soil health, aquaculture closed-loop systems, vermiculture, small and large scale composting, urban agriculture, permaculture, food distribution, marketing, value-added product development, youth education, community engagement, participatory leadership development, and project planning.

Growing Power currently have over fifteen urban farm sites and an extensive list of outreach projects and partners throughout Milwaukee and Chicago. Iron Street Farm in Bridgeport, is an impressive example of productively adapting an existing urban landscape to produce food for the community. The farm is based in an old industrial area of South Chicago and uses a variety of both traditional and innovative growing methods. Land and hoop houses are used conventionally for growing vegetables, raising chickens, and housing bees, whilst an on site three story building is used for extensive vermicomposting, mushroom production and aquaponics. Across the sites, Growing Power produce more than one million pounds of fresh micro-greens, fruits and vegetables year round.

For many years, Will Allen has been pioneering a vertical farm concept that would have a major impact on the urban farming movement. Allen’s vision of a 27,000 square foot five storey vertical farm would address horizontal land mass issues to tackle food safety and food sovereignty in urban areas, and could be replicated in cities worldwide. Although designed by architects and city planners in 2010, this ambitious project has not developed beyond the technical plans due to lack of financial investment, however it projects that larger scale vertical farming is on the horizon.
The first farmers market in Portland was organised in 1992 by three local activists, with only thirteen stalls in a city car park. Twenty five years on, the registered non-profit organisation Portland Farmers Market (PFM) manage over two hundred vendors and seven market sites within the city limits. PFM operate direct to consumer markets meaning customers are buying directly from the farmers and producers. Urban residents are supplied with locally-grown, locally-made and locally-processed produce of which 80% is sourced from within a 100 mile radius of the city. This includes grains and nuts, dairy, fruits and vegetables, meats, fish, flowers and plants and preserves.

PFM employ a team of paid staff and volunteers to successfully deliver the organisation’s mission and objectives. Even though they operate as a non-profit, the organisation’s primary goal is to make the farmers as much money as possible, to maintain this sustainable method of providing food to the urban community.

The market systems and policies have been designed to benefit both vendors and customers whilst promoting best practice. Current and prospective vendor applications are submitted annually, outlining what they wish to sell and how. This enables PFM to assess whether the vendor is a fit for the markets on a basis of product type, pricing and ethics. If successful the vendor is given a minimum of two months notice allowing sufficient time to plan for the upcoming growing season. It is in the terms of the contract that all applicable vendors must accept Supplemental Nutrition Assistance Program (SNAP) benefits to encourage all members of the community to shop, regardless of financial status.

In terms of operations, PFM manage permits, licenses, street closures, contracts and marketing. Strong relationships have been built with the City who act as a landlord for certain sites. As an alternative, finding private land to host markets is favourable not only because less paperwork and permits are required but it can benefit the business or land owner by bringing guaranteed foot flow to their area.
Farmers’ markets are a sustainable way to bridge the urban/rural agricultural divide. In both the USA and UK, the number of rural farms are steadily decreasing, particularly family, and small scale businesses. According to a 2014 report by the United States Department of Agriculture, the number of farms has dropped from 6 million in 1935 to roughly 2 million in 2012. With large scale agriculture continuing to expand, (2.2% of the USA’s farms occupy a third of the country’s crop land), small and medium scale farmers need dependable income to avoid closure or having to sell their business to a large agri-corporation. Farmers’ markets help keep family and small scale farms in business by providing a direct route to sales. A well managed market which is supported by the city and local council will continue to grow its customer base, which as a result will continue to support the urban residents, the rural community and the local economy.

THE CANNERY

Based in the city of Davis in the Sacramento Valley, The Cannery is the result of almost a decade of planning between the City of Davis, The New Homes Company and the Centre for Land Based Learning. The 100 acre site sits on the former Hunt-Wesson tomato packing plant and has been transformed into a revolutionary housing project which pays homage to the area’s rich farming history.

Progressing far beyond the ‘American gated community’ concept, this radically designed residential development is centred around sustainability and environmental consciousness. Each of the 547 houses and apartments are equipped with solar power, tank-less water heaters, LED lighting, electric vehicle charging stations, bicycle storage and 30% of the land has been designed as usable green space with parks, picnic areas and ten miles of bike trails. To further minimise the impact on the environment by reducing the reliance on cars, coffee shops, restaurants and small stores have been built into the six on site neighbourhoods. Taking this one step further, the planning teams and designers have incorporated a 7.4 acre urban farm into the Cannery site, making it California’s first farm to table community.

The New Home Company donated the land to the City of Davis who lease it to the Centre for Land Based Learning (CLBL). The CLBL are an award winning organisation who have spent over two decades cultivating opportunity for youth and promoting a ‘healthy interplay between agriculture, nature and society’. The CLBL converts both publicly and privately owned vacant lots into urban farm incubators for graduates of their beginner farmer programme, providing low cost land leases, equipment, mentoring, and peer to peer support. The urban farm at the Cannery is managed by two former graduates, Hope Sippola and Shayne Zurilgen.

Hope and Shayne, who operate under the name Fiery Ginger Farm, grow organic fruits, vegetables, flowers, raise poultry and keep bees. The produce supplies local restaurants, two on site weekly farm stands and a CSA. The CSA quarterly membership consists of 13 weekly veg boxes costing $30 a week for 8 - 10 pounds of freshly picked vegetables and eggs. Being part of a CSA builds direct links between the farmer and the community, providing the consumer with a first hand education on local produce and food systems. In this case residents have the added value of observing the food growing in their neighbourhood day by day before it is picked, distributed and consumed. In addition to the farm, the original ‘cannery’ barn has been renovated into an attractive communal space which hosts community events and gatherings. This ‘agri-classroom’ regularly holds workshops such as bee-keeping and cooking lessons for residents to partake in.
Urban farming organisation Growing Power are not only successfully and sustainably growing food in an urban landscape, but they are taking a fresh distribution approach to servicing food deserts in the Chicago area. A food desert is a region where the community has no access to fresh, nutritious produce, relying only on convenience stores, fast food restaurants, liquor stores and petrol stations for food. This is currently affecting over 23.5 million Americans and over half a million people in Chicago alone. Aside from having less access to fresh food, those living in food deserts have a higher risk of diabetes, heart disease, and obesity.

With financial backing from farm to fork retailer Sweetgreen, and two vehicles donated by Chicago Mayor Rahm Emanuel, Growing Power transformed two out of service Chicago Transit Authority buses into Fresh Moves Mobile Markets. Loaded with Growing Power farmed produce, these mobile farmers’ markets distribute fresh food directly to the people who need it most. The buses drive through under-served neighbourhoods stopping at parks, health clinics, schools and housing institutions. Some communities in these areas have a 20% unemployment rate, and 42% of people are living in poverty. To make the food more affordable, the Fresh Moves Mobile Market welcomes the Supplemental Nutrition Assistance Program (SNAP) benefits for fresh fruits and vegetables. In addition to accepting the government food scheme, Growing Power price in relation to the consumer. By charging a small premium to restaurants and consumers at farmers’ markets in affluent neighbourhoods, Growing Power can afford to lower the price of their produce in low income areas.

Many argue that in low income areas, healthy food can’t compete with cheaply priced meals from fast food outlets. However, the success of this project proves that under-supported communities will buy fresh produce if they have access to it and this should encourage fresh food retailers to invest in low income urban areas.

“FAR FROM BEING A “LUXURY FOR THE RICH”, ORGANIC FARMING MAY TURN OUT TO BE A NECESSITY NOT JUST FOR THE POOR, BUT FOR EVERYONE”
Raj Patel
THE PLANT

Built in 1925, the four storey, 93,000 square foot building now known as The Plant, functioned as a pork meat processing facility for over 85 years in an area of South Chicago which was once the largest meatpacking district in America. After being vacant for three years, John Edel of Bubbly Dynamics purchased the building in 2010 and used his experience of sustainable urban industrial development to transform this abandoned warehouse into the world’s first closed loop vertical farm.

The Plant is currently at 60% capacity with sixteen independently owned businesses residing on site. These include an aquaponic farm, a brewery, a spice distributor, a mushroom farm, a kombucha distillery, a bubble-less ice company, a flower farm, a coffee roastery, an apiary, a bakery and multiple outdoor vegetable farms.

The foundation of The Plant is built on the concept of circular economy and a closed loop system. Every element contributes to an overall self sufficient system that is sustainable, resourceful and creates zero waste.

In the construction stage, Bubbly Dynamics kept as much of the original structure as possible, preserving not only a building that was destined to be demolished, but reusing materials and internal fittings to reduce non recyclable material going to landfill. For example, all original tiling and ventilation has been kept in it’s original state and machinery such as the original meat smokers from the factory have been re-purposed into kitsch metal bathroom cubicles.

The heart of the operation is the anaerobic digester that processes on average 30 tonnes of food waste a day to create enough energy to power the entire building. The digester uses micro-organisms to break down biodegradable matter which produces biogas. This powers a turbine generator to create electricity, as well as providing gas for the heating and cooling systems. The remaining solid waste is used for fertiliser on the outdoor farms.

IS THIS THE FUTURE?
For a business to be accepted at The Plant they must productively contribute to the closed loop system. Current examples include:

- The coffee bean shells from the roastery are used as a growing medium on the mushroom farm
- Spent grain from the brewery is pressed into blocks to replace wood in the ovens at the bakery (in the trial phase)
- Waste ice from the bubble-less ice company is used to maintain a low temperature on the mushroom farm
- Chickens eat vegetable scraps from the outdoor farm. Their waste is used as fertiliser for further plant growth and the eggs are used in the bakery
- CO2 is a wasteful by-product of the brewery which is advantageous to plant growth. A future aim is to channel the CO2 through pipes to a further aquaponic farm in a greenhouse on the roof where it can aid plant production

As well as trading with local restaurants and supermarkets, The Plant holds regular farmers’ markets selling all on site produced food and products directly to the public. The large inner city food desert in which the business is located, greatly benefits from this short local food system which provides the community with better access to healthier, locally grown food.

An additional way that the Plant supports the local economy is by creating jobs in an ‘economically distressed neighbourhood’. It is also an incubator for start ups and micro businesses, and a research and food education centre. The Plant operates under a social-enterprise model, with a non-profit side and a for-profit side and was initially supported by $1.5 million in grant money from the Illinois Department of Commerce and Economic Opportunity. At each stage of expansion, the Bubbly Dynamics team launch a wave of public crowdfunding to allow the local community and larger Chicago area to be involved in the development of the business.

Construction continues at The Plant as they seek further independent businesses with innovative solutions for sustainable and waste-free food production. By operating on a local level with the city council, and by collaborating with small independent businesses, The Plant is a practical example of environmental and economic sustainability which is only possible in an urban landscape.
SNAP

The Supplemental Nutrition Assistance Program (SNAP) is a US Government entitlement scheme to address domestic hunger and rising health issues, assisting over 45 million low income citizens to make healthier food choices.¹⁴ The benefit is issued via an electronic benefits transfer card (EBT), similar to a debit card, which is accepted in all 50 states by authorized retailers. The scheme has strict guidelines, only allowing the purchase of breads, cereals, fruits, vegetables, meats, fish, poultry and dairy products, to encourage nutritious meals aimed be cooked in the home. SNAP recipients are unable to purchase alcohol, cigarettes, non-food items or pre-prepared hot food with their EBT card.

The United States Department of Agriculture (USDA) developed an incentive to encourage SNAP recipients to not only purchase healthier food, but to buy fresh produce from local farmers and producers. EBT credit can be exchanged for ‘bonus’ money in token form, giving the individual more to spend if they choose to shop at participating farmers’ markets. The scheme is administered by individual states therefore the bonus differs slightly depending on the funding each state secures. In 2016 and 2017 the Oregon Farmers Market Fund secured a ‘Double Up Food Bucks’ grant of $500,000 allowing Oregon farmers markets to double the recipient’s credit, with a maximum bonus of $10 per day. Therefore $10 of government benefits can mean tokens to the value of $20 to spend at a farmers’ market. Not only does this benefit lower income citizens by enabling them to purchase high quality, organic, fresh produce, it supports both the farmers and the community by putting the money back into the local economy. The scheme benefits the farmer by attracting more consumers to the market, and in return the consumer is provided with healthy, locally grown food at an affordable price.

Each year program participants spend roughly $70 billion in SNAP benefits, including more than $19 million at farmers’ markets.¹⁵ As reported by the Farmers Market Coalition, this number has grown rapidly over the past 8 years proving that farmers’ markets are an effective way to distribute healthier food to the community, regardless of financial status.
SACRAMENTO URBAN FARM ORDINANCE

In 2015 the Sacramento Urban Agriculture Coalition (SUAC), a collection of urban farmers and non-profit organisations, proposed an ordinance to the County that had the potential of increasing local food production within the city limits by allowing citizens to grow and sell produce on vacant plots and their own private land. Part of the motivation behind the ordinance was to address food deserts and low income areas of the city which offered little or no access to affordable fresh produce. According to a 2010 report from the California Food Policy Advocates, 3.25% of the city’s population is on the Supplemental Nutrition Assistance Program (SNAP) and in terms of access, the ratio of supermarkets to convenience and fast food restaurants in Sacramento County is 1 to 5.

The goals and policy considerations of the ordinance included:

“ER 4.1: Urban Agriculture and Access to Locally Grown Foods. Expand urban agriculture and food production and increase the distribution and sale of locally grown fresh food.

ER 4.1.1 Community and Rooftop Gardens. The City shall provide incentives for developers to include community gardens and rooftop gardens in new development projects.

ER 4.1.2 Local Food Production, Distribution, and Sale. The City shall promote urban agriculture with zoning provisions that support means for production, distribution, and sale of locally grown foods, such as market gardens, farmer’s markets, community markets, and farm stands, particularly in areas that have vacant or underutilized land.

LU 8.2.7 Locally-Grown and Organic Foods. The City shall allow urban farms and market gardens at a scale that is appropriate to Sacramento’s neighborhoods, particularly in areas that lack access to fresh healthy foods, and have vacant or underutilized land”

The Urban Agriculture Incentive Zone Ordinance was passed on 6th August 2015 in a 6-1 majority vote from the Council. Where previous public policy relating to urban growing was unclear and restrictive, the new law allowed not only urban farmers, but citizens in certain city zones to sell home grown produce to the community with the incentive of property tax reductions. After further campaigning by the SUAC, an additional county-wide urban agriculture ordinance was unanimously passed on 27th January 2017 legally expanding farming rights in the city.

The latest ordinance allows urban agricultural stands under 120 sq. feet in area with a temporary use permit, and over 120 sq. feet in an area with conditional use permit, to sell produce, eggs, honey and other goods on the site of a private market or community garden.

This ordinance also legalises keeping bees, chickens and ducks on small lots. For educational purposes, larger animals, such as cows, goats and sheep can be kept temporarily on lots under 20,000 square feet.

As an initial incentive, the County are waiving the $31 permit fees for the first year, which will serve as a testing period for the new regulations. In addition to this, the Sacramento Urban Agriculture Coalition are running specific events to teach residents how to run a successful farm stand and lessons on urban chicken and bee keeping.
Hells Kitchen Farm Project (HKFP) is an urban farm and education facility at Metro Baptist Church in Midtown Manhattan in NYC. In 2010, four organisations - Clinton Housing Development Company, Metro Baptist Church, Rauschenbuch Metro Ministries and Metropolitan Community Church - came together to address the lack of affordable healthy food options in an area packed with fast food chains and restaurants. The solution was a rooftop farm.

Unlike the large scale production methods of Brooklyn Grange and Gotham Greens, HKFP grow over 20 varieties of fruit, vegetables and herbs in 52 plastic children’s paddling pools on the roof of Metro Baptist Church. Over 300 pounds of produce is grown every year and split between the farm CSA and the food pantry, which is coordinated by Rauschenbuch Metro Ministries. Aside from the fresh produce grown on the rooftop, the pantry receives bread, dairy, and tinned donations from a number of local businesses, food banks and charities. According to NYC Department of Health, up to 6% of the residents in the Hell's Kitchen neighbourhood have diabetes and up to 18% are obese¹⁷ therefore the fresh fruit and vegetables from the rooftop farm are a vital addition to the staple food donations.

The food pantry provides emergency food assistance for over 700 people a month who have limited or no means to secure food. Food is issued according to family size and certain products such as cartoned milk are reserved for the homeless and those with young children. The fresh rooftop grown vegetables are shared fairly however due to increased demand, they are available on a first come first served basis. A recent change in government policy brought negative changes to the Supplemental Nutritional Assistance Program in certain states. This directly affected over 15,000 New Yorkers, meaning a growth in attendees at the food pantry, therefore stretching the farm’s aim to offer a three day supply of food for all.

The organisers refer to the community as ‘customers’, volunteers as ‘clients’ and the pantry as ‘the store’. ensuring regardless of age, ethnicity or social situation, everyone is treated with dignity. HKFP provides a safe, supportive environment which in addition to supplying food, offers social assistance by inviting the likes of tax specialists and healthcare providers to speak with the group. Between the farm and the pantry there is only one paid member of staff, the rest being volunteers. With green space and growing opportunities a rarity in NYC, HKFP attracts volunteers who enjoy gardening, who want to give back to the community, and who appreciate the green oasis in the built environment. HKFP receive extra assistance through corporate social responsibility programs and by providing corporate volunteer days for large local businesses.
ECONOMIC DEVELOPMENT

Purchasing food from large chain supermarkets sends consumer’s money out of the city, whereas local food production keeps money circulating in the community. A pound spent at a farmers’ market goes directly into the hand of the farmer who will spend that money on seeds or compost to grow food for the following season. Money spent in this way enables farmers and producers to be financially sustainable which allows them to expand and create more jobs for local people. More jobs means less unemployment, and financially sustainable businesses creates a stronger economy.

JOB CREATION

Localising the food chain creates ample opportunity for job growth in the agriculture sector. New York urban farm Gotham Greens are improving local food chains by substantially producing and distributing fresh organic food, but in addition to this they are supporting economic growth and job security within the urban community. In 8 years over 140 jobs, 100 of which are full time, have been created primarily for residents living in close proximity to their farms. These jobs range from growers, to delivery drivers, to scientists to marketing experts. Other roles that urban agriculture can bring fall within the sectors of education, construction, retail, architecture and design, as well as food advocacy and food policy.

TOURISM

Whether a commercial urban farm, a community food garden, a farmers’ market or an educational food hub, urban agriculture attracts locals and visitors alike. Due to logistical requirements or community needs, urban farms and farmers’ markets are often based in diverse or unconventional locations. This is beneficial by bringing tourism to previously unseen areas of the city. Green tourism is on the rise and is important to the development of cultural capital. In peak season, the Union Square Greenmarket draws 60,000 shoppers a day. In a recent survey, 82% cited Greenmarket as the primary reason for their visit, and 60% spend up to $50 in area businesses.¹⁸
URBAN RENEWAL

Economic development through urban farming revitalises previously under-supported areas of the city. In addition to this, increasing the area of dedicated green space in urban neighbourhoods has a positive impact on the community. For urban residents without a private garden or outdoor space, dedicated community growing areas support both physical and mental wellbeing, whilst acting as an area for social interaction and communal activities.

ENVIRONMENTAL EDUCATION

Without education, the growth of urban agriculture wouldn’t be possible and local food systems would be unsustainable. Through leading by example, all urban farms and growing projects incorporate consumer education into their ethos. City Growers is a not for profit that engages with around 17,000 NYC youths a season through farm workshops, summer camps, after school programs at Brooklyn Grange rooftop farm. Although the lessons contain vegetable growing, raising chickens and bee keeping, the education goes far beyond the obvious. Growing improves science and maths skills, aids communication development and social engagement, educates on nutrition and health and also teaches how to nurture and care. Green learning is also a great way to start conversations about climate change, energy and the environmental impact of our choices.

TRAINING

The average age of a farmer in both the USA and the UK is 58. Rural family farming is no longer seen as a desirable occupation for the next generation. However in contrast, urban farming provides the balance of modern living with working in sustainable agriculture and therefore is creating a new generation of farmers. The Centre for Land Based Learning in Sacramento provides intensive training for adults from non agricultural backgrounds through the Farm Leadership Program, the California Farm Academy and the Student and Landowner Education and Watershed Stewardship. A practical education is delivered in sustainable production, marketing and business planning providing the graduates a complete skillset to succeed as agricultural entrepreneurs.

SPECIALIST SOCIAL SUPPORT

Farming is a global occupation and can be used as a tool for social communication. The Urban Farm Recovery Project is led by the Refugee and Immigrant Fund (RIF) and uses Brooklyn Grange rooftop farm as a base to offer support to refugees, asylum seekers and immigrants. The six-month paid apprenticeship program prepares asylum seekers for life in NYC via job readiness training, English immersion, psychological healing, and community building. Interns generally come from a farming background which is how this program aids the cultural transition.
The USA is leading by example, proving that businesses can adapt traditional farming methods to work in an urban landscape and can succeed at producing and distributing healthy and nutritious food to local residents.

The specific motivation behind each business and organisation varies. For example, the Hell’s Kitchen Farm Project is focused on providing fresh food to the under-supported community, whilst the aim of Art on the Farm is to educate the citizens of Chicago about organic growing practices in the city. Gotham Green’s produce hydroponic greens on a commercial scale for retailers and restaurants, whilst Harlem Grown produce hydroponic greens on a community level to feed hungry children. No matter the size or scale of the business, the overarching motivation remains; to increase the volume and quality of healthy produce available to urban residents through using sustainable, environmentally supportive practices.

There is a general misconception that purchasing organic food is expensive, and only an option for the wealthy. Regardless of business size or target market, the majority of urban farmers and city growers choose organic growing and production methods. For reasons relating to both consumer and environmental health, the agricultural professionals do not support the use of chemicals or genetically engineered seeds. In the case of Growing Power, they pragmatically use organic growing methods but are not officially organically certified. The certification process is time consuming and paperwork heavy, and for this not for profit organisation, the certification cost and energy compromises their focus on agricultural education and training.

Financial sources for start up capital varied between each project and were dependable on the target market. For the large commercial scale farms, capital was primarily raised through private investment and fundraising. For smaller organisations, particularly those aiming to target under-supported communities, local grants and city funding generally assisted in fulfilling financial start up requirements even when the longer term goals were to be independently sustainable.

CONCLUSIONS AND RECOMMENDATIONS

When the benefits of sustainable food systems are accepted by local government and councils, food based businesses are able to thrive and give back to the city. Ways in which the local governments can be of service include contributing financially through grants and funding, making land more affordable and accessible, promoting training schemes for beginner farmers and introducing or changing laws to support the development of urban farming and city growing.

The way we spend our money and the food choices we make directly impact global food systems. If the demand for organic produce increases, although not always a straightforward process, more farmers will convert to organic growing methods. If local farmers' markets thrive and more money is put back into the local economy, councils will see the benefit and further support local distribution methods allowing markets to expand. Every penny handed to a local farmer is a direct vote for sustainable food systems.

The concept of urban farming is relatively new in the UK, with only a small number of commercially successful businesses operating in this field. There are many community growing schemes around the country however the majority are either grant funded or backed by a charity and therefore not independently financially sustainable. If funding streams disappear, the great work of the project comes to an end which therefore is not succeeding in driving forward urban agriculture. As a positive, Farmers’ markets and CSA’s are growing in popularity as consumers learn the many benefits of supporting local food systems.

With the UK Government reassessing agricultural policies off the back of the UK referendum to leave the European Union, this is a crucial time to address how we can support and increase the sustainability of our food systems through considering health, the economy and the environment on a local level.
The key to the future of food sustainability is education and food literacy. The importance and impact of food choices, including health, the environment, and the economy can be taught through science, geography, history, politics and food technology and should be incorporated into the curriculum at all stages.

Where rewriting the national curriculum may be a goal for the long term, initial recommendations to encourage the development of localising food systems in the short term include:

- Government funding and support for new and young farmer training programmes that include progressive sustainable farming methods such as hydroponics and aquaponics
- Government and local trusts to invest in privately run urban farms to operate in public institutions such as schools, hospitals and prisons to localise the production and distribution of healthy food
- Local councils making unused urban land available to local farmers and producers at a reasonable cost
- Urban developers incorporating sustainable green initiatives into their designs and working with urban farmers to create mutually beneficial business arrangements
- Local councils to actively support local farmers’ markets and recognise the benefits for both the rural and urban communities
- Chain supermarkets agreeing to stock a percentage of local produce in smaller community size stores and running awareness campaigns
- Using farms as a resource for alleviating food insecurity by connecting local farmers to food banks and food poverty organisations
USEFUL LINKS

GREENMARKETS: www.grownyc.org/greenmarket
HELLS KITCHEN FARM PROJECT: www.hkfp.org
JET BLUE T5 FARM: www.jetblue.com/green/building
HARLEM GROWN: www.harlemgrown.org
BROOKLYN GRANGE: www.brooklyngrangefarm.com
GOTHAM GREENS: www.gothamgreens.com
WALDORF ASTORIA: www.waldorfastoria3.hilton.com
EAGLE STREET: www.rooftopfarms.org
PORTLAND FARMERS' MARKET: www.portlandfarmersmarket.org
SOIL BORN FARMS: www.soilborn.org
CENTRAL SACRAMENTO FARMERS MARKET: www.california-grown.com
WEST SACRAMENTO URBAN FARM: www.landbasedlearning.org/west-sac
FOOD TANK: www.foodtank.com
SXSWECO: www.sxsweco.com
SUSTAINABLE FOOD CENTRE: www.sustainablefoodcenter.org
CHICAGO O'HARE AIRPORT: www.flychicago.com/OHare
THE PLANT: www.plantchicago.org
GROWING POWER: www.growingpower.org
LOCAL FOODS: www.localfoods.com

FURTHER READING


Cockrall-King, Jennifer. Food and the City. Prometheus Books (2012)


ABOUT THE AUTHOR:

After many years of shopping locally and being inspired by local farmers and producers, Hannah left her career in the music and events industry to pursue a future working in the environmental sector. Hannah has worked and volunteered for a number of local projects and organisations both in the UK and abroad and is currently the assistant grower for a peri-urban organic community farm in Warwickshire, and a trainee on the 2017 Soil Association’s Future Growers Scheme. Through demonstration and collaboration her aim is to grow the UK urban farming movement on both a commercial and community scale to promote the positive benefits of localising food systems.

The Winston Churchill Memorial Trust fund British citizens from all backgrounds to travel overseas in pursuit of new and better ways of tackling a wide range of the current challenges facing the UK.

For further information visit:

www.wcmt.org.uk