Sustainable Cities
Inspirational Case Studies
Sustainable Cities

Inspirational Case Studies

Edited by Simon Mills
Contents

Foreword ............................................................................................................................ vii
   The Right Honourable The Lord Mayor of the City of London,
   Alderman Fiona Woolf CBE

Introduction ...................................................................................................................... 1
   Simon Mills MSc MPA, Head of Sustainable Development
   for the City of London

About the Sustainable City Awards ................................................................. 3

Sustainable City Award Winners ................................................................. 5

About the City of London ....................................................................................... 10

GrowUp Urban Farms ......................................................................................... 12
   Award: Entrepreneurship (commercial)

Project Dirt ............................................................................................................. 21
   Award: Entrepreneurship (commercial)

Rosh Engineering ................................................................................................. 31
   Award: Entrepreneurship (commercial)
PleaseCycle (now Yomp) ........................................ 40
Award: Entrepreneurship (social)

Core Arts ............................................................... 51
Award: Greening the Third Sector

Abundance ............................................................. 60
Award: Sustainable Finance

Co-oproduct CIC ...................................................... 67
Award: Responsible Waste Management & Social Entrepreneurship

Nampak Plastics ....................................................... 75
Award: Responsible Waste Management

Castle Climbing Centre ............................................. 83
Award: Responsible Waste Management/Sustainable Food

United House, NHP Leisure Developments and Mitsubishi Electric (joint award) ................. 93
Award: Sustainable Building

WestTrans Partnership .............................................. 112
Award: Sustainable Travel and Transport
The core theme of my tenure as Lord Mayor of London has been Tomorrow’s City – the energy to transform lives. Nowhere is the essence of this theme better brought to life than in the Sustainable Cities awards.

Those represented in this collection, kindly brought to you by Greenleaf Publishing, include community groups, the public sector, small business, and multinationals. The one thing that binds all of these groups together is sustainability.

Sustainable organizations are successful organizations. Sustainability brings clear benefits by reducing risk, opening up new markets, and improving staff morale. Sustainability is not an optional extra, to be discarded when the chill winds of the recession begin to blow. It is an essential shield which can protect businesses, and give them a springboard for rapid growth as the economy begins to thaw. It is the rocket fuel that will drive growth, jobs and quality of life for all.
I am delighted that the City of London and our partners have been able to recognize the outstanding qualities of our winners, and offer them my heartfelt congratulations on their success.
Introduction

Simon Mills MSc MPA
Head of Sustainable Development for the City of London

I must admit that when I established the Sustainable City Awards back in 2000, I had no idea they would grow to become the institution they are today.

According to the RSA the average life expectancy of an awards scheme is three years, which is why, to qualify for RSA accreditation, awards have to demonstrate longevity as well as stringent standards of quality and transparency.

Personally I put the success of the Sustainable City Awards down to three things:

- Firstly the efforts of our army of partner organizations (22 and counting) who work tirelessly to promote the awards, and sift and separate the hundreds of entries we receive for the awards every year.
- Secondly the draw of the City of London – the fact that the world’s leading international business centre hosts these awards, underscores the importance of sustainable business practice – as a
driver of growth, a driver of efficiency and a driver of innovation.

- Finally, and most importantly, the quality of the applications – office recycling schemes and bike racks are no longer seen as exceptions, they are, to borrow a phrase from the Lord Mayor, “the new normal”. Today’s Sustainable City Awards are a celebration of excellence, a salutation of the exceptional, not as novelty, but as the standard for tomorrow’s companies.

Over the past fourteen years it has been my pleasure and my privilege to hear about the journeys of some of the UK’s most forward-thinking and successful firms. I am delighted that Greenleaf Publishing have enabled us to share some of these stories with you.
About the Sustainable City Awards

The Sustainable City Awards were established in 2001 by the City of London Corporation to recognize and reward organizations that have demonstrated excellence in sustainable development. Examples of this have included logistics companies that are reducing congestion and air pollution, organizations that are helping people with visual impairments into employment, ethical pensions funds, and plastics manufacturers with state-of-the-art recycling programmes.

The awards run annually, and are launched in September with the awards ceremony hosted at Mansion House the following March. Due to extensive media coverage in print and broadcast media, the Awards are now considered the UK’s foremost sustainable development awards scheme.

The awards, which do not charge for entry or for attendance at the Mansion House awards ceremony, attract an average of 250 entries from organizations across the UK
ranging from household names to community groups. The Sustainable City Awards are supported by 22 partners, and are given across 12 categories, which between them represent the three pillars of sustainable development: the economy, society and the environment. The partners supporting each category set up judging panels, which choose a winner, a highly commended entry and three shortlisted organizations. The winner and the highly commended entry for each category are put forward for consideration for two further awards:

• The business entries are considered for the Sir Alan Parker Award
• All of the winning and highly commended entries are considered for the Sustainable City Trophy

Previous winners of the Sustainable City Trophy have included charities, community groups, small family-run businesses and multinational companies. The Awards have been selected as a national feeder scheme for the European Business Awards, by the Royal Society for the Arts.

For more information, see www.cityoflondon.gov.uk/services/environment-and-planning/sustainability/sustainable-city-awards.
Sustainable City Award Winners

(Italics denotes cases included within this collection.)

**Sustainable Finance Category**
(supported by the UK Sustainable Investment and Finance Association)

- *Abundance Generation* *winner*
- Resonance – Real Lettings Property Fund *highly commended*
- The Ecology Building Society
- Impax Investment Management
- Schroders Investment Management

**Sustainable Travel and Transport**
(supported by the Campaign for Better Transport).

- *GetMoreBikes* *winner*
- *WestTrans Partnership* *highly commended*
- Bradford Council for WYLES
- CC Cycles
- E-car club Ltd
Responsible Waste Management
(supported by the Clean City Awards)
- Zoological Society of London *winner*
- *Nampak Plastics Europe Ltd* *highly commended*
- The Castle Climbing Centre
- Cavendish Conference Centre
- *Co-oproduct CIC*

Resource Conservation
(supported by The Worshipful Company of Launderers and The Worshipful Company of Water Conservators)
- Zoological Society of London *winner*
- Redbridge Lakes *highly commended*
- The Cavendish Conference Centre

Sustainable Building
(supported by the Worshipful Company of Chartered Surveyors and The Chartered Institute of Building)
- United House and NHP Leisure Developments for their Kingston Heights development *winner*
- The South West Energy Centre *highly commended*
- Belfast Metropolitan College for their e3 Centre
- Nottingham City Homes for their “Secure Warm Modern” programme
- Skanska for Brent Civic Centre

Sustainable Food
(supported by the Chartered Institute of Environmental Health)
- The Castle Climbing Centre *winner*
- Vacherin Ltd *highly commended*
- The Clink Charity
- Shropshire Energy (UK) Ltd
- Wahaca Restaurants
Entrepreneurship (Social)
(supported by the Worshipful Company of Environmental Cleaners, the London Sustainability Exchange and The Energy Saving Trust)

- Please Cycle *winner*
- GetMore *highly commended*
- Co-oproduct CIC
- London Youth
- Nottingham City Homes
- Redbridge Lakes

Entrepreneurship (Social)
(supported by the Worshipful Company of Environmental Cleaners, the London Sustainability Exchange and the Energy Saving Trust)

- Carbon Voyage *winner*
- *Rosh Engineering Ltd* *highly commended*
- E-car club Ltd
- Project Dirt Ltd
- GrowUp Urban Farms Ltd

Farsight Award
(supported by Gresham College and the Zyen Group Ltd)

Entries to the Farsight Award are drawn from contributors to The London Accord project, the world’s largest collaborative research programme on sustainable finance.

- Lloyds of London *winner*
- Bank of America Merrill Lynch *highly commended*
- Kepler Cheuvreux *highly commended*
- HSBC
- Sustainalytics
Greening the Third Sector
(supported by the Worshipful Company of Patten Makers and the City Bridge Trust)

• Poplar HARCA *winner*
• Get More *highly commended*
• London Youth *highly commended*
• Core Arts
• New Horizon Youth Centre

Air Quality
(supported by King’s College London)

• Nomura International plc *winner*
• Bradford City Council *highly commended*
• GetMoreBikes *highly commended*
• Lend Lease
• ClientEarth

Tackling Climate Change
(supported by the Ecological Sequestration Trust and the Institute of Sustainability)

• Shropshire Energy (UK) Ltd *winner*
• The Castle Climbing Centre *highly commended*
• Climate Solutions Fund
• United House and NHP Leisure Developments

Sustainable Fashion
(supported by the British Fashion Council)

• Thrifty Couture *winner*
• The Good Wardrobe (highly commended)
• Rentez Vous
• Tammam
Winner of the 2014 Sustainable City Trophy:
Rosh Engineering
About the City of London

The City Corporation has a special role and wide remit that goes beyond that of an ordinary local authority. It looks after the City of London on behalf of all who live, work and visit here and has three primary functions:

- It supports and promotes the City as the world leader in international finance and business services.
- It provides modern, efficient and high-quality local services and policing within the Square Mile for residents, workers and visitors.
- It provides valued services to London and the nation as a whole, including its role as one of the most significant arts sponsors in the UK and its support for economic regeneration in the surrounding boroughs.

Many of these services are funded from its own resources at no cost to the public and benefit London and the nation. Its valued services include:
• The Barbican Centre and the Guildhall School of Music & Drama
• The Guildhall Library and Art Gallery and London Metropolitan Archives
• A range of education provision including three City Academies
• The maintenance of five Thames bridges (including Tower Bridge and the Millennium Bridge)
• Management of the Central Criminal Court at Old Bailey
• Management of almost 11,000 acres of some of London’s best-loved open spaces including Hampstead Heath and Epping Forest
• Management of three wholesale food markets (Billingsgate, Smithfield and New Spitalfields)
• It also provide London’s Port Health Authority and run the Animal Reception Centre at Heathrow.

It works in partnership with neighbouring boroughs on the regeneration of surrounding areas and its charity, the City Bridge Trust, donates more than £15m to charity annually.

The City of London views sustainability as a critical component of resilience and fundamental to the competitiveness of London and the nation.
GrowUp Urban Farms

www.growup.org.uk

Award: Entrepreneurship (commercial)

The Mission

GrowUp Urban Farms grows sustainable and healthy salads, herbs and fish in cities using aquaponics and vertical growing systems. Aquaponics is a combination of two well established farming practices – aquaculture (farming fish) and hydroponics (growing plants in a nutrient solution instead of soil). We take the waste water from a fish farm, and pump it through our hydroponic growing beds where our salad plants absorb the waste nutrients from the water, clean the water for the fish, and the whole system continually recirculates.

Our mission is to feed people in cities in a positive way for the community and for the environment, today and in the future. We do this through creating employment and lowering the environmental impact of agriculture.
We see what we do as sitting at the heart of the conversation around Sustainable Cities – by reducing the environmental impact of how we feed people in cities we can start to adapt our cities in response to climate change and mitigate against further climate change impact in agriculture. Cities that have a more sustainable way of sourcing and producing food create less harm to the environment, where problems associated with traditional farming methods include leaching of fertilizers and pesticides, disruption to ecosystems through habitat loss and a high water requirement.

The Challenge

Growing food in cities and making that process transparent for people is a key part of the challenge of reconnecting people with the story of where their food comes from and what it takes to produce it.

The challenge of sustainable food production that can contribute to local food security is one that many cities face. Traditional agriculture requires transportation of the produce to the city, and this travel time reduces the freshness of produce and can lead to higher levels of waste. Urban production reduces transportation distances and therefore has the potential to reduce embodied carbon in food.

Traditional farming relies on fertilizers and pesticides that can have detrimental effects on the surrounding area. Through leaching into water sources, the ecosystem structure can be altered and damaged. Future food production needs to minimize its impact on the environment, reduce
reliance on chemical-based fertilizers and pesticides and in addition, reduce the amount of water required for food production.

Feeding people in cities needs to be readdressed to take into account the potential of urban farming – not as a replacement for traditional agriculture, but as one part of the solution of creating cities that are more self-sufficient and more sustainable in their use and reuse of resources.

Developing Sustainable Solutions

Image 1: The GrowUp Box

In 2013 we built our prototype farm – The GrowUp Box. Designed to maximize the yield from a restricted growing space, the GrowUp Box is a demonstration farm
that incorporates both aquaponics and vertical growing systems in one space. Made from a recycled shipping container with a greenhouse on top, the Box houses an aquaponics system capable of holding up to 150 fish and 450 salads at any one time (see Image 1). The greenhouse allows for year-round growing, with crops changed to adapt to seasonal conditions. Our use of aquaponic technology addresses the challenge of reducing water supply and providing a natural way to fertilize the plants. The soilless nature of the system minimizes water loss that is usually associated with soil-based growing, where water is lost through evaporation and absorption into the ground. The cycling of water between the fish and the plants means the nutrients are absorbed and replaced, decreasing the need for more water and removing the need for additional fertilizers (see Image 2).

Our vertical growing techniques also means that the growing density is higher than traditional growing methods. The greenhouse holds 40 vertical growing columns each capable of holding between 10 and 15 plants. The water is pumped through the internal structure of the columns while the plants grow on the external surface of the columns.

The GrowUp Box was built following a successful crowd-funding campaign that raised over £16,500 on Kickstarter from more than 300 supporters, creating a support base for the project and indicating a growing interest in sustainable food production around the world.

The GrowUp Box is designed to be used in any unused urban space. Cities have the potential to turn unused space into productive growing spaces – this includes the rooftops of buildings, unused land and disused car parks.
WHAT IS AQUAPONICS?

Aquaponics is a farming method that combines hydroponics (growing plants in water without soil) and aquaculture (fish farming) to make an efficient closed-loop system.

1. The fish feed. The fish eat the waste from the plants.
2. The nutrient-rich water is pumped to the plants.
3. The nutrient-rich water is pumped back into the fish tanks.
4. The plants absorb nutrients from the water, purifying the water.

GrowUp build urban farms using aquaponics and vertical growing systems to grow sustainable and healthy salads, herbs and fish in cities.

WHY DO WE WANT TO GrowUp?

The GrowUp box showcases the potential that aquaponics offers for sustainable commercial urban farming. By bringing food production closer to people, we significantly cut down on transportation, refrigeration and packaging and this means reducing the environmental impact of growing food.

Growing food is hard work, and not everyone who lives in cities wants to grow their own; but we believe everyone has the right to healthy, fresh and environmentally friendly food. Commercial urban farms can contribute to food security and be a part of a sustainable supply chain for cities.

WHAT CAN WE GROW?

Aquaponics is ideal for growing leafy greens and herbs which is why we focus on growing various varieties. The traditional UK salad growing season runs from March to September when most traditional salad and vegetables are grown. Over this winter is the time we flip the box to oriental and indoor greens.

Tri taşı are the most widely used fish in aquaponics. Since they are a warm water fish we only fish them across the summer months and then switch to a cold water fish like trout for the winter.

GET IN TOUCH
Not only does this activate unused space, it also compares favourably to the impact that traditional farming can have when disrupting habitats and ecosystems in rural areas. The shipping container is a highly visible way of presenting aquaponics, and also creates a secure environment for the system making it suitable for public spaces and interaction.

The Box was also designed to give people the opportunity to see aquaponics in action and learn about sustainable urban food production. We’ve held workshops and open days at the GrowUp Box to engage the local community about aquaponics and sustainability. Rather than focusing on “grow your own”, our approach educates people on what it takes to produce food, allowing them to make more informed, and hopefully healthier and more sustainable choices about the food they buy and eat.

The Box was open to the public on weekends (and Fridays throughout the school holidays) over the summer of 2013. The aim of this was to engage with the local community and discuss the pros and cons of the current food system, how what we do is different, what place we have in the food system and how we plan to get there. When the Box first opened to the public it was as part of the Chelsea Fringe Festival. We continued to receive a fair amount of press and promotion around our work, which we encouraged as this often led to more visitors coming to see us. We were featured in articles in publications including Time out, The BBC, Guardian, Inhabitat and Sustain Magazine. These can all be found through our Pinterest board: www.pinterest.com/growupbox/growup-in-the-press.

The produce grown in the GrowUp Box is sold to local restaurants. This allowed us to test the market for our
produce, and gain valuable insight into the requirements of local independent restaurants – our target market for sustainably produced salads, herbs and fish.

**Experiences**

The GrowUp Box is a proof of concept for GrowUp Urban Farms and created the springboard from which we’ve been able to propose a viable model for scaling our business to maximize our social and environmental impact. There are two key areas in which we’ve learned lessons around the operation of the Box as a point of public engagement and education and are now putting that knowledge to use:

**Design**

The GrowUp Box was a prototype system, designed to maximize the productive yield from a small urban space and give us the opportunity to engage with potential customers and the local community. Over the first year of operations, we worked closely with a number of volunteers who helped with the operations of the box to redesign and refit the growing system. We’ve also continued to work with an architectural designer to look at what modifications would need to be made to the overall design to make it appropriate for sale as a stand-alone unit. This included technical changes to increase the efficiency of the system and to increase the ease of working in the greenhouse as well as alterations to ensure the Box met Building Regulations for school buildings. This has resulted in a “Box
2.0” design which we are now working on developing as an independent business proposition.

Volunteers/training

We continue to receive a significant number of requests from people who are interested in volunteering at the Box or who would like to learn more about aquaponics. This suggests that there is a gap in the market for courses around aquaponics in urban areas and something that we will explore in the future. In terms of bringing on volunteers, we want to make sure we can do this in a structured and mutually beneficial way. This year we’re working with Urban Food Routes who are helping us design a volunteering programme to put in place at the Box.

The Future

In late 2014, GrowUp will build London’s first commercial aquaponic urban farm, demonstrating the viability of high density aquaponic production in urban and peri-urban areas. With production planned to start in early 2015, this farm will generate employment opportunities for local young people with a poor record of educational attainment, and will be capable of producing around 20,000 kg of salad and 5,000 kg of fish each year.

In 2015 we also hope to start marketing the GrowUp Box as a product available for schools and universities to use as an educational tool to explore sustainable and local food production.
The GrowUp Box continues to operate, selling produce to local restaurants around Stratford in East London and offering workshops and open events for people to learn about aquaponics and urban farming.

Authors

Prior to forming GrowUp Urban Farms, Kate Hofman (Co-founder) worked as a management consultant for IBM. Whilst on a sabbatical year at Imperial College London, she began investigating how aquaponics could work as a sustainable way of commercially growing food for London. Her overriding philosophy is that innovation and sustainability are at the core of the best businesses.

Tom Webster (Co-founder)’s commitment to sustainable food production has always underpinned his professional life. During his MSc, he looked at the benefits and potential supplementary uses of green roofs in the city. Working as a sustainability consultant he continued to investigate the potential for rooftop farming in London. This work, combined with his background in biology, led Tom to found GrowUp Urban Farms in 2013 with Kate.

info@growup.org.uk