

Sustainable urban enterprise

creating the right business environment in cities



This report has been commissioned by Opportunity Peterborough and independently produced by Forum for the Future. Opportunity Peterborough is an economic development company whose objective is to drive forward sustainable economic growth in Peterborough, as the UK's Home of Environment Capital.

www.opportunitypeterborough.co.uk and Twitter @OP_Peterborough

Forum for the Future team: Fiona Dowson, Ivana Gazibara, Martin Hunt, Sam Kimmins

For more information contact Ivana Gazibara: i.gazibara@forumforthefuture.org, +44 (0)20 7324 3673

We would like to thank MHP Communications for their contribution to this project, as well as the interviewees and online survey participants for their insights.

Participating companies were Anglian Water, Barclays Corporate, British Sugar, Hegarty Solicitors, IBM, Larkfleet Homes, Royal Haskoning and LDA Design.

Forum for the Future is the UK's leading sustainable development NGO. It works internationally with government, business and public service providers, helping them to develop strategies to achieve success through sustainability, to deliver products and services which enhance people's lives and are better for the environment, and to lead the way to a better world.

www.forumforthefuture.org

Email: info@forumforthefuture.org and call: 020 7324 3630

The Forum for the Future is a non-profit company limited by guarantee and registered in England and Wales.

Registered office: Overseas House, 19-23 Ironmonger Row, London, EC1V 3QN, UK.
Company No. 2959712. VAT Reg. No. 6777475 70. Charity No. 1040519

contents

Foreword	4
Executive Summary	5
Introduction	7
Top 10 sustainability trends for cities	9
1. adapting to the changing climate	9
2. the era of resource scarcity	10
3. ‘smart’ cities	11
4. personal mobility 3.0	12
5. web-enabled citizen empowerment	14
6. the changing workplace	15
7. financing sustainability	17
8. ‘green-collar’ jobs	18
9. a green built environment	19
10. localism	20
Creating the right urban business environment	22

Foreword

At any time, but particularly in a tough economic climate, having the right business location, environment and culture is vital to an organisation's success. But the nature, shape and appeal of the ideal business destination has significantly changed in recent years, and is still changing.

Tomorrow's graduates, suppliers, customers and business owners will not necessarily have the same views about where they want to work and operate as today's marketplace. Modern workforces have complex and often contradictory needs, seeking locations that are local, individual and sustainable.

At Opportunity Peterborough we are – inevitably – interested to identify just what are the right conditions for fostering business innovation, sustainable growth and investment and which kind of location will provide the best environment for that endeavour.

To find out, we have partnered with Forum for the Future, the UK sustainable development organisation, to produce this report: *Sustainable Urban Enterprise: creating the right business environment in cities*.

In the pages that follow, we examine what the key trends are and how they influence where businesses look to set up, grow and expand. We assess what today's businesses – both regional and national – think a sustainable, thriving business environment might look like in cities of the future, and what key conditions are required to achieve that vision.

The report outlines a framework that aims to help make that vision a reality and provides the blueprint for creating and locating the perfect urban business environment. Clearly, business needs and demands will continue to change and evolve over time, but we hope this paper goes some way to help budding business capitals – of which we very much count Peterborough as one – to better understand and respond to future sustainability trends.

We hope you enjoy reading it – and if you would like to find out more about this and our other work around sustainable business environments, please do visit our website: www.opportunitypeterborough.co.uk

Kind regards



Neil Darwin - Economic Development Director, Opportunity Peterborough

Executive Summary

In this report, we examine what a sustainable, thriving business environment might look like in cities of the future.

All cities, not just the world's mega-cities, will need to evolve in response to a range of critical challenges including climate change, resource constraints, population growth and changing lifestyles. Collaboration with business will be vital if they are to become resilient and thrive in the context of these challenges. Their future as dynamic destinations for business will mean providing the right environment for sustainable enterprise to flourish, as well as facilitating a high quality of life for their inhabitants.

To understand what a thriving business environment might look like in cities of the future, this report explores a series of factors that are relevant for cities. Ten key trends, based on extensive horizon scanning research and tested with UK businesses, are examined. The trends range from the obvious big sustainability issues like climate change to lifestyle changes and local economic factors.

Businesses consider a range of issues when deciding where to locate. They consider practical issues like proximity to market, transport and communication links. They want an environment that will attract people that are crucial to business success. They look to local government to provide incentives, support skills development and create places where their employees want to live. These factors are likely to remain very important.

However, in the context of emerging sustainability trends, the actions for cities looking to attract business are likely to change substantially. Sustainability is becoming a key factor within business – forward thinking businesses are trying to anticipate future trends, whilst self-reporting improvements in environmental and social performance. Most businesses that contributed to this report thought that, out of the factors that facilitate sustainable outcomes and a more effective business environment, urban mobility is critical, closely followed by a clean, green urban environment, and a vibrant city centre. Factors such as access to low carbon energy and 'green' premises are also receiving an increasing amount of attention.

The future resilience of cities is critical. Cities will have to anticipate and adapt to changing demands brought about by massive challenges like climate change, resource scarcity and population growth. At the same time they need to be innovative enough to support existing businesses and attract new ones. In this report, we outline some of the ways they can do this, if they start thinking differently.

Proximity to market - *Think connectivity, rather than physical distance.* Web-enablement, supply chain flexibility including local sourcing solutions, and resilient logistics will all be important.

Communications links - *Think access, rather than movement.* Interconnected low-carbon transport options, reduced urban sprawl and ICT systems to connect people can support businesses and peoples' work-life balance.

Access to resources - *Think lower consumption, and higher quality of life.* Regional supply chains and storage for key resources, resource-efficient infrastructure, recovery and recycling will all help cities ride out fluctuations in resource availability.

Provision of utilities - *Think independent supply streams.* Local energy generation, smart metering, smart grid technologies, and closed-loop utility systems, such as heat recycling can reduce a city's environmental impact and enhance resilience.

Land/space premises - *Think systematically about the interaction between the built environment and the urban infrastructure around it.* Urban planning needs to foster climate change adaptation and the provision of flexible, resource and energy efficient workspace.

Access to talent - *Think about matching green skills to green business needs.* A dynamic research sector for green skills, mechanisms for linking talent to 'green' jobs, programmes to boost sustainable skills, and links to like minded companies.

Attractiveness of place - *Think about designing the city for people, not cars.* Accessible amenities, attractive, walkable neighbourhoods with integrated business space, effective dialogue with planners and improved access to community information can enhance quality of life.

Government incentives - *Think big AND small: infrastructure investments need to be big, but community planning should be small-scale.* Cities need a clear vision of a sustainable future to guide bold investment in infrastructure, whilst fostering local entrepreneurship and innovation at community scale will need dynamic dialogue, understanding and sensitivity.

The business community may not be looking for all these things right now, but many of the trends we have identified are integral to sound business decision making. Businesses need to take into account the short and longer term sustainability issues when thinking about where to locate, and in any attempts to achieve improvements in their current locations. And so, forward looking cities need to be anticipating what it will take to maintain, or create the right environment for the thriving sustainable urban enterprise of tomorrow.

Introduction

In this report, we examine what a sustainable, thriving business environment might look like in cities of the future. As the world's population increasingly moves into urban centres, our cities will need to evolve in order to meet a new set of demands. Cities already consume 75% of the world's energy and are responsible for 80% of the global GHG emissions.¹ In the future, they will have to deal not only with climate policy responses, such as more expensive carbon, but also the physical impacts of changing weather patterns. This will be overlaid with resource constraints - from oil and water scarcity, to food insecurity – and population growth pressures.

These are by no means challenges for 'megacities' only. Second- and third- tier cities² hold much of the potential for future commercial growth and opportunity in the future, and their development pathways have huge implications for the sustainability agenda. In fact, smaller cities might be of an ideal size to achieve smart, sustainable policies. They have an advantage over megacities, which are too big and have a lot of competing factors and entities; yet they also have more human and financial resources than small towns.

A critical success factor of future urban resilience will be the ability of these cities to work collaboratively with business to address key sustainability challenges. Their future as dynamic destinations for business in this context will be critically predicated on providing the right environment for sustainable enterprise to flourish, whilst at the same time providing a high quality of life for local communities.

As a starting point, we undertook horizon scanning research in order to identify and better understand the key trends around sustainability in cities over the next 10-20 years. We considered the latest developments in forward thinking cities around the world, along with the big 'sustainability' challenges that current scientific data clearly shows will be significant issues for society in the future, such as climate change and natural resource availability. The way people respond to these challenges as well as to a range of other drivers, such as the expansion of the role of the internet, were also key themes in our research. We also drew on the extensive research databases that Forum for the Future has developed over many years based on expertise in helping organisations consider future trends in their strategic decision making.

Some of the trends will not sound new to many readers, but there is an emerging awareness about their 'network effects'. They are linked as part of a complex adaptive system in cities, and tweaking just a part of the system will not get us to the necessary sustainability outcomes. Transport, urban planning, public services, energy and food supply can no longer be considered in isolation.

¹ Smarter Cities, The Guardian, Wednesday, 8th September 2010.

² Cities with a population of less than 1 million.

Achieving scale will mean addressing all key trends through simultaneous, collaborative action between city governments, businesses and other key factors in urban areas.

We also interviewed a number of UK-based businesses to test and supplement our analysis of future trends, as well as gain an understanding of what business is currently looking for in a business environment, and how future sustainability trends may impact upon it. We talked to a range of businesses from different sectors, from medium sized British companies to global giants. And as you might imagine, gained a range of different insights about how they view the future and consider it in current decisions. An online poll also provided valuable insights into opinions amongst business leaders and entrepreneurs. We then used this body of work to develop a framework of action for cities that articulates the success factors needed to create the optimal environment for sustainable enterprise.

The aim of this work is to assist UK cities in better understanding the key future sustainability trends, as well as the role they can play in responding to these trends through the creation of a sustainable business environment. Our hope is that this report will spark a broader debate and further research about the conditions needed to create a flourishing business environment in the sustainable city of the future.

Looking several decades into the future can seem a long way off, but cities have to plan ahead now to radically re-engineer and integrate their infrastructure to cope with these challenges. The challenges are significant but the opportunities are huge. Cities are already leading the way in innovation through collaborative initiatives like the C40,³ but also through independent action in areas as wide ranging as sustainable mobility and healthcare. The next decade will be a critical time as they look to respond to key future challenges and develop urban environments that will attract sustainable enterprises and allow them to thrive.

weak signals from the future

...are ideas, trends, technologies or behaviour changes that are as yet unrecognised by mainstream society. They might have a big impact or they might disappear. They can help people challenge their assumptions about the future, navigate risk and seize new opportunities. We've included one or two for each trend – real things that bring the trends to life.

³ C40 is a group of large cities committed to tackling climate change through a range of energy efficiency and clean energy programs: <http://www.c40cities.org/>.

Top 10 sustainability trends for cities

1. adapting to the changing climate

In the future cities will experience the effects of climate change. In many cases urbanisation itself could exacerbate the severity of impacts such as water shortages or extreme weather events. For example, an urban environment lacking sustainable drainage systems can disrupt the hydrological cycle by preventing rainfall and run off from reaching vegetation and allowing the process to repeat itself.⁴

Although UK cities may not be as severely affected in the near-term as urban areas with dry, hot climates such as Mexico City and LA, by the 2080s the south of the UK is likely to experience a 4°C increase in summer mean temperatures, with around 2-3°C in winter. In addition, less rainfall is likely in the summer, with more in the winter. This may make supply chains more difficult to manage across the country.⁵ The South East and East of England will experience the most water stress.⁶ Since this region already relies heavily on the pumping of water, it will face a number of simultaneous sustainability challenges as water becomes scarcer and the cost of energy required to supply it goes up.

weak signals

Chicago has a community outreach initiative whereby the elderly and handicapped are alerted to imminent heat waves, and there is a system of having people check on others that may be vulnerable when conditions warrant.

Thus far, the focus on addressing climate change has primarily been on mitigation, but this will need to change in the future. Many projected climate change impacts in the UK might seem far off, but with the increase in frequency and intensity of extreme weather events already occurring, and with climate science increasingly showing more serious impacts than originally anticipated, there is a real need for cities to prepare now. For example, the UK is already recording **more periods of heavy rainfall and intense storms**, which can lead to flooding through increases in peak river flows, sea levels and tidal surges.⁷

Given the long 'lifetime' of urban infrastructure, cities need to create resilient systems and strategies today in order to adequately prepare. Adaptation strategies should focus on preparing government, business and citizens for extreme heat events, flooding, and large-scale migration from impacted areas,

⁴ Maude Barlow, *Blue Covenant*.

⁵ http://ukclimateprojections.defra.gov.uk/images/stories/briefing_pdfs/UKCP09_Briefing.pdf.

⁶ <http://publications.environment-agency.gov.uk/pdf/GEHO1208BPAS-e-e.pdf>; <http://www.defra.gov.uk/sustainable/government/progress/national/17.htm>.

⁷ The Environment Agency, <http://www.environment-agency.gov.uk/homeandleisure/floods/31674.aspx>.

amongst other things. Most importantly, this will require **cooperation between a number of different** sectors and professions. The construction industry's ability to design and construct resilient buildings and infrastructure will be important, whilst the insurance community and local government will also have critical parts to play in facilitating risk-sharing mechanisms.⁸

2. the era of resource scarcity

The current (and projected) demand for natural resources is continually depleting the earth's stocks of virgin resources. In 2002 humanity was already consuming ecological resources 23% faster than the earth can replenish them. By 2050, according to UN projections, we will demand twice as many resources as the planet can supply. We can expect to see a number of 'peaks' as a result: peak oil, phosphate, and a number of metal ores, for starters.

Oil is arguably the most threatened, and most imported, resource in developed economies like the UK. While we cannot say with certainty whether reserves as a whole are 'running out,' we can be sure that getting at the remaining conventional reserves in a cost-effective manner will become more difficult.⁹ Energy shortages or supply disruptions are also a likely consequence of political acts, terrorism, warfare and natural disasters. Combined with increasingly robust climate change regulation and the emergence of carbon taxes, it is clear that energy supply and demand will continue to be a key and highly uncertain driver of the economy. In the UK, despite some of the highest demand levels in Europe, energy capacity is already insufficient. The recent National Grid Outlook Report¹⁰ revealed that 55% of gas used for commercial and domestic use this year will be imported. With reserves in the North Sea dwindling, this points to a high likelihood of further export dependency and higher energy prices in the future.

As energy prices rise and unexpected shortages occur, food prices will also rise, especially for food that must be transported long distances, stored and processed. Disruptive weather events - like the Russian heat wave and the Pakistani floods earlier this year - could further increase prices of staple foods, as could increasing

weak signals

Google Powermeter is an online power monitoring tool, this can be incorporated as a widget as part of your iGoogle home page. It could bypass the need for smart meters by working through a broadband connection rather than the existing SMS technology, eliminating the need to wait for utility companies to process and analyse information about your energy use.

⁸ Ariel Schwartz, How can big cities adapt to climate change? Fast Company, June 1, 2010, <http://www.fastcompany.com/1655082/how-can-big-cities-adapt-to-climate-change> (accessed on October 23, 2010).

⁹ Richard Heinberg, *The Party's Over, Peak Everything*.

¹⁰ National Grid, *Winter Outlook Report - 2010/2011*, <http://www.nationalgrid.com/uk/Gas/TYS/outlook/>.

demand from emerging economies such as China and India. According to FAO estimates, global food demand is forecast to rise 50% by 2030.

weak signals

UK's Pavegen Systems Ltd. has developed energy storing pavement. Every time a rubber Pavegen stone is stepped on it produces kinetic energy. This energy is stored within the slab's lithium batteries or simply distributed to nearby lights, information displays or any other energy requiring applications.

In this context, discontinuity is potentially serious for industrialised cities in the UK and other developed economies, which will in the future see demand from emerging economies capture an increasing share of the global resources. In 2004, for example, China already accounted for half of global growth in metals demand according to World Bank estimates.

Cities will need to reduce their consumption footprints, while at the same maintaining quality of life. Resource scarcity will hit many elements of the urban economy, from agriculture to transport to oil-based products. Implications will be felt in **higher prices of key resources**. Greater **disruption of supply** is also expected, meaning that cities – which currently rely on long, global supply chains – could be left particularly vulnerable. **Business discontinuity** could become an issue, and the private sector will look to cities to assist with contingency planning.

On the opportunity side, there is a lot of potential for local resource security in the UK, such as low carbon, regional energy generation. The Department of Energy and Climate Change (DECC) has used powers in the Energy Act 2008 to introduce a system of feed-in tariffs to incentivise small scale (less than 5MW), low carbon electricity generation. Schemes such as this one will increase the potential for **decentralised energy solutions**. Cities will need to consider this as a part of their decarbonisation strategies, and it will have implications for how we design, build and operate urban infrastructure.

A lot of energy used by cities goes on transporting goods from rural to urban areas. With food security issues growing in importance, cities will therefore increasingly have to think about ensuring steady affordable supply. Cities that serve as distribution hubs will have particular opportunities in this space.

weak signals

Peterborough is pioneering a web-based model to visualise the city's environmental data. The platform uses satellite imagery, aerial photography and 3D geographical maps to create an image of Peterborough's current and future environmental performance.

3. 'smart' cities

From virtual chat rooms and meeting spaces, to utility metering to transport coordination, ICT networks are increasingly used to connect us and the infrastructure of our cities. Although this trend is not necessarily new, it is fair to say its potential in facilitating greater sustainability in cities is still being explored. Increasingly, we are realising ICT holds enormous promise for increasing the energy and resource efficiency of most aspects of urban development.

Some examples are traffic congestion monitoring, water leakage detection, smart grid energy applications and so on. Its key impacts are to optimise energy use, smooth out demand patterns for resource use and transport, and reduce the amount of waste.

The opportunities for business are potentially huge, and many companies – including IBM, Siemens and Google - are increasingly focusing on urban ICT infrastructure solutions. In the future, we are likely to see the emergence of new business models and cross-sectoral collaboration that delivers improved sustainability outcomes through ICT.

weak signals

Birmingham is promoting better connectivity through access to online databases on public consultation exercises, and has a TV channel which provides details about local authority services and real-time bus services.

As a greater proportion of the global population moves to cities, ICT-networked or – as it is increasingly known – ‘smart’ urban infrastructure will be a critical element of addressing the challenges that climate change, resource scarcity and population density will bring to cities. DECC has said in the past that it is aiming to see 47 million ‘smart meters’ in 26 million properties in the UK by 2020.¹¹ And the Institute for Electric Efficiency estimates that half of all American homes will have smart meters by 2020.¹² Many experts today are suggesting that the key future trend for cities is not being ‘green’, but rather ‘smart’. It is no

exaggeration to say that cities which emerge as centres of smart system innovation will be the key players in the future global economy.

4. personal mobility 3.0

Even though the current economic climate has reduced the number of vehicles on the road in the UK¹³, experts suggest this is likely to be a blip rather than a long term trend. The UK population is projected to grow at its fastest rate since the post-war ‘baby boom’, increasing from 61.4 million now to 70.6 million in 2030.¹⁴ It is highly likely that this growing population will continue to see cars as the primary means of personal mobility, increasing the risk of severe congestion in our cities. Traffic growth could result in gridlock on many

weak signals

MIT’s (Massachusetts Institute of Technology) CityCar is a stackable, electric two-seater concept car designed to be used as part of a mobility-on-demand system – similar to a bike-hire scheme - where stacks of vehicles are available for instant short-term hire at key transport hubs around the city. Three or four CityCars can fit in a standard parking space.

¹¹ National Grid, *Winter Outlook Report – 2010/2011*, <http://www.nationalgrid.com/uk/Gas/TYS/outlook/>.

¹² Smartgridnews.com, http://www.smartgridnews.com/artman/publish/Technologies_Metering_News/Smart-meters-Half-of-all-American-homes-will-have-them-by-2020-3146.html.

¹³ <http://www.telegraph.co.uk/motoring/news/7563297/Number-of-cars-declines-for-the-first-time-since-Second-World-War.html>.

¹⁴ Forum for the Future, *Growing Pains: Population and Sustainability in the UK*, http://www.forumforthefuture.org/files/population_web.pdf.

of the nation's most important strategic routes – damaging the vitality and prosperity of UK cities and resulting in the deterioration of environmental and social sustainability.

However, the emergence of car-sharing and bike-sharing schemes in urban areas in both the United States and Europe presents a potential alternative model for urban mobility – flexible, sustainable and on-demand. Cycling, for example, is in the midst of a renaissance in cities. With increasing awareness about sustainability, as well as rising congestion, we can expect this to continue. Bike-sharing systems now abound in dozens of European and North American cities as well as in places like Rio de Janeiro and Santiago, Chile. In the future, we are likely to see a proliferation of different modes as part of this new model - small cars, scooters, and bicycles, often cooperatively owned and well-integrated with other transport modes.

weak signals

No-driving days in Seoul are voluntary and popular: residents are incentivised to sign up to it by benefits such as insurance discounts, reduced –price parking and tax-breaks. Participants agree not to drive on one business day per week, and compliance is monitored via RFID tags attached to windscreens. The city benefits from having approximately 10,000 fewer vehicles on the road every day.

weak signals

Intellidrive is a US initiative which aims to enable networked wireless real-time communications between vehicles, infrastructure, and drivers' and passengers' personal devices. This improves safety via crash prevention and provides rich real-time information about routes, traffic and optimum drive speeds. Real-time information from thousands of vehicles will enable transportation managers to optimise the system for efficiency by adjusting signalling, lane availability, etc.

According to the most recent

International Energy Agency estimates, demand for oil is set to increase by 50% over the next 20 years. This will be happening against the backdrop of declining oil production in existing fields, and rapidly growing demand in the developing world.¹⁵

High and volatile oil prices are therefore likely. This emphasises the need to decarbonise the transport sector. And the potential to reap benefits from alternative fuel solutions is huge. An HSBC report recently estimated that the global market for low-carbon energy could treble to US \$2.2 trillion by 2020.¹⁶ Progress in battery technology and low-carbon fuel generation is increasing the likelihood that alternative energy powered vehicles will become much more prevalent in the future.

In addition, new transportation systems are emerging that will lessen traffic congestion and accident risks. In the next decade or so, it is possible that we'll see

roads and motorways that feature lanes for cars and trucks controlled by computers. The car itself will be transformed.

Manufacturers are already thinking about how to incorporate ICT into vehicles. In the future, we can expect more information and

¹⁵ IEA, The World Energy Outlook, 2009.

¹⁶ James Murray, HSBC predicts low-carbon energy market will treble to \$2.2. tn by 2020, GreenBiz.com, 6 Sept 2010, <http://www.businessgreen.com/business-green/news/2269279/hsbc-predicts-low-carbon-energy>.

entertainment; automated navigation that supersedes bad driving; and cars that are able to communicate with other vehicles on the road and transmit real-time information to traffic hubs through in-built sensors.¹⁷

Last but not least, people are becoming increasingly comfortable accessing services, information and social networks online. And, in conjunction with this, online platforms are shifting from being technology centred to being user centred, with experimentation in everything from augmented reality¹⁸ goggles to neural stimulation technology, whereby computers interact directly with our brainwaves. Although it is unlikely that virtual spaces will ever fully replace the physical elements of our daily life, the increasing convergence between real and virtual worlds will impact on everything - from urban form and the way we think about mobility, to our ability to access goods, services and information.

5. web-enabled citizen empowerment

Ways in which people access information are changing, as is the nature of information businesses make available. Web connectivity in cities is enabling urban-dwellers to become more empowered than ever before – as consumers, public service users, community members, and even as producers. It is providing more - and on-demand - information, positively impacting our ability to make choices that enhance our quality of life.

weak signals

Barcoo is a mobile phone bar code reader which provides information about the social and environmental credentials of a product.

As consumers and citizens we are becoming more demanding. We increasingly ask for 'radical transparency' - facilitated by the Internet - because we want to understand the background 'story' of the products we are buying or the services we are using. A majority of UK consumers, for example, care about whether the companies they buy from are helping to tackle climate change¹⁹, and even NHS international supply chains have come under the media spotlight.

In cities, the use of web connectivity and ICT networks will also be a very important part of providing the right information, creating an attractive urban environment, and improving quality of life: through solutions that allow the real-time sharing of traffic conditions via ICT platforms, to interactive maps of public spaces that help people understand the services and attractions that the

¹⁷ <http://www.wfs.org/content/2011-top-ten-8-cooperatively-owned-smart-cars-and-roads-will-replace-dumb-individual-gas-guz/>
<http://www.forumforthefuture.org/blog/whats-in-store-for-city-dwellers-in-2040>.

¹⁸ A term used to describe a live direct or indirect view of a physical real-world environment whose elements are *augmented* by virtual computer-generated imagery. As a result, the technology functions by enhancing one's current perception of reality. For more information, see the Wikipedia entry for augmented reality: http://en.wikipedia.org/wiki/Augmented_reality.

¹⁹ UK Carbon Trust.

city provides, and technologies that enable them to conveniently access many public services online, amongst other things. Web-enabled dialogue will continue to increase between urban service providers and citizens in the future: there will be more and more information sharing, co-design of services, and enabling of local communities.

Ubiquitous ICT connectivity is also changing the business landscape in cities. It lowers barriers to entry for new companies and entrepreneurs, by enabling different routes to ideas, to markets and to consumer trust. For example, people are increasingly able to communicate and deal with each other directly, giving a rise to peer-to-peer business models, with potential to grow rapidly and disrupt incumbent companies, and even sectors. There is a wide variety of such business models, but the one thing they all have in common is that they are almost always facilitated by the internet, and heavily premised on trust by the user community.

All this creates new pressures on businesses and local governments in cities, but also huge opportunities to interface differently with the 'wired' urban dweller. Cities - as centres of the knowledge economy - will be important facilitators of this process. Those that are forward thinking will tap into this trend, working with people that live and work there to create sustainable solutions to the challenges we face, foster sustainable business and to help enhance their citizens' quality of life in an increasingly resource constrained world.

6. the changing workplace

According to Workwise UK, "work patterns are changing rapidly. Work is becoming more flexible in terms of location, timing and a multitude of other factors causing new work practices to emerge."²⁰ This year, for example, sees the UK's 5th annual work-from-home day. More than 3 million UK workers are already classed as 'home-based'²¹, a number that is likely to represent just the tip of the iceberg as many more people work occasionally from remote working spaces, be that the home or the community coffee shop.

weak signals

Zopa is a lending and borrowing exchange where real people sidestep the banks to get a better deal by lending directly to other users.

²⁰ *Work Wise UK* is a not-for-profit initiative, which aims to make the UK one of the most progressive economies in the world by encouraging the widespread adoption of smarter working practices – It is supported by the CBI, the TUC, The British Chambers of Commerce and the Equality and Human Rights Commission <http://www.workwiseuk.org/>.

²¹ http://www.workwiseuk.org/what_is_wwuk/index.html.

weak signals

Double U Smartwork, a network of Smart Work Centers throughout the Netherlands, offer high-end working facilities and aim to address modern urban challenges by measures such as reducing travel and promoting efficient and sustainable ways of working. Regular workplaces at any of the Smart Work Centers across the Netherlands can be booked via the online Double U Smartwork Reservation Tool.

It is a trend that will surely continue and is likely to have significant implications for business premises and working structures in the future. A move away from centralised, large headquarters is possible. 'Smart work centres' – hubs where small groups of collaborating workers would be able to get together or collaborate via digital connectivity – are likely to become more common. Workspaces conveniently located in relation to your local community, instead of at the end of a long and expensive commute, will also become more popular. Working patterns will obviously vary depending on peoples' roles and personal circumstances but congestion, fuel prices, adverse climate events and perhaps above all, the desire for a productive work-life balance, will all drive the decline of the long daily commute.

The workplace will almost certainly be highly digitalised, so that people will also be able to connect remotely with working teams much more efficiently and effectively than today. In this context, the traditional headquarters could be transformed into

a service-providing hub which links and coordinates smaller, decentralised working spaces.

Cities will need to facilitate the commercial real estate that will help attract business and top talent, including well-networked, sustainable office space, as well as attractive public areas that can act as offices-on-demand.

7. financing sustainability

A growing proportion of investment funds are now available to organisations that wish to consider their responsibilities to society and reduce their exposure to environmental risks. Socially responsible investment, for example, is growing rapidly in the UK. It went up from £2.4 billion invested by 200,000 investors ten years ago, to £9.5 billion representing approximately three quarters of a million investors by the end of 2009.²² And the success and increasing uptake of global initiatives such as the Carbon Disclosure Project²³ are another indication of the importance that investors are placing on understanding risks they are exposed to beyond simple analysis of the 'financials'. All this has been facilitated in recent years by a decline in trust levels in financial institutions as a result of the financial crisis, and in business due to a number of sustainability disasters including, most recently, the BP Deepwater Horizon oil spill.

weak signals

Climate Change Capital has a property fund that is looking to invest in the upgrade of commercial property to a low carbon level.

While the ability to pay back a loan is always going to be primary lending criteria, the implementation of energy and resource efficiency measures is reflected as part of the investment assessment, particularly for 'intensive' sectors such as manufacturing. Institutional investors are analysing investments more thoroughly – demanding information about environmental, social and governance characteristics of their investments.

weak signals

Buzzbank is an on-line crowd-funding platform to bring social ventures looking for start-up or growth capital together with like minded people keen to fund with small amounts of money.

Businesses - from the innovative start-up to the growing multi-national - will all be affected by this trend and so, therefore, will the business environment in cities. There will be more opportunity to scale up corporate sustainability initiatives in order to attract more 'green' capital, but also increasingly stringent investment guidelines which will reinforce the need for sustainable business behaviour. Savvy, growing businesses are therefore likely to seek a more sustainable operating environment – including everything from green building space to the ability to reduce employees' carbon footprint through access to public transport. Cities that are able to provide sustainable infrastructure will be better placed to meet this emerging demand.

²² http://www.uksif.org/resources/faqs_facts.

²³ The Carbon Disclosure Project is an independent not-for-profit organization holding the largest database of primary corporate climate change information in the world. Thousands of organizations from across the world's major economies measure and disclose their greenhouse gas emissions and climate change strategies through CDP. <https://www.cdproject.net/en-US/Pages/HomePage.aspx>.

In addition, there are more state funding initiatives focused on sustainable development than ever before. In the UK, for example, a **national Green Investment Bank** has gained cross-party support and backing from industry.²⁴ Its priority would be to unlock investment in low carbon infrastructure - both large and small scale projects.

Access to finance will increasingly be understood as part of the solution for sustainable development at a range of different scales – including urban infrastructure. In cities, it may therefore become easier to raise funds for sustainable initiatives in the future.

8. ‘green-collar’ jobs

The global market for low carbon environmental goods and services (LCEGS) was worth £3.2 trillion in 2008/2009 – a £150 Billion increase on the previous year’s estimate. As international action on climate change gathers momentum, this market is forecast to grow to over £4 trillion by the middle of this decade. The UK LCEGS market was worth £112 billion and employed 910,000 people directly or through the supply chain in 2008/2009 – it is estimated it will grow to over 1 million people by the middle of this decade.²⁵

weak signals

Portland, Oregon generated 20,000 new clean tech jobs in 2007 alone.

We will require significant ‘up-skilling’ and capacity-building in order to address global sustainability challenges, and meet this emerging market demand. ‘Green skills’ are expected to be in increasing demand in the UK going forward, with jobs in the renewable energy sector and in low carbon transport proposed for 1.2 million people by 2020, according to the UK’s Low Carbon Transition Plan.²⁶

Research indicates that the “first-wave” jobs are most likely to come from energy efficiency measures.²⁷ Retrofitting buildings for energy efficiency is clearly a focus in several UK cities already, for example. However, in the long-term it is harder to determine exactly in which areas jobs will be needed and where they can be created most effectively. In addition, it is possible that the LCEGS sector will rely more on smaller enterprises (e.g. solar panel installers) than large-scale corporations, which will challenge the traditional market environment - which has largely been focused on consolidation and economies of scale.²⁸

²⁴ The Green Investment Banks was proposed by Labour before the 2010 election, and is now supported by the Coalition Government.

²⁵ “Green Skills, Green Jobs” Conference, The Aldersgate Group, Nov 2010.

²⁶ The UK Low Carbon Transition Plan: http://www.decc.gov.uk/en/content/cms/what_we_do/lc_uk/lc_trans_plan/lc_trans_plan.aspx.

²⁷ Living Cities, Green Cities: How Urban Sustainability Efforts Can and Must Drive America’s Climate Change Policies, May 2009.

²⁸ Living Cities, Green Cities: How Urban Sustainability Efforts Can and Must Drive America’s Climate Change Policies, May 2009.

For cities, the challenges are dual. One of the main priorities going forward will be addressing the skills gap – we will need training initiatives alongside the job creation schemes. Demand responsive skills development strategies will be critical as the pace of change in the LCEGS sector is likely to be quite fast. Moreover, an increasing number of graduates are looking for ‘green jobs’ and will seek to relocate to cities that offer the best opportunities in this space. In order to attract people with an existing set of relevant skills that can be deployed immediately, cities will need to provide high quality of life standards and an attractive, dynamic urban environment.

9. a green built environment

Buildings have a profound impact on the quality of our lives in urban areas. There is a growing understanding of this, and therefore increasing pressure from multiple sources to create a more sustainable built environment in cities. For starters, there is the UK target of all new homes by 2016 being zero carbon. Similar targets are in the pipeline for commercial and public sector property as well. In addition, the UK Government’s Carbon Reduction Commitment Energy Efficiency Scheme will drive occupier demand for reduced energy use in their buildings. With 40% of UK emissions coming from the built environment²⁹, the buildings within which we live and work will remain a primary target for carbon reduction over the next decade.

At the same time, business is increasingly realising that more energy and resource efficient buildings have a fast return on investment in the form of lower utility bills and maintenance costs, as well as a reputational benefit with key stakeholders. Sustainable build is increasingly becoming a competitive advantage issue. High performance against green building standards, like LEED and BREEAM is becoming a commonplace requirement for clients and building modelling and technologies are becoming ever more sophisticated in order to accommodate growing demand. Some of the UK’s leading real estate companies are developing and rolling out “green leases” to encourage more responsible tenant behaviour, and ultimately reducing the environmental impact of the buildings they own and manage.

In the future, it is likely that we’ll see clear links emerge between the market value of buildings and their ‘green credentials’. There is increasing research into the “value case” and it is very possible that a two-tier market will appear, where top rated commercial and residential building space is more desirable, easier to sell or rent and therefore more profitable.

weak signals

CABE's The Value of Good Design quotes a 21% improvement in hospital discharge rate from a hospital renovation, effectively reducing total costs by 21%. It improved care quality, speed, satisfaction and had spin-off benefits of lower drug use, reduced return visits and other factors.

²⁹ <http://www.reuters.com/article/idUS367283376220101021>.

weak signals

At Wal-Mart's Lawrence, Kansas, 'Eco-Mart' skylights were installed to reduce lighting costs. Employees asked to be moved to the daylight part because sales were higher there.

There is also some research that indicates that green buildings – such as hospitals and offices – have positive knock-on effects on productivity, operational costs and corporate reputation.³⁰

Industry will increasingly want to be accommodated in sustainable buildings, which utilise eco-friendly resources, recycle water, monitor energy use, and so on. Cities will need to be in a position to supply this. The most competitive ones will ensure their urban building stock meets these emerging needs, in order to capitalise on the opportunities of the 'green' housing market and reduce their vulnerability as traditional built environment assets lose market value.

10. localism

weak signals

Unto This Last is a company set up to recreate small-scale, local manufacturing models. It produces semi-bespoke furniture at number of sites in London – each serving the local community and minimising the transport distances of their products.

Localism is on the rise – it is shaping the way space is organised in cities, influencing our choices of goods and services, and helping create more vibrant communities that are equipped for the future.

The concept of cities designed for people, not cars, is growing in popularity. Architects and urban planners are increasingly looking for ways to create mixed-use urban neighbourhoods, with infrastructure designed to maximise its utility to local communities, characterised by a high

weak signals

Low Carbon West Oxford is an a community-led initiative which aims to combat climate change by cutting community carbon dioxide emissions by 80 % by 2050, encouraging residents to live more sustainably, and contributing to a more cohesive and resilient community.

degree of accessibility and walkability. We might see cities re-densify in the future, with people increasingly choosing to live, work and play in the same area. The local street could undergo a renaissance, with small retail formats popping up again, more footpaths, and more green space. More efficient use of community infrastructure³¹ will also play a role. School buildings are already being used outside of typical school hours for various community activities – with enhancements to building layout, security and so on. We

³⁰ Green Value, http://www.bluewildernessgroup.com/index.php?action=display&cat=43&doc=greenvaluesreport_1.pdf.

³¹ <http://www.forumforthefuture.org/blog/whats-in-store-for-city-dwellers-in-2040>.

could start to see collaborations with the commercial world as changing working practices mean that local, flexible work spaces are increasingly sought after.

There is also an increased demand for locally produced, handcrafted goods, and small-scale traditional trades (e.g. carpentry, recycled fashion, artisan food). Consumers are launching initiatives campaigning to reverse the decline of local retail in neighbourhoods as well as campaigning against out of town retail parks. Online shopping will most certainly increase, but there will arguably always be a place for the high street shop, because of the convenience and a need for social interaction.

Dialogue between citizens and planners – engaging communities in ‘bottom-up’ planning – will improve the success of urban planning in tackling problems such as anti-social behaviour and unsustainable development, and enabling local businesses to thrive. The Transition Towns movement, for example, is trying to plan for a future without oil, focusing on community-scaled solutions in transportation, health, economics and people's livelihoods and personal skills.

Distinct identities for cities and for neighbourhoods within them will become more important as people shun the ‘identikit’ high-street.

Creating the right urban business environment

Our desk research and consultation with the UK business community identified a number of key drivers impacting the decision to locate in a particular urban business environment.

Proximity to market: The ability to effectively and efficiently access key markets from a business location.

Communication links: Transport and, increasingly, information technology links that support access to markets.

Access to resources: This includes both physical proximity to raw materials, as well as steadiness of supply. Locating close to raw material supplies can reduce costs in industries where large quantities of raw materials are used in production (e.g. steel industry).

Provision of utilities: Energy, water and waste disposal infrastructure is a critical component of the business environment. The ability to have steady supply, and to negotiate bulk discounts are influential as a locating factor.

Land/space premises: The availability and affordability of land, as well as an appropriate built environment (e.g. buildings and related infrastructure), is increasingly important as land becomes scarce, particularly in urban locations.

Availability of talent: The ability to access an appropriately skilled workforce within the business location. This is particularly important to industries that rely heavily on a highly skilled workforce.

Attractiveness of place: As part of attracting and retaining top talent, businesses seek a location that provides high living standards, and an attractive, dynamic urban environment.

Government incentives: Important in reducing costs for business and providing key benefits, such as tax benefits and co-funding opportunities.

Our analysis of these key drivers in the context of emerging sustainability trends reveals that the high-level driving forces are likely to remain the same. However, the critical actions for cities looking to attract business on the basis of this framework will change substantially. Sustainability is emerging as a key driver of the business environment – both on the basis of what we know sustainability impacts are likely to be in the future, but also in terms of self-reporting by companies. 70% of our online respondents indicated that sustainability and environmental responsibility was important to their workforce, and 50% of those stated that their employees are motivated by the sustainability of their business location. And out of the factors within a business location that both facilitate sustainable outcomes and a more effective business environment, the majority of respondents indicated urban mobility is critical, followed by a clean, green urban environment, and a vibrant city centre.

There is no doubt that sustainability in cities will be critical in the future, the key word here probably being ‘resilience’. Cities will have to adapt to changing demands brought about by sustainability challenges such as climate change, resource scarcity and population growth, external factors, while at the same time being forward thinking and innovative enough to attract business. In the framework below, we outline some of the key ways in which cities can do this.

Proximity to market

Think connectivity, rather than physical distance.

- Focus on climate change adaptation education and community outreach, as well as large-scale investments in urban public and private infrastructure to address impacts such as coastal flooding or dwindling seasonal water supplies.³² This will ensure continued access to market and mobility within the city if shocks occur.
- Bolster supply chain flexibility and resilience by developing more regional supply links.
- Invest in low-impact distribution channels (e.g. rail freight)
- Scale up urban food solutions, such as urban agriculture and aquaculture. The trend of local production in the UK will be driven both by environmental pressures, as well as growing consumer awareness about the carbon footprint of imported products, and the desire to 'buy local'.
- Invest in ultra-fast broadband connectivity to attract new businesses to the city. Provide free, ubiquitous wi-fi in the city centre to improve the ability to access goods, services, people and information for all citizens. In the future, closeness to market will be more about ‘connectedness’ than physical proximity.
- Harness the power of online networks for local community development (e.g. using peer-to-peer loan platforms to access innovative sources of micro-finance for local initiatives in your city).

“If you are not web-enabled as a business, you will go out of business.”

**- Ian Abbott-Donnelly, CTO,
IBM Big Green Innovations**

³² <http://www.postcarbon.org/blog-post/55766-the-next-decade-s-top-sustainability-trends/13916-government>.

Communications links

Think access, rather than movement.

- Invest in public transport infrastructure, in order to avoid over-reliance on the automobile and pre-empt congestion issues as a result of future population growth.
- Ensure that public transport links well with other transport modes such as cycling, automobiles, walking and so on (e.g. allowing cycles on public transport, implementing park-and-ride schemes).
- Offset travel demand by developing effective alternatives (e.g. better IT connectivity, de-centralised working centres in key neighbourhoods).
- Ensure all urban planning seeks to reduce urban sprawl and dependency on the automobile (e.g. limit road expansion).
- Integrate IT solutions into transport networks in order to optimise journeys and provide en-route information about relevant services (e.g. augmented reality phone applications that inform citizens about the location of key amenities in their location area).
- Implement greater energy efficiency measures in transport systems.
- Facilitate the shift towards low carbon transport by investing in appropriate infrastructure (e.g. charging stations for electric vehicles, bicycle rental schemes, etc.).
- Capitalise on the 'slow travel' trend by creating walking and cycling infrastructure in the city (e.g. cycle paths, pedestrianised streets in the city core)

“Cities have got to start grasping the nettle now and planning for the future. For example, the electric car will be with us soon, but are we planning the infrastructure that these will require?”

- Henry Rowe, Member of the Board, Royal Haskoning

Access to resources

Think lower consumption, and higher quality of life.

- Climate change will have an impact on resource security, particularly in the south of the country where we will see more pronounced impacts. For example, more droughts might mean more food supply insecurity in the region. This will be a competitiveness issue between cities. Cities therefore need to develop systems to ensure steady supply of key resources to help reduce business continuity risks for resource-reliant companies.
- Regionalise the supply chain of key resources such as food and energy.

“Availability of cheap energy is important for a high energy user like my company. High prices and the likelihood of them rising further are important. But we are looking at this as an opportunity – for example, there are opportunities for us in generating biofuels and biomass energy.”

- Karl Carter, Group Technology Director, British Sugar

- Develop effective storage capacity and resource-efficient infrastructure in the city.
- Capitalise on emerging opportunities around new business models based on recovery and recycling of valuable, scarce resources (e.g. rare earth metals).

Provision of utilities

Think independent supply streams.

- Invest in local energy generation and new sources of energy supply, to boost energy independence and resilience. In urban areas which are close to agricultural production, for example, processes like biomass-based energy generation and anaerobic digestion represent significant opportunities.
- Make resource issues visible to businesses and citizens. Create and implement information feedback loops to raise awareness about the level of resource security at any given point in time (e.g. if water tables are low at a particular time, people will know not to wash their cars that day, or they will have to pay more to do so).
- Implement smart energy and water metering systems.
- This sector is likely to reach the consumer directly in the future, with smart metering technologies enabling households to 'time shift' their power usage to take advantage of off-peak rates. Invest in smart grid technologies for consumers and enterprises to further incentivise efficient energy use.
- Implement closed-loop utilities systems (e.g. use heated water from commercial and residential real estate as energy stock, use the pressure from water arriving on site at ports, etc.)

“Resilience is absolutely critical, not just to water companies but to all utilities. Recent years have seen severe flooding around the UK, particularly the West Country, where they witnessed vandalism and civil unrest when delivering emergency drinking water supplies. We are a more fragile society than some might think.”

- Andrew MacIntosh, Group Head of Communications, Anglian Water

Land/space premises

Think systematically about the interaction between the built environment and the urban infrastructure around it.

- The most cutting edge cities will increasingly integrate climate adaptation strategies into urban planning and housing construction – including things like flood defences, sustainable drainage systems, floating farms and so on. Today, this is spurred on by innovative design

“40-50% of IBM-ers don’t have an office – and I can only see that going up, not down.....you either work from home or you work in a nice place, and that nice place is typically NOT your office. Cities that get this will be winners”.

- Ian Abbott-Donnely, CTO, IBM Big Green Innovations

and proactive planning policies - reacting to growing awareness about climate change. In the future, it could increasingly be a response to robust government requirements as the impacts of climate change become more visible.

- Invest in micro-generation technologies for buildings in order to boost energy security.
- Develop low-cost, resource- and energy-efficient buildings.
- Shift away from large-scale office space development. This is likely to increasingly lose relevance as more and more people start working remotely. Think creatively; think beyond the traditional business park model.
- Create decentralised, modular working spaces, and provide good links to city centre amenities.
- Build adaptability into leases and rental agreements, to facilitate a more flexible working style.
- Make retrofitting a priority. New build constitutes a small percentage of future housing stock in the UK, so retrofitting existing stock will be one of the biggest challenges of meeting future targets and regulation requirements. Investing now will offset the increasing cost of doing so later.
- On the upside, it is a £28bn market opportunity³³ that businesses will be looking to capitalise on. Provide a facilitating environment that will attract the retrofit sector – through co-financing assistance, ‘green skill’ capacity building programmes, setting clear standards, and developing monitoring and data sharing capacity.
- In order to increase the ‘green credentials’ of your building space, think systemically not just about the buildings themselves, but also about how efficiently they are integrated with the remainder of the urban environment – be that transport or digital networks, schooling or retail centres.

Access to talent

Think about matching green skills to green business needs.

- Create a dynamic research and academic sector focused on ‘green skills’. This will help develop local talent, and draw sustainable enterprise to the city, creating a virtual cycle of sustainable urban development.
- Implement job placement programs which match graduates to job opportunities in the local LCEGS sector.
- Partner with business to ensure that key needs for sustainable enterprise are met by local training and education programmes.
- Adapt business incentive packages to the small-scale green jobs sector. Traditionally, cities have focused on traditional business incentive

“We want the engineers that join us from university to be thinking differently immediately. It's not just about pouring concrete, but about carbon reduction as well.”

- Andrew MacIntosh, Head of Group Communications, Anglian Water

³³ <http://construction-manager.co.uk/news/first-movers-take-green-retrofit-challenge/>.

packages, which favour large scale corporations, luring them to come or stay with promises of lower taxes, reduced utilities and developed infrastructure. That model may work for a large wind turbine manufacturer, but the green jobs sector in any given city is much more likely to rely upon dozens of smaller companies.

- Develop job training programs focused on green skilling the low income urban population, in order to ensure that they are not left behind as part of the transition.
- Create a 'constellation of excellence' within a sector (e.g. cleantech) across all fronts – R&D, business start-ups, communication campaigns and so on.

Attractiveness of place

Think about designing the city for people, not cars

- Create urban neighbourhoods with the infrastructure to serve local communities and dense developments that prevent further sprawl, easily walkable and accessible for all.
- Integrating business space with neighbourhoods where people can access good quality amenities such as schools, healthcare, arts facilities, dining and shopping.
- Increase the amount of green space in the city. For many urban dwellers, this is an important quality of life factor. Green space in cities serves the dual purpose of being aesthetically pleasing, but also reducing the urban heat effect and trapping carbon.
- Harness the potential for ICT-based solutions to enable urban dwellers to access more things online – whether that is public services or retail options – as well as to connect and coordinate their travel options. When they venture out, people should be able to connect smoothly, safely and quickly between different modes of transport, as well as check journey conditions – everything from air quality to traffic to facilities located near transport hubs - on their smart phones, netbooks, public access touch screens, and a variety of other 'ubiquitous connectivity' devices.
- Engage in a two-way dialogue with businesses and citizens, providing increasing amounts of information, good or bad, and using input from stakeholders to improve the way goods, services and information flow through the city.

“The places where we will want to live and work in the future will need to develop a more local feel, and become more accessible and environmentally-minded. Cities like Peterborough are uniquely placed to meet the localism and sustainability challenges and have put the environment right at the heart of their urban regeneration.”

- Neil Darwin, Director of Economic Development, Opportunity Peterborough

Government incentives

Think big AND small: infrastructure investments need to be big, but community planning should be small-scale.

- Develop a long-term, overarching ambition and vision for creating a sustainable city, linking it to and building upon the city's unique identity to make it credible and distinctive.

- Ensure the city provides regular monitoring of the changing climate, and a body of experts who can advise on adaptation responses, in order to minimise uncertainty around future impacts and help facilitate business continuity.
- Traditional economics looks purely at economic activities like production or services that can be measured and ignores the value added by, for example, carers, volunteers etc. Provide incentives that will attract sectors that deliver sustainable value-add, including cleantech companies, volunteering organisations, social entrepreneurs and so on.
- Provide incentives for 'smart' network providers in order to leverage the benefits of ICT-based innovation and value addition in your urban area.
- Because of the upfront costs of creating smart systems in cities and today's environment of restricted funding, there will be a need to make a strong business case for investment. Look at ways to use ICT to deliver services in a more efficient and less wasteful way.
- This will almost certainly mean engaging business in the delivery and operation of smart networks in cities, including the provision of capital and management or servicing contracts.
- Find ways to nudge people in the right direction and change patterns of established behaviour. Our future challenges will be shaped by people's values, behaviour and preferences. Cities need to think about ways in which mass behaviour and social norms can be influenced in positive ways to promote low-carbon, healthier lifestyles including, for example, less reliance on the automobile.
- Develop city-scale collaboration. Capitalise on opportunities to innovate and co-create new products and services by sharing data and opening up political decision-making processes between government organisations, with businesses and civil society organisations.
- Seek 'green investment' to help finance sustainability projects in the city. Understand and clearly articulate the business case and ROI of sustainable projects in the city.
- Act as a catalyst for new business models. Cities have not got as much funding for large-scale investments any longer, so it will be important to know how to enable others to develop and implement solutions.

“Local authorities need to be consistent in how they sell sustainability. It requires authentic leadership from the top, and has to be seen as integral to what they do. In smaller cities, this should be easier to do.”

- Karl Hick, Managing Director, Larkfleet Homes