Emerging Concerns

Alongside the common challenges and ambitions discussed, three emerging concerns were raised during our research and are seen as areas where future resource needs to be focused. While not yet applicable to every urban environment, the leading examples highlight that momentum is building.

CONCERN 1: Safe Cities

Whether it is to prevent terrorism, defend against infrastructure-focused cyber-attacks or deal with increased crime, the need for citizens to feel safe is accelerating.

One of the key issues that the Chinese interns we talked to in Dubai saw as important for the future was to live and work in safe cities. While security in Dubai is clearly high, these students felt that achieving similar levels of safety would be important for many other leading cities in the years ahead. Whether to prevent terrorism, provide defense against more infrastructure-focused cyber-attacks or dealing with increased inequality, the need for urban environments to better protect their citizens was highlighted at several events.

Safest Cities

Taking a holistic view across security from digital, health, infrastructure and personal perspectives, the EIU 2015 Safe Cities Index identifies Tokyo as the world's safest city closely, followed by Singapore.[65] In Asia, Jakarta and Ho Chi Minh City are at the bottom of the list. While wealthy nation cities are generally above average in the rankings, they should not be complacent; Riyadh for example is one high-income city with a low safety index. Here and elsewhere, **gated communities provide a sense of security for those who can afford to live in them.** In Chile, Santiago has seen a significant growth in gated communities over the past decade while, as far back in 2004 Johannesburg had 300 enclosed neighbourhoods and 20 security estates.

Total Score		
1	Tokyo	85.63
2	Singapore	84.61
3	Osaka	82.36
4	Stockholm	80.02
5	Amsterdam	79.19
6	Sydney	78.91
7	Zurich	78.84
8	Toronto	78.81
9	Melbourne	78.67
10	New York	78.08
11	Hong Kong	77.24
12	San Francisco	76.63
13	Taipei	76.51
14	Montreal	75.6
15	Barcelona	75.16
16	Chicago	74.89
17	Los Angeles	74.24
18	London	73.83
19	Washington DC	73.37
20	Frankfurt	73.05
21	Madrid	72.35
22	Brussels	71.72
23	Paris	71.21
24	Seoul	70.9
25	Abu Dhabi	69.83
26	Milan	69.64
27	Rome	67.13
28	Santiago	66.98
29	Doha	66.41
30	Shanghai	65.93

Personal Safety		
1	Singapore	90.42
2	Osaka	90.2
3	Tokyo	89.31
4	Stockholm	87.51
5	Taipei	85.67
6	Hong Kong	85.09
7	Toronto	84.82
8	Melbourne	82.72
9	Amsterdam	82.39
10	Sydney	80.4
11	Barcelona	78.36
12	London	77.35
13	Zurich	76.62
14	Doha	76.41
15	Lima	74.81
16	Frankfurt	74.57
17	Washington DC	73.95
18	Istanbul	73.7
19	Seoul	73.62
20	Mumbai	73.61
21	San Francisco	72.96
22	Delhi	72.7
23	Los Angeles	71.66
24	Paris	71.29
25	Chicago	71.27
26	Bangkok	70.97
27	Milan	70.87
28	New York	69.45
29	Montreal	68.48
30	Shanghai	67.66

Digital Security		
1	Tokyo	87.18
2	Singapore	83.85
3	New York	79.42
4	Hong Kong	78.78
5	Osaka	77
6	Los Angeles	74.99
7	Stockholm	74.82
8	San Francisco	73.85
9	Abu Dhabi	73.71
10	Chicago	72.9
11	Toronto	72.04
11	Montreal	72.04
13	Santiago	70.51
14	Sydney	70.48
15	Washington DC	69.99
16	London	69.42
17	Amsterdam	68.81
18	Mumbai	68.07
19	Zurich	67.04
20	Melbourne	65.42
21	Taipei	65.11
22	Brussels	64.6
23	Kuwait City	64.21
24	Delhi	63.33
25	Shenzhen	62.74
26	Milan	62.62
27	Mexico City	61.69
28	Madrid	60.78
29	Barcelona	60.29
30	Buenos Aires	59.58

Source (viii)

Counter Terrorism

Around the world, increased terrorism has become a growing concern for everyone. Recent terrorist attacks in Mumbai, Paris, Brussels, Ankara and London, to cite just a few, are centre-stage for many security forces, urban planners and increasingly the general public. Preventing attacks from happening and minimising their impact when they do is now a priority in many locations. This is made all the more complex because of the changing strategy of assailants some of whom employ low-tech but extremely effective approaches, such as driving cars into crowds with the intention to cause harm, for maximum effect.

In some cities planners use counter-terrorism architecture such as bollards, barricades, street furniture and open spaces to reduce this risk.[66] The UK's RIBA was one of the first organisations to explore the options and provide design guidance.[67] It highlighted the benefits that can be achieved from using glazed facades, large staircases and enhanced landscaping in public spaces.[68] While extreme approaches, such as those being used within and around the new US Embassy in London, with its seclusion zone, and six inch glass walls, are necessary in some areas, for the majority, more modest, but effective street architecture does, at least, provide a shield.[69] One thing for sure is that **designing for counter-terrorism without turning nations into uninviting fortresses is a delicate balance.**[70]

Foiling Cyber-Attacks

Although physical attacks and the options to counter them can be highly visible, behind the scenes equally significant changes are taking place to deter and prevent increasingly common cyber-attacks against urban infrastructure. In one of our 2015 future of privacy discussions that involved leading members of the intelligence services, it was stated that the number of cyber-attacks that had been prevented in the UK alone that year was put in the thousands. As the Internet of Things increasingly connects everything from cars to street signs, fridges to supermarket checkouts, our mobile data and health information to distant monitors and so on, the risk of fraud and the possibility of error will become a constant in our lives. While some consider that this will simply become an inevitable part of everyday life, and is similar to the risks we already take when driving a car or getting on a train, others are more wary, believing that the new **integrated connectedness makes security management significantly more challenging.**

As was often pointed out, the IT sector and security services may well prevent a thousand attacks (or more) each year, but it only takes one major breach to potentially cause panic. Most vulnerable are the utilities, especially energy supply and water treatment/ distribution facilities. Closing down a power grid is seen as the worst-case scenario in much security risk analysis.[71] While Russian hackers have recently taken down the energy system in Ukraine, industry

experts see that other nations, including the US are also in danger.[72] As energy systems are evermore interconnected, the ability for hackers to deny citizens supply for months, not just hours, is a real possibility. This is a major worry and security contingencies see that a week of no power in many urban districts could lead to food and water shortages and even civil breakdown. Currently, cities vary widely in terms of how prepared they are for possible attacks.

Safe Cities

US locations such as New York, Los Angeles, Chicago and San Francisco are all relatively secure digitally but the focus on technology and cyber security does not seem to be matched by success in combating physical crime. All are outside the top 20 for personal safety. London, with one of the most extensive networks of CCTV monitoring of any city, has a camera for every six citizens. And yet, at the time of writing, crime rates in London are rising, some argue because of the reduction of policemen on the beat. Madrid has more than 8,000 security cameras distributed throughout its mass transit system. However, some studies suggest that CCTV does not in fact have an impact on levels of crime and violence. At best its impact is modest.[73]

Maintaining Social Cohesion

Alongside terrorism and cyber-attacks, the third main security risk that was highlighted was that of social cohesion, especially in a world of rising migration and inequality. **Urban environments can be incubators for crime.** Hot spots generally occur in areas that are characterized by poor social cohesion and control. Addressing this is a priority and so many cities increasingly have plans to combat inequality and improve the quality of life for all citizens. But success is proving elusive. Consider Rio de Janeiro that in 2010 launched Morar Carioca, a high-priority plan to convert its slums, or favelas, into recognized city communities by 2020. Roughly one-fifth of the city's residents—around 232,000 households—live in these favelas, most without basic sanitation, and with little in the way of building standards. Under the 'Municipal Plan for the Integration of Informal Settlements' Rio planned to bring municipal services like clean water and waste collection into the favelas; upgrade urban infrastructure (such as providing energy-efficient lighting); improve residential buildings and more.[74] As a bold initiative the plan won several international awards.[75] However, five years later this ambitious and visionary project was packaged into the Olympic legacy framework, co-opted by political interests, and then abruptly dismantled without much explanation.[76]

Social psychologists treat cohesion as a trait that combines with others in order to influence the way the group does things. Sociologists tend to look at cohesion as a structural issue, measuring how the interlocking parts of the whole group interact to allow it to function. Within cities, providing people with incentives such as fulfilling employment, a good home environment and a sense of self worth are seen as primary drivers for greater cohesion. Equally important is the principle of social norms – effectively the acceptable behavior within a society. Norms tend to keep a group working better together as long as everyone acts within the same framework.[77]

Within urban planning, a key design approach to improving cohesion is identifying spatial strategies that can alleviate the concentrations of urban poverty and inequality and provide better access to jobs, housing, education, health, public space, transport and community infrastructure.[78] Green spaces and access to sports facilities, for example, can have a huge positive impact. Medellin in Colombia, site of innumerable gang murders a mere few decades ago is again a good example of how sport can help transform communities beyond recognition. Problem favelas were reintegrated into the city with publicly funded sports facilities and better transport connecting them to the city. Others now taking heed of good examples, are following suit and are seeking to introduce similar more integrated planning policies.

CONCERN 2: Resilient Cities

The imperative to reconfigure infrastructures that are able to withstand the likely impact of climate change and the increasing number of natural disasters is a growing concern. Adaptation is currently the priority over longer-term mitigation.

Resilience reflects a city's ability to persevere in the face of an emergency. In our discussions in both Christchurch and Guayaquil, the need for cities to be more resilient to natural disasters was emphasized above many other issues. In many ways this was no surprise given that both have recent experiences of earthquakes. Christchurch was hit most significantly in 2011 killing 185 people and rendering much of the city centre uninhabitable, while the 2016 earthquake in Ecuador was centered on Manabi Province and killed over 670. Whether from earthquakes, flooding or other acute shocks, in an age of wider climate change recognition, many cities are asking how they can be more robust to withstand and combat the effect of natural disasters and extreme, less predictable weather patterns.

Climate Change Impact

No one really knows exactly what the impact of 2, 3 or 4ºC of rise in global temperature will mean as it is genuinely unchartered territory, but the UK Met Office has created one map of likely consequences of 4oC based on the IPCC Assessment Report. Alongside further melting of the Artic and Antarctic ice sheets, this shows desertification in the Amazon, South West USA, Southern China and large parts of Africa. In terms of weather, drought and hurricanes will increase in frequency and strength and the seasons will shift. However, the most concerning issue that we need to prepare for seems to be flooding. Whether stemming directly from rising sea levels and more heavy rainfalls or as a by-product of more unstable weather patterns, dealing with more water than our systems were designed to handle is the top climate risk in many urban regions.[79]

Historically many communities were adjacent to water and cities have naturally developed in the same locations. Today most of the largest cities are located on the coast and so are increasingly vulnerable to flooding. New York, Miami and Boston, alongside Guangzhou, Mumbai, Kolkota, Shenzen and Jakarta are among the most vulnerable. The ten most 'at risk cities' globally already have combined populations of over 150m and are projected by the UN to have grown by a further 50% by 2015, adding another 75m.

Flooded Cities

The vast majority of our cities are not prepared for flooding and yet 22 of the top 50 wealthiest are prone to serious flooding that will impact housing, the poor, cost of energy and social breakdown.[80] By 2070, the total asset exposure could rise more than tenfold from today, reaching $35 trillion, more than 9% of projected annual global economic output. Over the longer term, experts estimate that up to 1 billion people will have to migrate inland or north this century as a consequence of climate change. For the majority, who are simply unable to move, dealing with this will become the biggest priority. Over the past decades, many of us have consistently built where we should not and, in many regions, flood plains have not been respected. Moreover, other than in the Netherlands, few buildings have been designed to accommodate regular flooding. Multinational learning visits to the Netherlands, a sensible idea for planners and decision-makers, are frequent but, as yet, few tangible new projects have been proposed.

Preparing for Resilience

The real opportunity is to rethink infrastructure in terms of resilience, and not just rebuild it. In only a few cities more effort is being put into building new infrastructure similar to the Thames barrier in London. Designed in the 1960s and operational since 1982, this helps to defend London from high tides and storm surge. Originally intended for use

WORLDS MOST AT-RISK CITIES FROM FLOODING

Total Score					
1.	Guangzhou	China	11.	Jakarta	Indonesia
2.	Mumbai	India	12.	Abidjan	Ivory Coast
3.	Kolkata	India	13.	Chennai	India
4.	Guayaquil	Ecuador	14.	Surat	India
5.	Shenzen	China	15.	Zhanjiang	China
6.	Miami	US	16.	Tampa	US
7.	Tianjin	China	17.	Boston	US
8.	New York	US	18.	Bangkok	Thailand
9.	Ho Chi Minh City	Vietnam	19.	Xiamen	China
10.	New Orleans	US	20.	Nagoya	Japan

Source (ix)

only once or twice a year, in 2014 it was closed 48 times. This increased frequency both reinforces the need for long-term planning, and acts as a reminder that it is reaching the end of its capacity to protect. Similar sustainable flood-risk management schemes are being discussed and planned for areas like the Pearl River Delta in China where currently the practice is to deliberately flood rural areas in order to protect cities.

No one is expecting migration to vulnerable cities to stop, or for cities to voluntarily relocate any time soon, but with insurance now impossible to obtain for some locations and more regular flooding occurring in others, the need for action to be taken will be increasingly visible over the next decade. If global warming plays out as many expect, attitudes to flooding will shift considerably, good practice will be shared and a there will be a more widespread view around better preparing for resilience.

After the damage from Hurricane Sandy, New York has embraced an approach originally conceived in London that calls for agencies to start adopting resiliency measures immediately, monitor how well they work, and continually update their understanding of climate risk information and responses as the climate system and resilience actions evolve. The report "A Stronger, More Resilient New York" outlines 250 projects to protect the city's coastline, and to strengthen buildings, energy systems, transportation networks, parks, telecommunications, health care operations, and supplies of food and water.[81] Sea levels in the vicinity of New York City are rising at almost twice the global average rate. As much of the city's critical infrastructure is located within the '100-year flood zone' so the core challenge is how to dedicate the resources to adapt and rebuild infrastructure to be able to cope with the expected changes in water levels. While some in Washington DC see that, in the longer term, eventually the whole city may need to relocate, others believe that this can be avoided. Digital technologies may well help to monitor the situation and as cities become more intelligent and responsive it is hoped they can also become more resilient.

New York has gained a lot of focus, however other cities face more immediate threats. As such there is a flurry of collaborative activity underway in order to improve resilience.[82] Most significant here is the 100 Resilient Cities collaboration a network dedicated to helping cities around the world become more resilient to physical, social and economic challenges.[83]

The 100 Resilient Cities network sees that urban resilience is the capacity of individuals, communities, institutions, businesses, and systems within a city to survive, adapt, and grow no matter the kind of chronic stresses and acute shocks they experience. These include high unemployment, inefficient public transport, rising violence as well as food and water shortages - each of which is clearly critical and variously occurring in conurbations around the world. However, given the growing impact of climate change, greater focus is now also being placed on a city's ability to adapt and cope with more acute shocks such as earthquakes, flooding and also more pandemics.

The City Resilience Framework

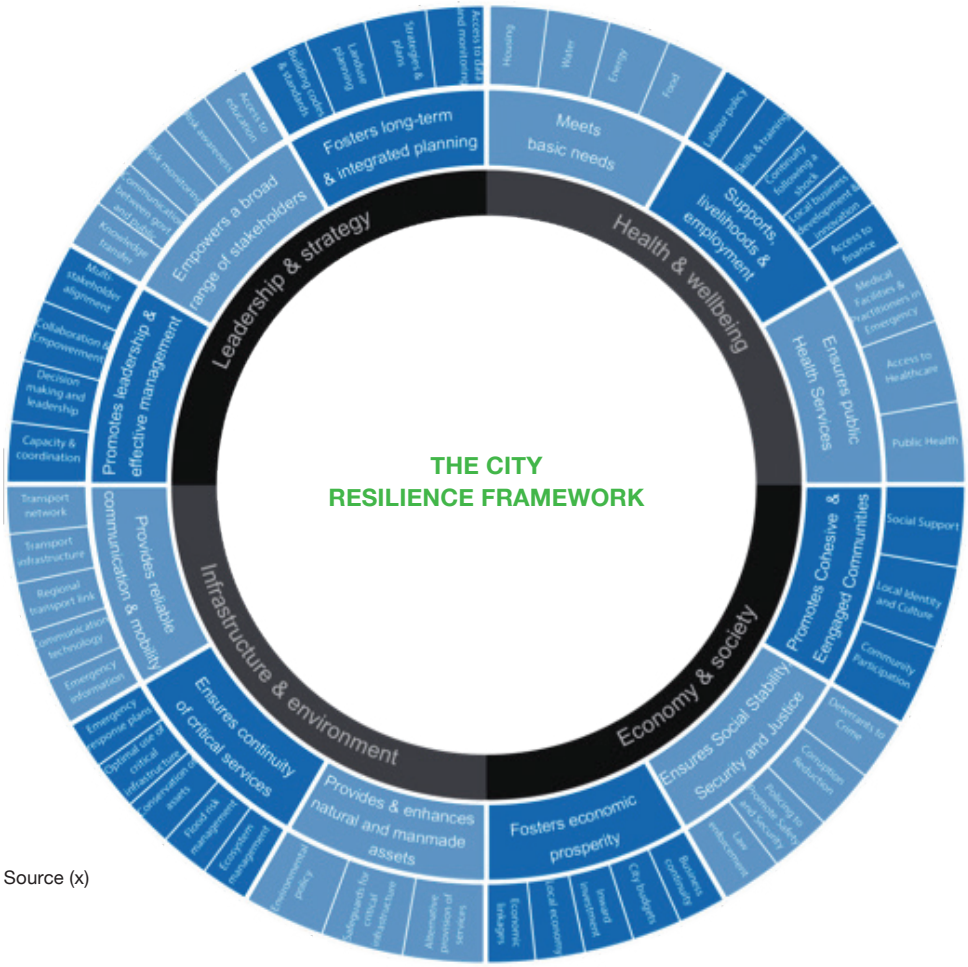
Developed by Arup with support from the Rockefeller Foundation, The City Resilience Framework[84] provides a lens to understand the complexity of cities and the

drivers that contribute to their resilience, and a common language that enables cities to share knowledge and experiences. It is one of several examples of joined up thinking taking place that connects the multiplicity of factors that underpin urban resilience.

In some of our discussions it was recognized that, given the climatic shifts now evidently underway, efforts to mitigate climate change are needed but may not have impact any time soon. If preventing more chronic stresses and acute shocks is not possible, then we need to adapt to the changing conditions. Indeed, the language of adaptation and resilience is becoming more commonplace. Globally we can see different cities already pushing differing, more adaptive approaches. For example, Toyko's cap-and-trade program for reducing greenhouse gas emissions, the first for an urban center, requires large commercial, industrial, and government buildings to cut their carbon pollution via energy efficiency or emissions trading.[85]

Resilience Efforts

Led by both city mayors and, significantly, the big insurers such as Swiss Re and Munich Re[86], more proactive efforts to address the impacts of climate change are now taking place. These range from the creation of Chief Resilience Officers[87] who focus, coordinate and lead each city's resiliency efforts to the development of resilience bonds[88] that generate capital for risk reduction projects. How quickly these and other initiatives can scale and have impact ahead of the next acute shock remains to be seen. Several climate change experts consider that many of the implications from global warming for this century are already underway and that the point of no return for temperature rises above 2°C is looming, bringing with it extensive, but unpredictable shifts. The problem is that the changes we make today will only begin to have tangible impacts in the next century. Therefore improving the resilience of key cities to get us through to 2100 intact is no small task.



Source (x)

CONCERN 3:
Collaborative Co-opetition

Managing partnership and competition to establish the right balance between sharing experience, insights and ideas for the future while recognizing increasing economic competition between locations.

Cities always have and always will compete and compare with each other. But with many shared challenges now being aired, the level of inter-city collaboration taking place is also increasing. 100 Resilient Cities is one example already discussed. The C40, is another great network example that connects policy makers from 83 cities around the world in order to address the impact of climate change and learn from each other about issues such as waste management, building efficiency and transportation. Through efforts like these, cities are taking the lead ahead of national and regional governments in tackling the key issues for the future. However, balancing greater collaboration with the ongoing demand to compete is a tricky balance to maintain.

Growing Competition

Since the days of Sparta and Athens there has been competition between cities. While the means of gaining competitive advantage may have changed, the continuous battle for leadership has not abated. **The big cities of today and tomorrow operate in a constant state of competition.** They jostle over everything: positioning and attractiveness through to design, innovation and strategic city branding. This competition among metropolises is intense, and a strong city brand has become a potent weapon to maximise its profile allowing it to differentiate itself from its others.

The World Bank sees that a competitive city is one that successfully facilitates its firms and industries to create jobs, raise productivity, and increase the incomes of citizens over time.[89] But culture and livability also has a role to play. What is increasingly evident is the increasing competition between cities to attract skilled, entrepreneurial people to live and work within them.[90]

National and International Rivalry

The need to attract high-value, high-wage businesses in services and professionals in the likes of research and design, new technologies, the financial and media industries is seen at both in-country and international levels. Within India, cities such as Mumbai, Pune, Hyderabad, Chennai and Bangalore are all striving against each other to be the national leader in digital business.[91] Across the EU, cities such as Paris, Frankfurt, Amsterdam and Dublin are all positioning themselves to attract more financial services jobs from London particularly following Brexit. Attracting significant FDI (foreign direct investment) has been a hallmark of Singapore's success. The same is true for London, Dublin, Shanghai and New York.[92]

Quality of Life – A Source of Competition

New forms of competition are emerging particularly around quality of life and the overall cleanliness, safety and greenness of the urban environment.[93] Dubai, for example, has emerged as not only a regional, but also a global centre, which invites talent, sprouts imaginative architecture, attracts the headquarters of major global firms and creates competitive infrastructure.[94] But it now also

suffers from serious pollution with air containing 80 micrograms of pollutants per cubic meter. That's slightly higher than China's at 73 micrograms and more than double India's at 32. Unless it can better manage this, its aspiration to attract the brightest and the best might remain just that.

Collaboration

Many see that today cities must not only compete to succeed they must also collaborate. Through networks, cities find opportunities to undertake joint projects in areas of mutual interest and benefit. **Inter-city collaboration is becoming a priority for any mayor's office.** Sharing, learning and partnering on the big issues for the future are becoming a necessity. Working across multiple sectors and issues, the C40 convenes networks that provide a range of services in support of urban climate change efforts. It has 17 networks organised under 6 initiative areas covering mitigation, adaptation and sustainability topics which are of highest priority to cities at risk of the greatest impact from climate change. They help cities replicate, improve and accelerate climate action. These city-only working groups provide a forum for honest knowledge exchange, enabling cities to tap into the global expertise of their peers as well as providing the connections for technology partnerships. C40 networks also amplify individual city solutions by providing a global platform for showcasing city successes.[95]

Some suggest the role of cities as problem solvers is rising while other government bodies such as nation states are increasingly being considered obsolete or dysfunctional.[96] A key element in this is that cities have more to offer, presenting a greater goodwill, more flexible configuration and a better mindset for collaboration than national governments. Specifically, a good number of municipal leaders tend to be more resourceful problem solvers. As cities must cope with the practical day-to-day realities, mayors and councils find themselves more obliged to deliver services rapidly and effectively. They are often also more able to test and refine approaches faster than national governments. Equally, local executives usually exhibit a less partisan and more pragmatic style of governance. Indeed the mayors of many cities show a quality of leadership that encourages collaboration. Some are going further than others: Metropolitan areas like Denver and New York are shunning competition and focusing on how entire regions can work together to reach economic goals.[97]

The C40 and the 100 Resilient Cities are not the only forums. Other collaborative networks of urban organisations and governments are emerging on a regular basis. The World Cities Culture Forum includes a network of 27 cities founded in 2012 that share a belief in the importance of culture for creating thriving cities while Eurocities is bringing together the local governments of over 130 of Europe's largest cities and 40 partner cities which,

between them, have 130 million citizens.[98] One of the most recent networks is The Global Parliament of Mayors[99] inspired by the ideas of Benjamin Barber, author of the book 'If Mayors Ruled the World' This is based on the view that cities, and the mayors that run them, offer the best new forces of good governance and best practices to support and accelerate global answers in an ever interdependent world. Greater and deeper collaboration is clearly the new normal.

Co-opetition

So how does ever-greater competition and deeper collaboration between cities actually work? What is the right balance? In the world of business, co-opetition – simultaneous competition and cooperation – is an important strategy that goes beyond the conventional rules of competition and cooperation to achieve advantages of both. Sharing supply chains, common platforms and defining new standards within an industry are all growing examples of this. For cities, parallel approaches are now emerging. In the UK, Liverpool and Manchester, established long-term competitors, are collaborating on a number of initiatives including one of several 'Cities for Business' partnerships where they are working together in the best interests of the North West region.[100] In Germany, cities in the Ruhr region are collectively promoting its sports and other cultural centres. Elsewhere in Europe cities such as Barcelona and Vienna are joining together to woo attractive global conferences for long-term collaborations. In Asia, competing Chinese cities are increasing co-branding in order to create momentum and attract investment. In addition several regional tourism destinations are experimenting with new strategies where cooperation and co-opetition co-exist.

If we are going to tackle some of the challenges identified in our discussions, it is clear that **more widespread co-opetition is going to be a key part of the solution.** Addressing inequality, migration and scaling requires greater sharing of the best approaches. Equally, if we are to realize the ambitions of healthier, accessible and more intelligent cities, new ideas that link together the needs of not one, but multiple urban environments should be shared.

Moving Forward

The insights gained to date on the future of cities have helped us to clarify the main issues, highlight numerous examples and lay out a view of the landscape. As we take this project further with more discussions in Europe and Asia planned throughout 2017/18, we wish to focus on new solutions, identifying opportunities for innovation in planning, policy, strategy and collaboration. Collectively we seem to be clear on the problems, the causes and some of the off-the shelf answers. However, given the scale of both the challenges and the ambitions, new thinking is also going to be part of the mix.

While we all recognise that every city is singular and so they have different set of problems and specific solutions, there are a number of common issues, concerns, ambitions and emerging challenges. Some of these are already being explored in depth by new collaborations – resilient cities, healthy cities and safe cities are all top of mind here. Other issues are being led by or promoted by a multitude of parties – intelligent cities and more innovative cities are, for example, both high on many agendas. Several new partnerships are now emerging to explore these further and we hope to help seed and guide some of these discussions using the insights gained to date. In addition, there are cross cutting topics like social cohesion, tolerance and openness to migration. These are increasingly political matters in many societies but with growing urbanisation a clear global trend for now and the future, they will have to be better addressed if more of us are going to live in close proximity to others.

While we recognise that there are many excellent research projects underway exploring elements of the future of cities, both globally and regionally, we hope that the insights the Future Agenda programme has gleaned and shared help.