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The world's leading open foresight program

The Future of Cities
Summary of Insights from Multiple Expert Discussions Around the World
February 2017

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Context

Cities are where innovation happens, where ideas form and where economic growth largely stems. They are where most of us live and are also where significant problems can emerge as well as where challenges can be magnified.
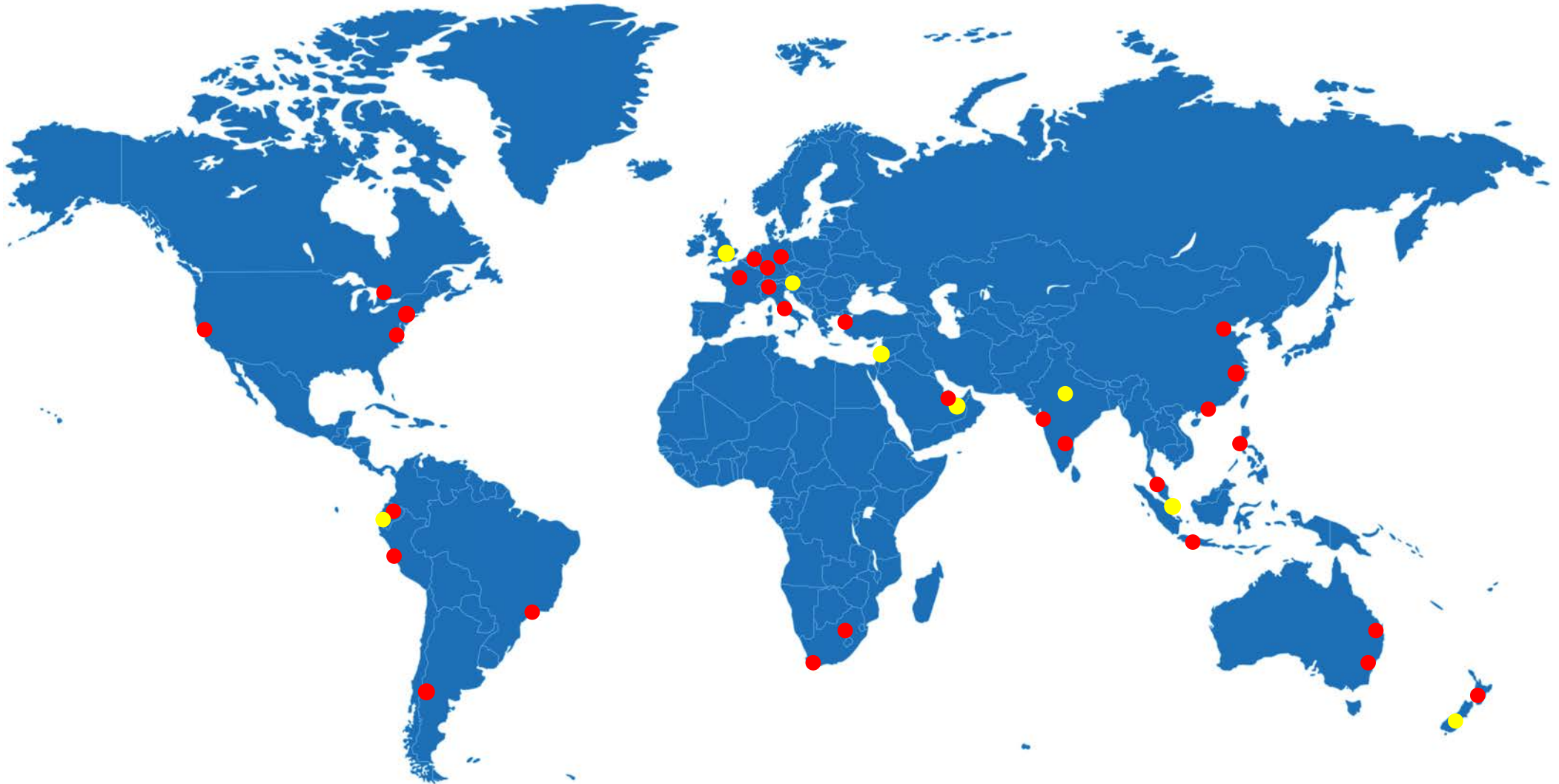
Future of Cities Discussions
As part of the global Future Agenda programme, during 2015 and 2016 we ran several 'future of cities' workshops in key locations. Complemented by over 100 other events, these have provided multiple insights on the topic.

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Common Challenges	Managing Migration	Countering Inequality	Scaling Sustainably
Shared Ambitions	Healthy Cities	Accessible Cities	Intelligent Cities
Emerging Concerns	Safe Cities	Resilient Cities	Collaborative Competition

Key Global Insights

Although some points were specific to individual locations, a number of issues were unified across all our discussions. We found three common challenges, three shared future ambitions and three emerging concerns.

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Reflect

- To reflect what informed people in varied countries think is most important

Link

- To link these thoughts to some of the research that has already been done

Prompt

- To prompt further debate on some gaps and issues that seem as yet unresolved

Purpose of Summary
Ahead of more workshops and the publication of a detailed report, this document provides an overview of what we heard from the expert discussions undertaken around the world during 2015/16. It has three objectives.

Common Challenges
Across our discussions a number of issues were raised repeatedly that focused on three significant, inter-related concerns for the majority. These are common challenges impacting many of the world's cities.

Managing Migration

Growing migration to cities in most regions is set to be one of the defining shifts taking place for the rest of the century. Over the next 30 years the urban population in the developing world is set to grow by an extra 2 billion.

Pace of Change

The scale of migration is driving huge social, cultural and political change: some governments have become doubtful of their ability to cope. Many have concluded that they ought to slow the process down or disperse the problem.

Positive Migration
Many economists and some politicians agree that, especially for countries with ageing populations, immigration has a positive economic impact. But only a few countries are really open about the benefits.

Refugee Influx

The inflow of refugees from Syria to Lebanon has passed 1.5m. Added to the 500,000 Palestinian refugees already in the country, within a total national population of only 6m there is now 1 refugee for every 2 Lebanese nationals.

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Internal Migration

In many nations internal migration completely dwarfs international migration.
32 people per hour are moving into Shanghai, 39 into Kinshasa and Jakarta,
42 into Mumbai and Karachi, 50 into Dhaka and 58 into Lagos.

Informal Urbanization

A third of the global urban population, and most of the migrants, now live in unplanned slums, ghettos and townships which typically suffer from poor quality, overcrowded housing and restricted access to water and electricity.

Coping Strategies

Cities are being forced to rethink how they plan their infrastructure and services to cope with fast-rising and yet sometimes statistically invisible populations. In some, policies are trying to halt rural-urban migration.

Countering Inequality

Widening differences in access to housing, transport, sanitation, healthcare, education and jobs will continue to extend the gap between rich and poor. Inequality is rising in many cities independent of the numbers of new arrivals.

Inequality a Mainstream Issue

Inequality has become a mainstream political issue as parties argue about the causes as well as the limits that society can accommodate. Almost all of the problems at the bottom of the social ladder are greater in unequal societies.

A Rich Country Problem

Urban inequality is not simply a developing world problem: The US has one of the highest rates of child poverty while New York, Los Angeles and London all have high GINI coefficients - the most commonly used measure of inequality.

The Influence / Need Gap

Many of the people dependent on the provisions of government are not those who pay or influence decisions. As such, as the inequality gap grows, those making decisions are increasingly out of touch with society's real needs.

The Top 1%

The wealthy have a disproportionate ability to influence government and therefore urban design. Consequently the shape and development of cities can often be the result of the needs of the elite rather than the majority.

Attracting the Highly Skilled
Attracting highly skilled workers to a city often leads to improvement in local amenities. But bringing highly skilled workers to an area is not enough to guarantee high wages; the right firms must come too.

Designing a Fairer City
Increasing social housing alongside limiting population density and creating better public spaces can make a difference. Providing wider access to basic services such as banking and healthcare also helps counter inequality.

Joined Up Responses

Given the inter-relationships between financial inequality and unequal access to transport, healthcare, education and the Internet, urban policy has to be integrated across multiple silos. This demands far greater joined up action.

Sustainable Scaling

Urban settlements will increase to more than 3m km² by 2050: Never before have we seen such fast scaling of urban environments. If we are to avoid replicating the errors of the past, then cities must be planned sustainably.

Disconnected Sprawl

Many of the world's fastest growing cities are becoming looser and less connected at the edges. Sprawl is significantly increasing urban footprints, decreasing density and reducing open space.

Africa Growth

Africa is the world's fastest urbanising continent. Some cities are expanding at rates of more than 7% per year. Unsurprisingly many governments find it difficult to provide residents with even the most basic services.

Planning Ahead

Retrofitting roads, utilities and services is far more expensive than planning for them in advance: fast-growing cities need to establish expansion areas that can accommodate growth, plan and secure the rights for roads and public spaces.
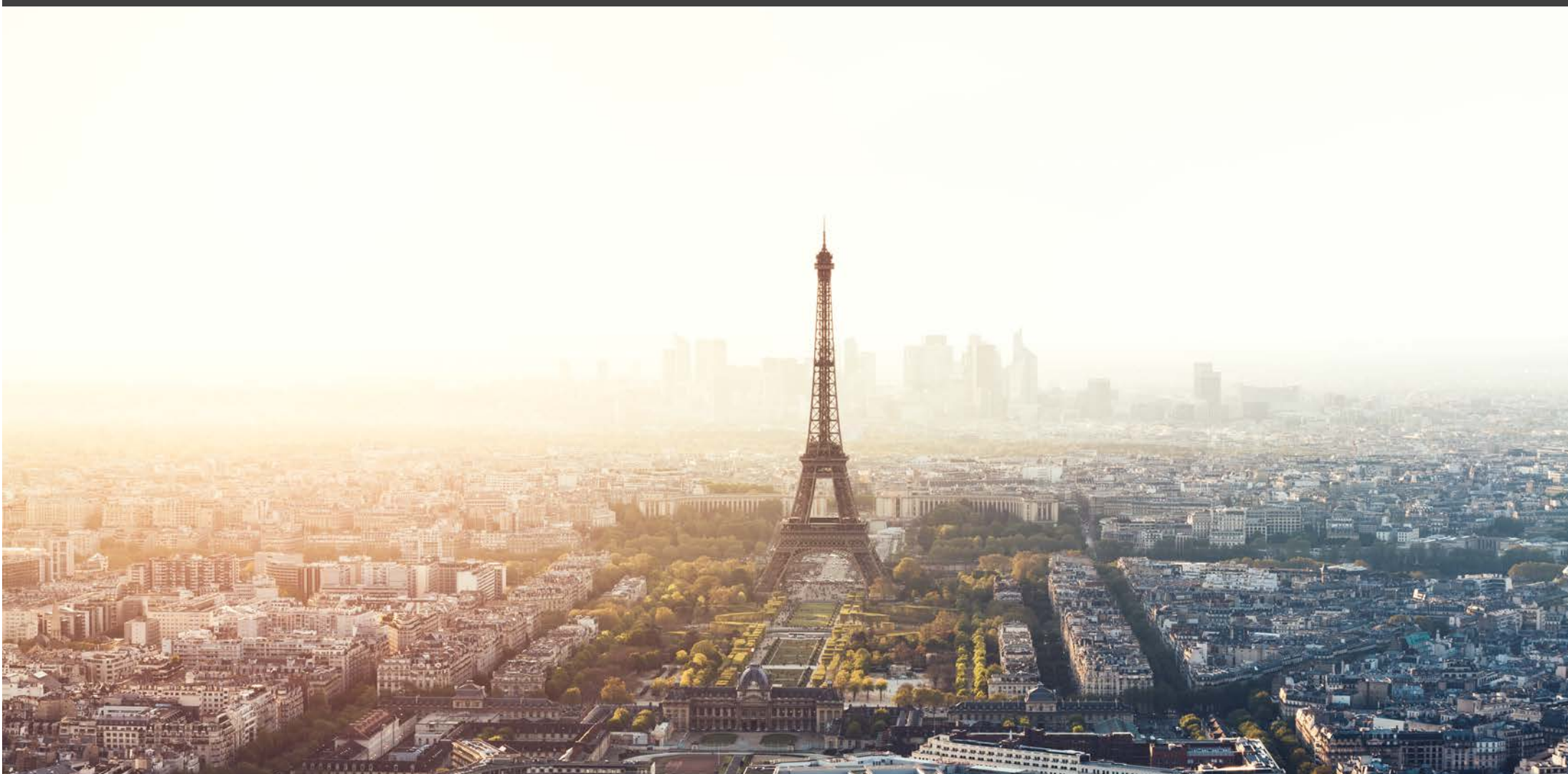
Dense Cities
Experts suggest that densely populated, efficient cities like Paris and Hong Kong are the potential blueprints for sustainable places to live; much better than the distributed sprawls such as Los Angeles and Mexico City.

Satellite Cities

In many regions the growth of satellite cities and networks of midi-cities is seen as a preferred route to more singular mega-city development. Connected by fast infrastructure, these can act collectively economically.
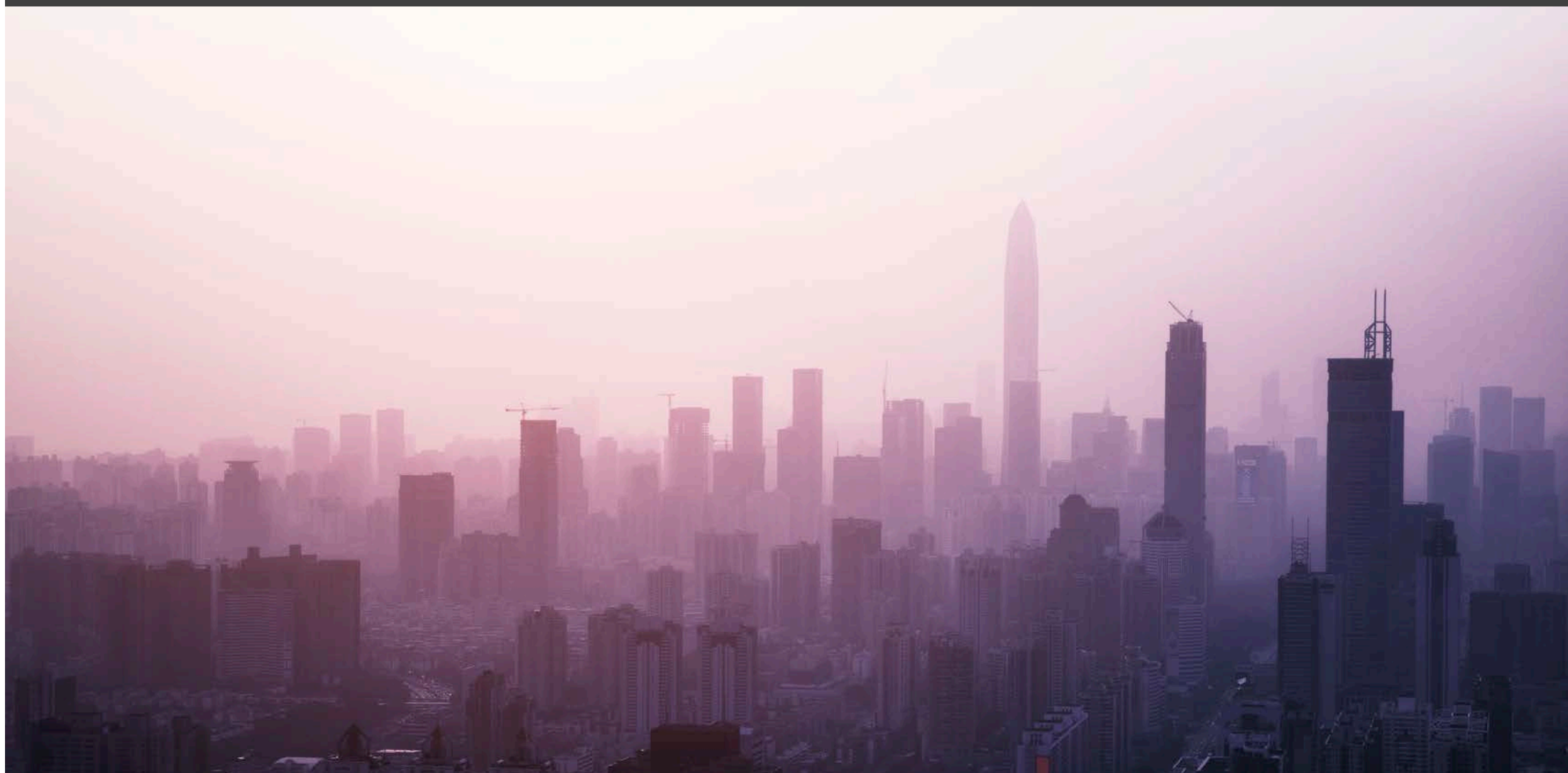
Mega-City Master-Plans

Several metropolises in Asia and the Middle East are effectively being built from scratch, so there is an opportunity to get scaling right from the start. To avoid more sprawl, they need shared, long-term and detailed master plans.

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Healthy Cities

Shared Ambitions

Intelligent Cities

Accessible Cities
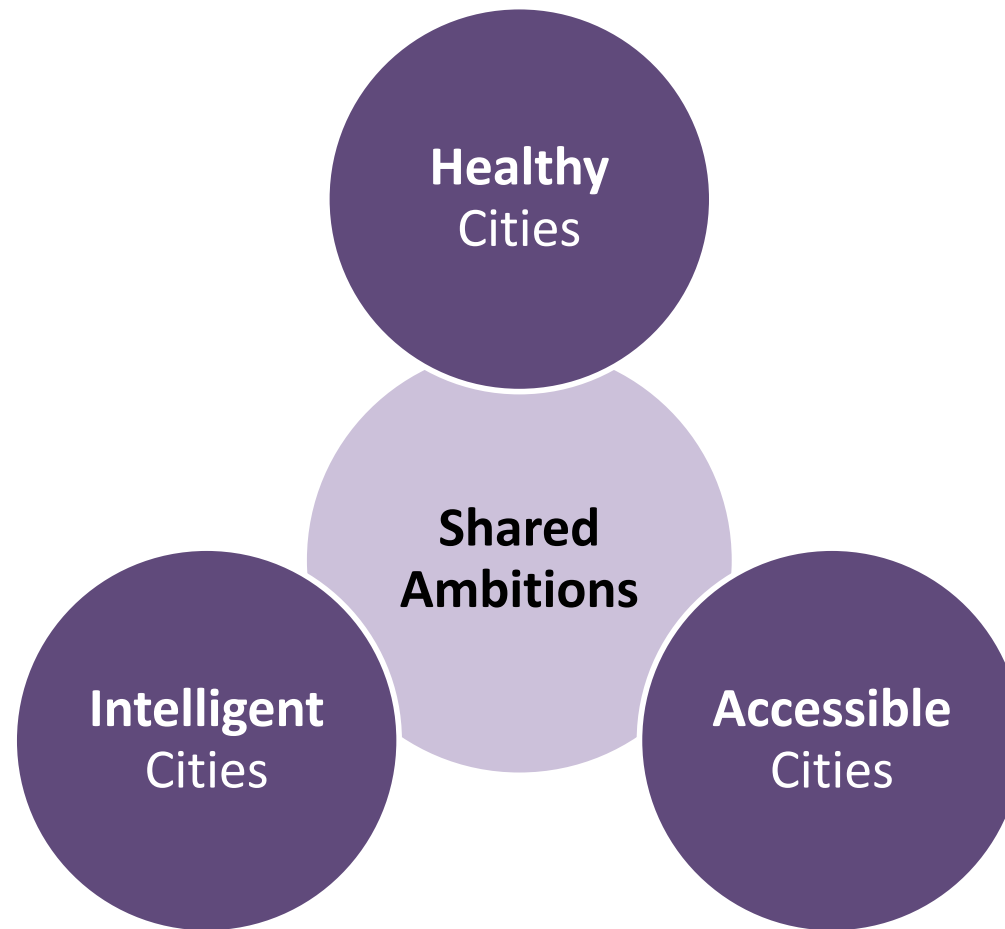
Shared Ambitions
In exploring how to improve their urban environments and the lives of citizens, many cities share a number of common ambitions for the future. Three inter-related goals were highlighted across most of our discussions.

Healthy Cities
A common core aim is to reduce pollution, especially air pollution, improve access to clean water, and install better sanitation and healthcare provision so that fewer die from preventable causes.

Air Pollution

The most detectible health threat to cities today is declining air quality.
Delhi's air is 15 times more polluted than the WHO safe maximum. Air pollution in China kills about 4,000 people every day – 17% of all deaths.

Rich Country Air Quality
Some of the most toxic air today is found in the UAE.
Although air quality is gradually improving in the US, in Europe
over 460,000 people a year die prematurely because of air pollution.

C40 Action

Led by the mayors of C40 cities such as Paris and Mexico City there is a concerted effort underway to reduce emissions. By introducing bans for diesel and incentives for electric vehicles by 2025, they aim to change the market.

Eco Civilisation

Potentially most significant on a global scale is China's Eco-Civilization initiative - many see this as a game-changer. China will take the lead on climate change and reducing urban air pollution and so set the standards for others.

Polluted Water

Water pollution is another major challenge to healthy city living. Poorly treated sewage can be low in dissolved oxygen and high in pollutants. Groundwater can be contaminated from garbage dumps, toxic waste and chemical storage.

Known Solutions

Many of the solutions lie not only in cleaning up water supplies but also in encouraging industry and citizens to use more recycled water. Simple, proven actions can transform the water supply and massively reduce contamination.

Waste Management

Dhaka, Delhi and Port-au-Prince are three of the worst for poor waste management. Globally the standard bearers for minimum landfill include Switzerland and San Francisco. Regulation drives behavioural change.

Urban Obesity

Mass urbanisation, reduced activity and poor diet are all accelerating obesity. Across India and Africa migration from rural to urban areas is associated with an increase in obesity and is a disproportionate burden on the poor.

Protecting Public Spaces

Urban planning has a role to play. Designing cities to encourage more outdoor activity is one area of observable activity as governments are pressured to ensure that public spaces are created and retained.

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Agreed Benefits

Encouraging a healthier lifestyle can improve urban design and consequently result in reduced pressure on healthcare, better community resilience, and overall offer improved life expectancy. No new technologies are required.

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Accessible Cities

A key ambition for many is to plan cities for people not cars, providing better public transport, new cycle ways and creating more walkable areas, while also encouraging more integration rather than segregation.

People Not Cars

We live in a world where the majority of our cities have been designed for cars first and people second. Many believe that urban life could be better without cars – or certainly without so many of them.

Better Options
Walking or riding a bike is healthier and safer and public transport is frequently cheaper than the car. Copenhagen and Amsterdam, often seen as Europe's most sustainable cities, are leaders in supporting non-motorized transport.

Pro Cycle and Pedestrian

Cities are shifting their attention to making it easier to walk, cycle and play on their streets. Central roads are being converted into pedestrian promenades, others flanked with cycle lanes and speed limits are being slashed.
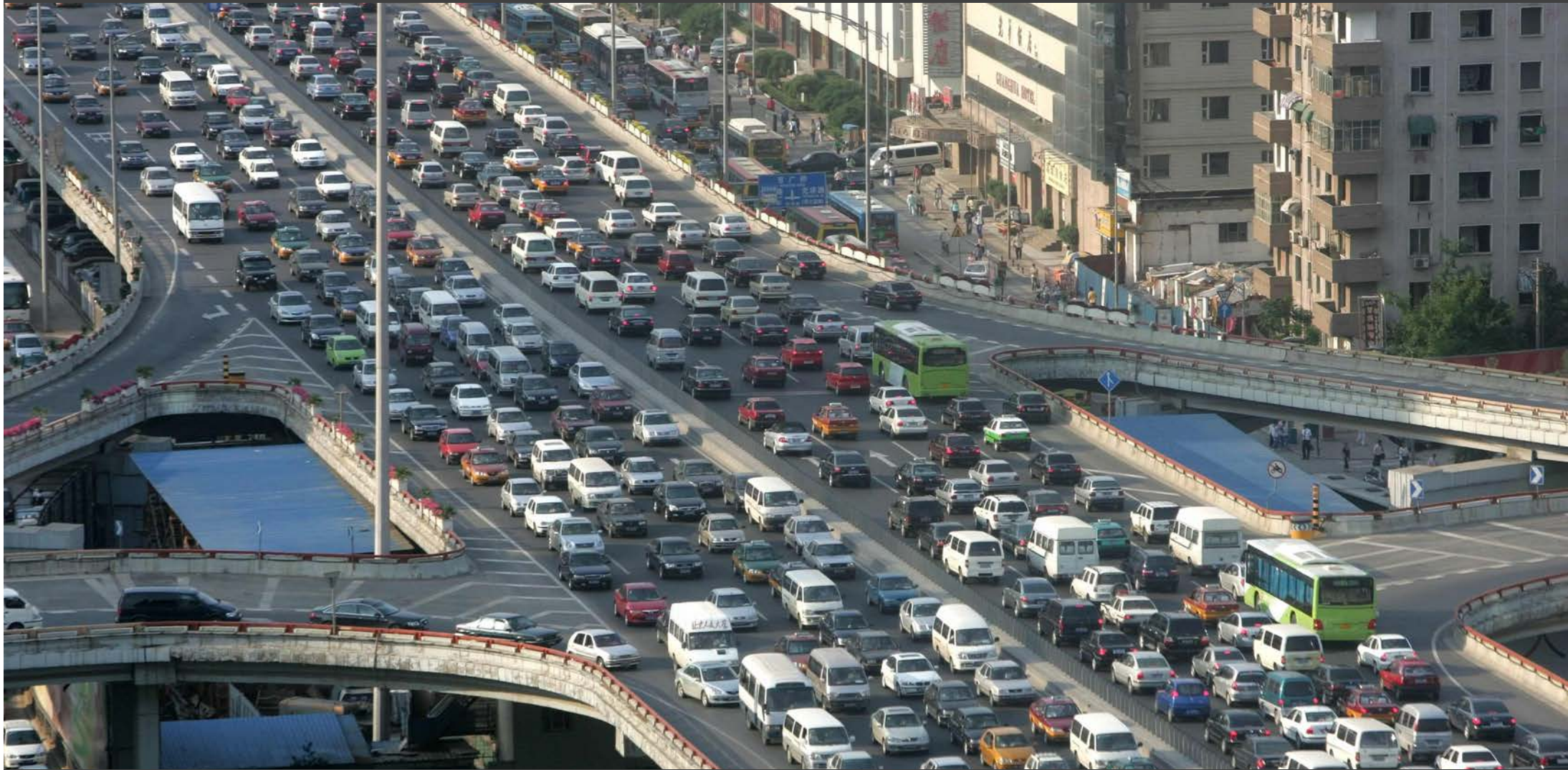
Peak Car?

For most conurbations today, the future threatens to be one with more cars. In many cities the lack of good public transport, coupled with rising incomes in some places, is pushing up the use of private vehicles but to what limit?

More Public Transport

A good public transport system makes a city more accessible and efficient. By 2030, 80% of Singapore households will be within a 10-minute walk of a train station - 75% of journeys will be on public systems.

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Public Private Partnerships
In Medellin, Colombia, the government is increasingly collaborating with business to improve the institutional fabric as well as core infrastructure - through the building of new cable cars and metros.

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Walkable Cities

Walkable cities are safer, more attractive, more inclusive and easier to govern. High profile developments like the Cheonggyecheon River in Seoul have transformed walkability ... but small changes can make a difference too.
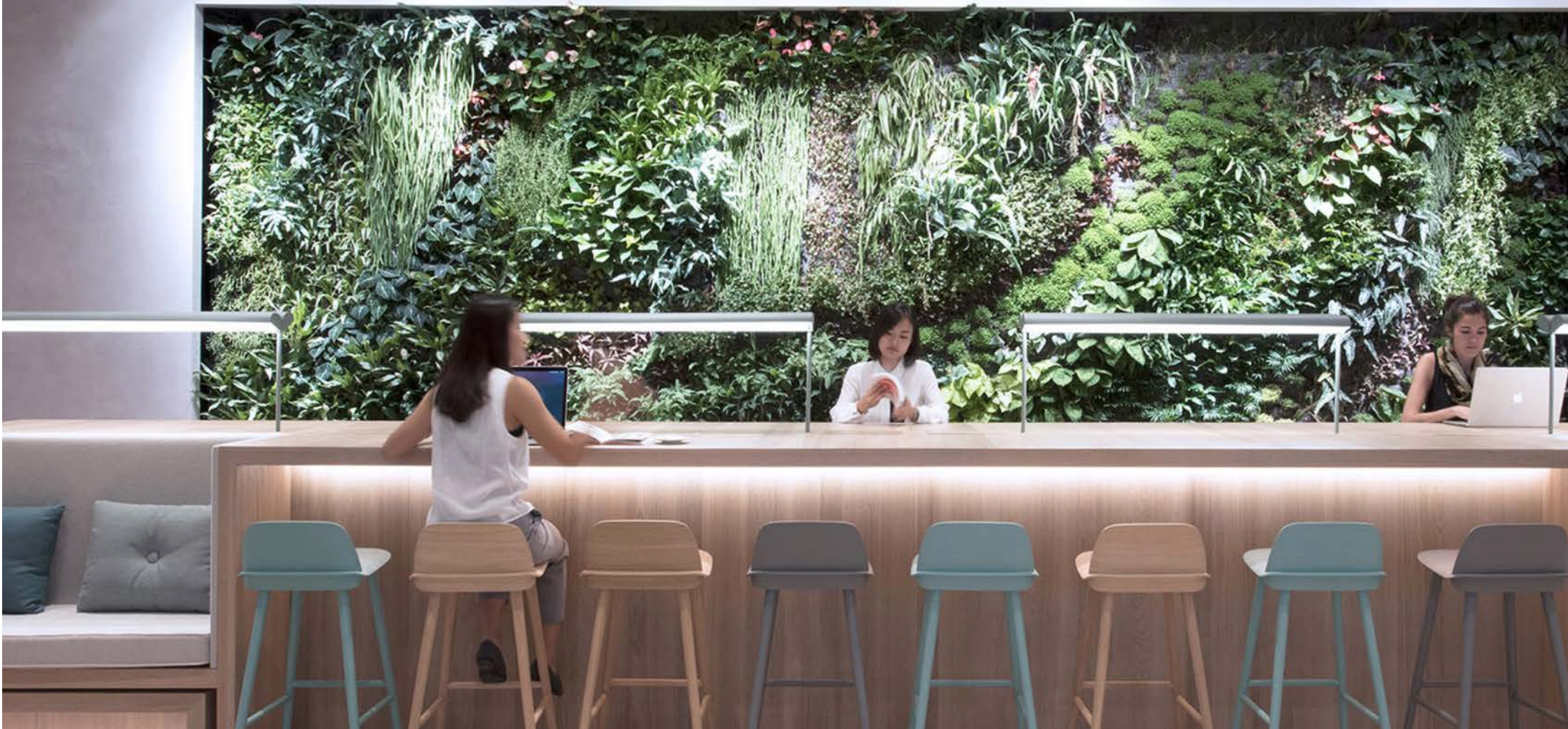
Local Clusters

Local hubs for those in knowledge-based sectors has long been proposed as a means of minimising the daily commute. 'Work, live, play' clusters in cities allow residents to access different activities all embedded in one area.

Cities for Ageing

In developed countries 80% of older people are expected to live in cities by 2050. They need continue to play an active role in the community and not become isolated. We need integration rather than segregation.

Increasing Accessibility
Many planning challenges in cities without extensive public transport centre on using better low-cost systems to improve access - while not constraining broader movement of people and goods by vehicles.

Intelligent Cities
Increasingly equipped with digital technologies and 'big data' many cities are now making buildings, infrastructure and even citizens smarter - and therefore making themselves more "intelligent".

Smart City Ideal

Ideally, sensors integrate with real-time monitoring systems, collect data from citizens and devices that is then processed and analyzed. The information and knowledge gathered are used to tackle inefficiency.

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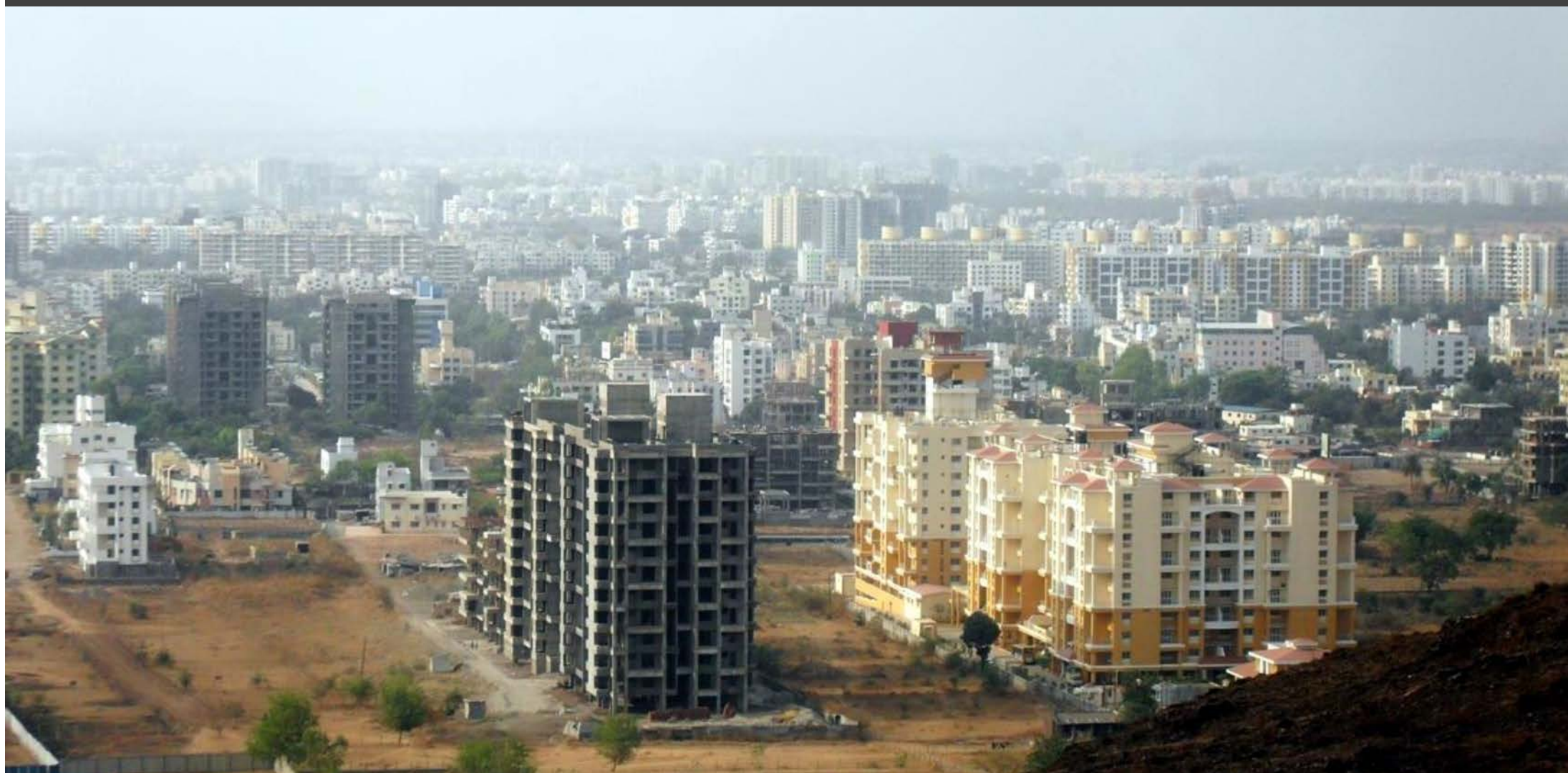
Smart City India

India is investing $15bn to develop 100 smart cities, aiming to improve basic infrastructure by providing good water and power supplies as well as better public transport and also significantly enhance IT connectivity.
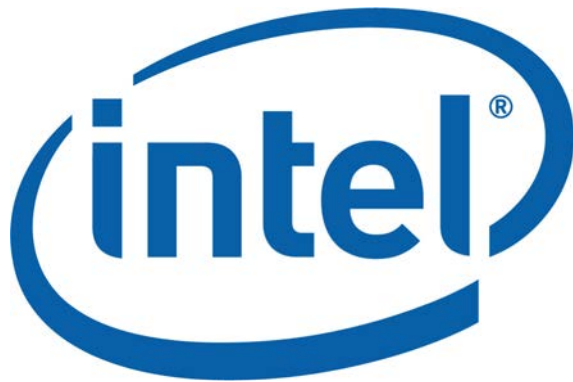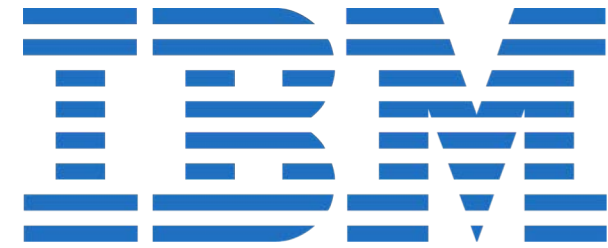
Corporate Partnerships
In recent years we have seen progress on the smart cities ambition – much of which has been focused on collaboration with some key multinationals to create municipal / corporate partnerships.

IBM | Rio de Janeiro

IBM's Smarter Cities / Smarter Planet initiative has been embraced by mayors in many key cities: Massive sensor networks, cloud-based storage and predictive analytics have all been coming to the fore.

Intel | San Jose

Intel's collaboration with the city of San Jose is a demonstrator of the capability of the 'Internet of Things' focuses on improving air quality, noise pollution and traffic flows via a more connected infrastructure.

Siemens | Masdar

Although behind schedule, Masdar is still aiming to be one of the most sustainable and smart cities on the planet. Key partnerships with Siemens are focused on opportunities such as more effective, low energy systems.

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Cisco | Songdo

Songdo in Korea has embraced Cisco's 'Smart+Connected' view of the city. Ubiquitous data sharing, automated buildings, high-speed networks and pervasive interaction are all part of the connected blueprint.

Realistic Expectations

Some see that the smart city is not a seamless web of integrated and joined-up technologies and probably never will be. Smart cities could be just as much about better governance and urban planning than about integrated machines.

Smartphone Impact

Digital platforms can bring people together and collaborate to 'fix' problems and so create a more efficient system. Smartphones in particular allow us to interact with and better understand the environments within which we inhabit.

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Data you could use
Eight categories of London residents

- Old people
- Rail commuters
- High proportion of foreigners
- Wealthy bosses
- Young professionals
- Youthful renters
- Families with children
- Those living in cheaper housing
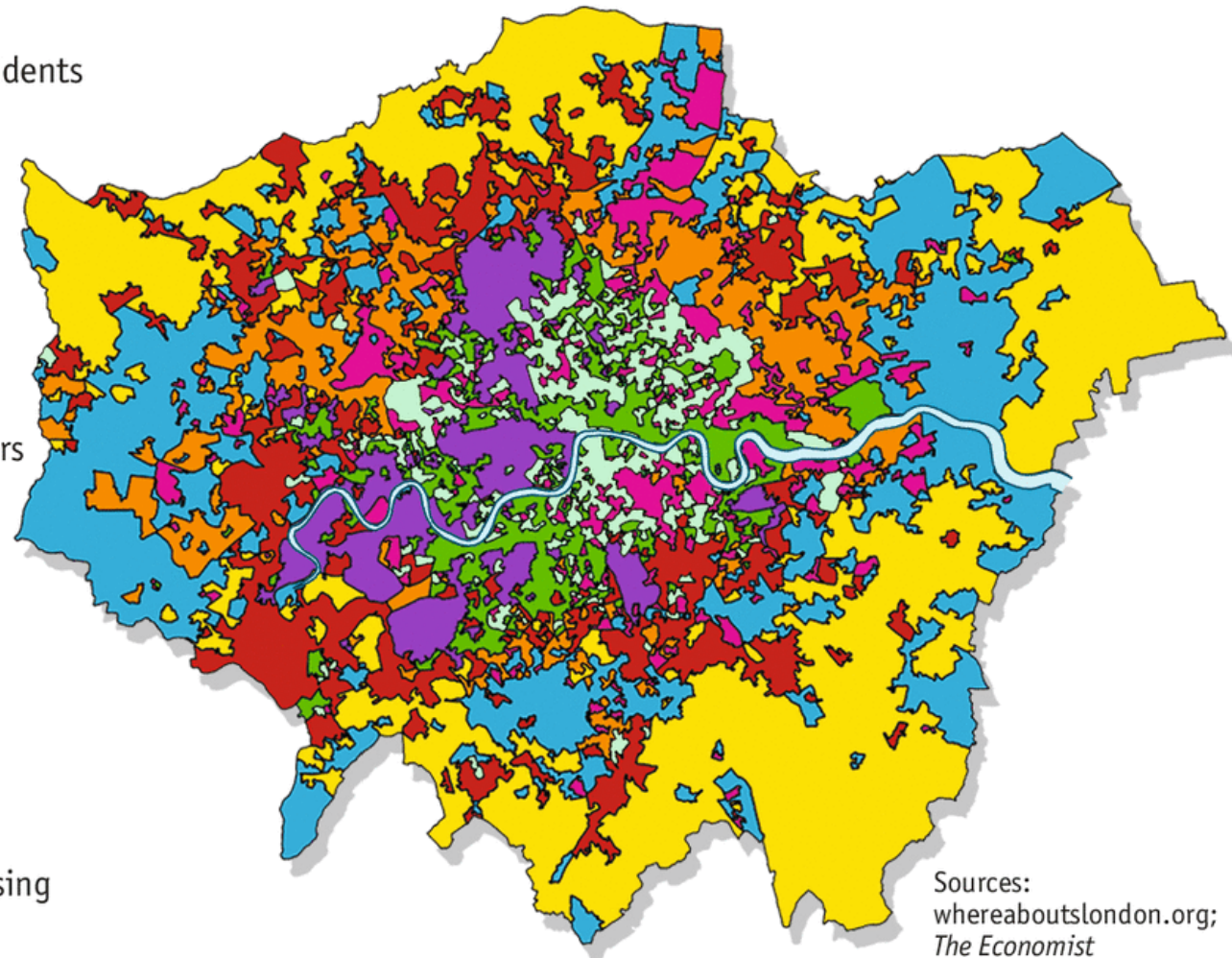
Sources:
whereaboutslondon.org;
The Economist

London – Open Data
Once information is free and open, then different parties and interests can collaborate. London has more open public data sets than any other European city. It is a leading centre for more intelligent use of shared information.

New York – Engaged Citizens

As the pioneer in providing open connectivity for all, New York has been a hot-spot for the development of citizen based networks: The Bryant Park Restoration Corporation was one of the first catalysts for change.

Big Data Analysis

The LAPD's algorithms analyse multiple data streams to identify areas with high current probabilities for certain types of crime. Insights are streamed into patrol cars who proactively go to these locations – and so prevent crime.

Responsive Cities

Pervasive digital systems that layer some cities are already transforming urban life for some. Once this information is better shared between planners, designers and the public, then we can maybe collectively shape future cities.
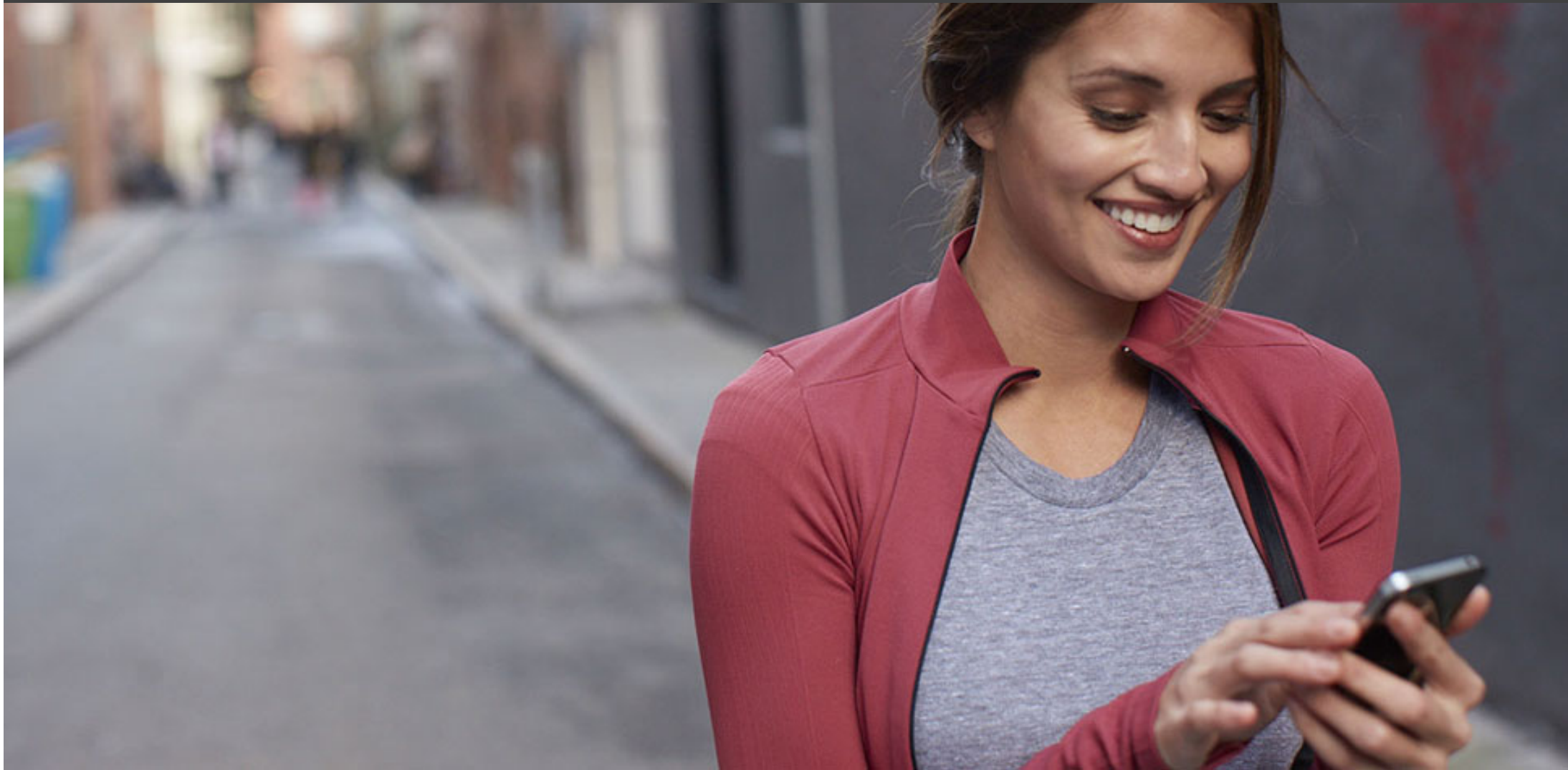
Smarter Citizens
By sharing more and better information in engaging more with
the people who live in them, cities and their citizens become smarter
and the overall intelligence of the urban environment itself increases.

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Safe
Cities

Emerging
Concerns

Collaborative
Competition

Resilient
Cities

Emerging Concerns
Looking forward, many see three themes that are emerging and increasingly significant concerns for cities. Although not yet universal, they are major shifts that are demanding new thinking about urban design and policy.

Safe Cities

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 is accelerating.

Safest Cities

Tokyo is rated as the world's safest city closely followed by Singapore. However, while rich nation cities are generally higher than the average in safe city rankings, wealth and resources are no guarantee of urban safety.

Counter Terrorism

With threats rising globally, counter-terrorism architecture is increasingly evident in some cities. Designing solutions that have impact but without turning urban districts into uninviting fortresses is however a fine balance.

Foiling Cyber Attacks

Many cities are wide open to cyber attacks and the IoT will accelerate this. Most vulnerable for urban areas are utilities and especially energy supply and water treatment. Taking down a power grid is a worst-case scenario.

Crime Hot Spots

Urban environments provide triggers for crime. Hot spots occur across city and local centres and residential areas that are characterised by poor informal social control resulting from weak social cohesion.

Maintaining Social Cohesion

Poor social cohesion drives increased personal crime. Addressing this is another top priority as many cities develop plans to overcome inequality and improve health. However in a good number, results are not being delivered.

Resilient Cities

Redesigning and building new infrastructures to withstand the likely impacts of climate change and more natural disasters is a fast-growing concern. Adaptation is currently the priority over longer-term mitigation.

CLIMATE DESTABILISATION

The average temperature rise across the globe — 4°C

The arctic rise will be as much as — 16°C

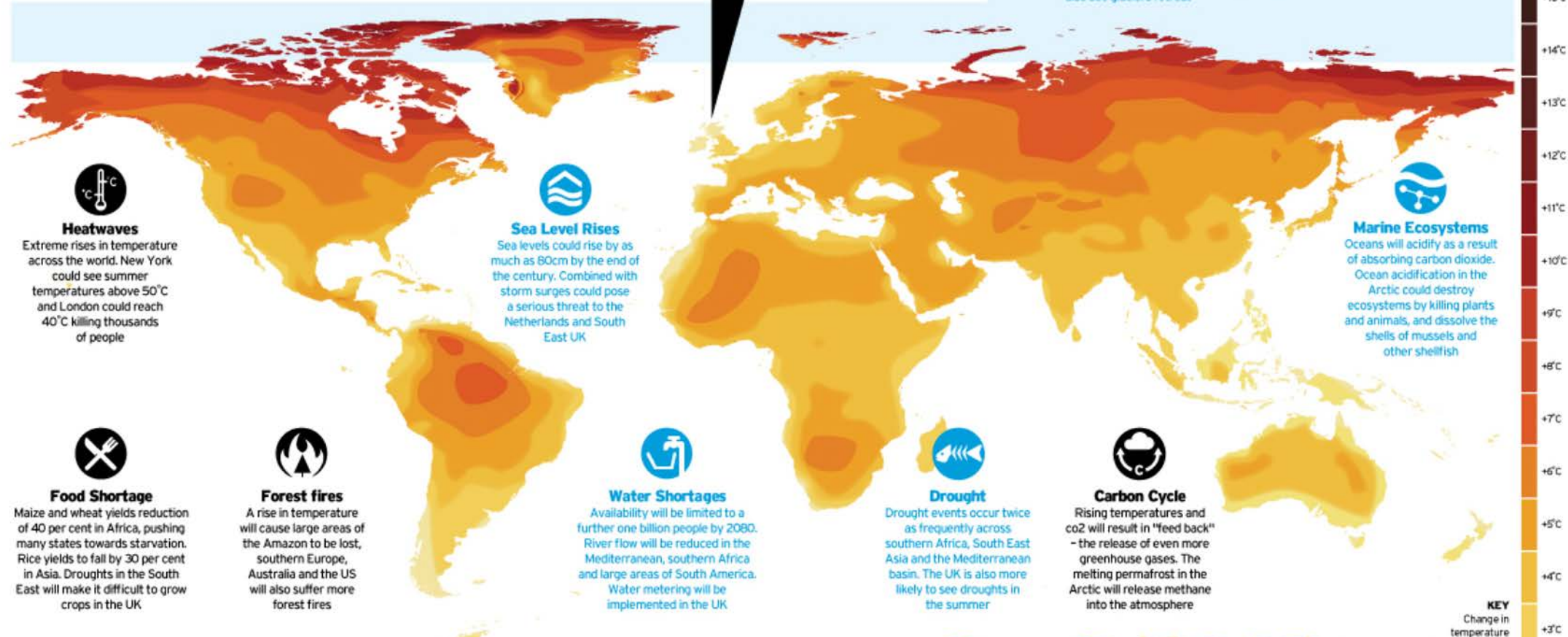**Coastal areas of Britain and New Zealand will see temperatures rise by** — 2°C

Affects on the UK

Melting Glaciers
Himalayan glaciers will be significantly reduced by 2050 putting the water source of billions of people at risk. South America and the Alps will also see glaciers retreat

Heatwaves
Extreme rises in temperature across the world. New York could see summer temperatures above 50°C and London could reach 40°C killing thousands of people

Sea Level Rises
Sea levels could rise by as much as 80cm by the end of the century. Combined with storm surges could pose a serious threat to the Netherlands and South East UK

Marine Ecosystems
Oceans will acidify as a result of absorbing carbon dioxide. Ocean acidification in the Arctic could destroy ecosystems by killing plants and animals, and dissolve the shells of mussels and other shellfish

Food Shortage
Maize and wheat yields reduction of 40 per cent in Africa, pushing many states towards starvation. Rice yields to fall by 30 per cent in Asia. Droughts in the South East will make it difficult to grow crops in the UK

Forest fires
A rise in temperature will cause large areas of the Amazon to be lost, southern Europe, Australia and the US will also suffer more forest fires

Water Shortages
Availability will be limited to a further one billion people by 2080. River flow will be reduced in the Mediterranean, southern Africa and large areas of South America. Water metering will be implemented in the UK

Drought
Drought events occur twice as frequently across southern Africa, South East Asia and the Mediterranean basin. The UK is also more likely to see droughts in the summer

Carbon Cycle
Rising temperatures and co2 will result in "feed back" – the release of even more greenhouse gases. The melting permafrost in the Arctic will release methane into the atmosphere

KEY
Change in temperature

+16°C +15°C +14°C +13°C +12°C +11°C +10°C +9°C +8°C +7°C +6°C +5°C +4°C +3°C

Climate Change Impact

No one really knows exactly what 2, 3 or 4°C of climate change means but many expect drought and hurricanes to increase in frequency and strength. Seasons will shift. The biggest issue to prepare for seems to be flooding.

At-Risk Cities

The ten most 'at risk cities' from climate change globally already have a combined population of over 150m and are projected to have grown by a further 50% by 2025 – Few, if any, will be insured.

Flooded Cities

The vast majority of our cities are not prepared for flooding.
22 of the top 50 wealthiest cities are prone to serious flooding that will also impact housing, poverty, cost of energy and social breakdown.

Preparing for Resilience

The opportunity is to rethink infrastructure in terms of resilience, and not just rebuild it. Attitudes will shift considerably and a more prevalent view around better preparing for resilience will become clear.
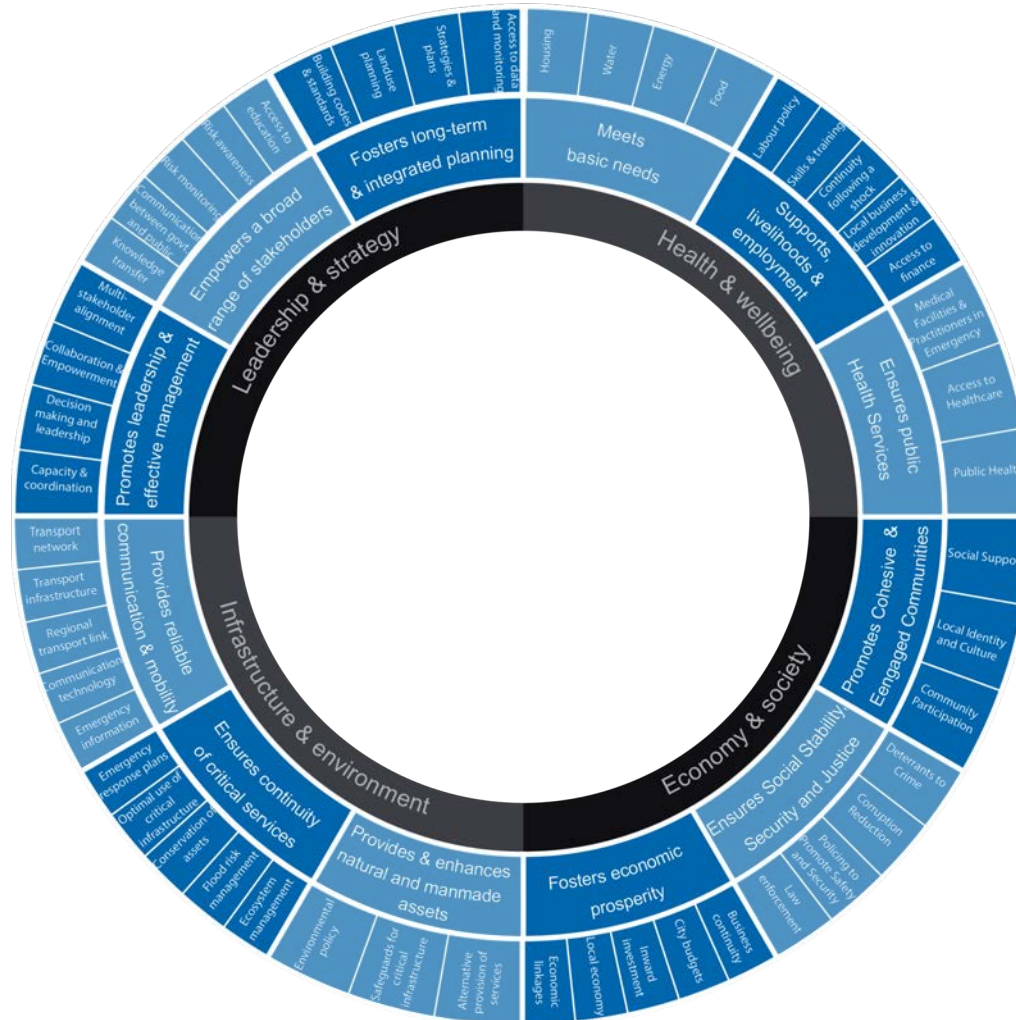
The City Resilience Framework
Developed by Arup with support from the Rockefeller Foundation,
The City Resilience Framework provides a lens to understand the
complexity of cities and the drivers that contribute to their resilience.

Resilience Efforts
New approaches are being fast-tracked: These include the creation of Chief Resilience Officers to coordinate each city's resiliency efforts to the creation of resilience bonds to generate capital for risk reduction projects.

Collaborative Competition

Cities have always competed with each other. This is not about to change any time soon. But with many shared challenges now being aired, there is also an evident increase in the level of inter-city collaboration taking place.

Growing Competition

The big cities of today and tomorrow operate in a constant condition of competition. Many compete for positioning and attractiveness through strategic city branding. This competition among metropolises is intense.

India's **Happiest** City

An Initiative of C R E D A I P U N E M E T R O

National and International Rivalry
There is growing competition between cities to attract high-value, high-wage businesses in services such as research and design, new technologies, financial and media industries. This is seen at both national and international levels.

Quality of Life As A Source of Competition

We can expect new forms of competition to emerge. As quality of life becomes an important source of competitive advantage, al cities will have to provide a clean, green and safe environment for their citizens.

Greater Collaboration

Inter-city collaboration is now top of many a mayoral office agenda. Sharing, learning and partnering on the big issues for the future are primary concerns for increasingly influential networks such as the C40.

Cities not Countries

The role of cities as problem solvers is rising while other government bodies and nation states are increasingly being considered obsolete or dysfunctional. Cities frequently have greater goodwill and better mindsets for collaboration.

WECP
WORLD ENERGY CITIES PARTNERSHIP

Coopetition

In business simultaneous competition and cooperation is a key strategy that goes beyond the conventional rules of competition and cooperation to achieve advantages of both. For cities, parallel approaches are now emerging.

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Broadening Competitor Collaboration
Across Europe, Asia and the US, cities used to competition are collaborating on business partnerships, tourism and co-branding for investment.
More widespread coopetition is going to be a core part of the future mix.

Moving Forward
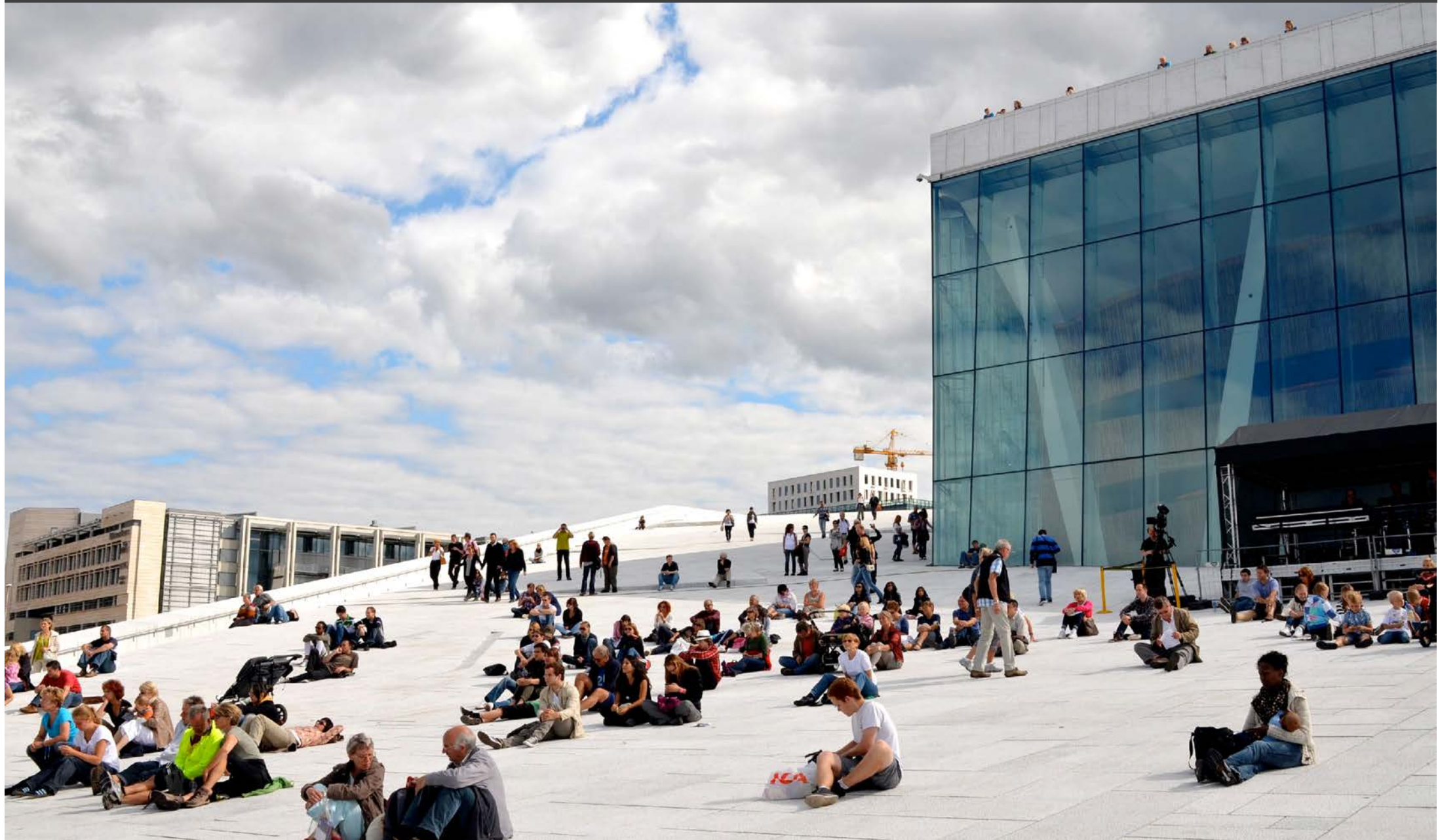
Future Questions

As we take this programme forward with 2017 workshops planned in more locations including London, Toronto, Dubai and Mumbai, we will be asking more questions about how we can meet the future challenges.

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What do you think?
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