# The Future of Cities

Wednesday June 1 2016    www.ft.com/reports | @ftreports

## Civic chiefs must lead the charge against climate change

Global warming should be at the very top of policymakers' to-do lists, says *Philip Stephens*

V illain or victim? If policymakers get it wrong, the answer could be both. Cities in the 21st century are the engines of economic growth and provide employment and homes to the growing global middle classes. As the world gets hotter, however, urban areas will need to put themselves at the heart of the international effort to mitigate the effects of climate change.

Along with the prosperity and innovation, global cities are the principal source of the carbon dioxide emissions warming the earth's atmosphere. If the process is not halted, these great

conurbations will be the worst affected by rising temperatures (*see story on page 4*).

A few figures tell the story. The London School of Economics Cities programme projects that by 2050 cities will have swelled by another 2.5bn people, taking the overall total to about two-thirds of the global population. On present trends these cities would be producing about four-fifths or more of the greenhouse gas being pumped into the atmosphere. As the planet heats up, cities will fare the worst.

The Paris-based Organisation for Economic Cooperation and Development estimates that temperatures in urban

areas already tend to be 3.5-4.5C higher in than in the countryside. This difference could well increase by another 1C per decade. This would mean that, by the second half of the present century, some big cities could be as much as 10C hotter than their surrounding hinterlands. That begins to sound like unliveable.

Many large cities are situated in low-lying coastal areas, leaving them badly exposed to the dangers of flooding that come with rising sea levels and storm surges. The sea does not differentiate between the rich and the poor. Among the cities judged most at risk by the OECD are Kolkata, Shanghai,

Guangzhou, Miami, New York and Osaka. Many of the same cities are vulnerable to the "urban heat island effects" that maximise ambient temperatures. The most affected by these trends are the urban poor — slum dwellers in emerging cities and those lacking cool shelter or air conditioning in long-established conurbations.

The story, however, is not one of unremitting gloom. As the OECD puts it: "It is not cities per se that contribute to greenhouse gas emissions, but rather the way people move around the city, sprawling urban development, the amount of energy people use at home and to heat buildings." In each of those

areas there is scope for the innovation and design that would greatly reduce both energy consumption and carbon production.

Planning is crucial. Halting urban and suburban sprawl should be at the heart of mitigation strategies. The gulf between the emissions generated by different cities is, in significant part, a reflection of differing levels of urban density. The city of Los Angeles generates a lot more $CO_2$ than New York City, even though the latter has a much bigger population. The need is to make new developments more compact and to concentrate building on

Wake-up call: sunrise in Pudong, Shanghai. The city is judged to be at risk from rising sea levels — *Johannes Eisele/AFP/Getty Images*

### Inside

**Unaccommodating locations**
Four charts show how housing costs affect wages and workers
Page 2

**Immigration**
The mixture of old and new populations poses a dilemma for planners
Page 2

**Inequality trickles down the generations**
Communities run the risk of being segregated by wealth
Page 3

**Paris adapts to life after the attacks**
Technology is likely to prove crucial in the fight against terror
Page 4

**How green is your infrastructure?**
Nature is the latest weapon to protect the built environment
Page 4

---

## India's population shift sparks a rethink of rural strategy

**Smart cities scheme**

Young people are flocking to urban areas in search of jobs and economic opportunities, writes *Amy Kazmin*

India's revered independence leader Mahatma Gandhi was of the view that "authentic" India lived in her villages while its cities were bastions of corruption and foreign influence. This bias has strongly influenced decades of Indian policy, which mainly focused on improving rural conditions while largely ignoring growing cities.

India is urbanising rapidly as young people from the countryside flock to cities in search of jobs and economic opportunities. Some estimates suggest that 30 Indians move from a rural to an urban area every minute.

Yet, after decades of neglect, Indian cities are struggling to cope. They are plagued with problems including choking air pollution, snarling traffic, and shortages of everything from water and affordable homes to schools, public transport and open spaces.

Indian cities fare poorly on liveability indices. Experts on urbanisation warn that conditions are likely to deteriorate without dramatic action that changes how Indian cities are governed, including new finance arrangements for urban infrastructure.

"India has been a very reluctant urbaniser," says Amitabh Kant, head of the government's National Institution for Transforming India. "In today's world, it is not nations that are competing with each other. It is cities. Mumbai, Chennai, Delhi — they should have been world-class cities." Instead, he says, they do not figure in the world's top 100.

But India's prime minister Narendra Modi, elected two years ago, differs from many of his predecessors in his view of cities, which he touts as hubs of entrepreneurial energy that can drive economic growth and potentially offer ways to lift people out of poverty.

During his 2014 election campaign, Mr Modi spoke often of the need to create "smart cities".

Now in power, he is putting the management of India's urbanisation process higher than it has ever been on the country's policy agenda and he has started two programmes aimed at improving

Street life: the country's cities are polluted and full of traffic

urban infrastructure and planning.

"In this country, it is very hard to be overtly pro-urban," says Barjor E Mehta, an urban specialist at the World Bank. "But right from the beginning, this prime minister used the word urbanisation as an opportunity, not with a negative connotation."

The first programme, known as Amrut, plans to give about $7.5bn to 500 Indian cities over five years for investments in basic amenities such as clean drinking water, sewerage, public transport and public spaces.

Mr Modi's government has also launched its so-called Smart Cities Mission, in which cities compete for funds to redevelop different zones and improve public services.

Public participation was crucial for putting together the proposals — cities that could not show citizen engagement were eliminated from the contest. So far 20 have been selected for funding.

"It's an innovation programme where

Some estimates suggest that 30 Indians move from a rural to an urban area every minute

new things can be done and, if the arrangements work, we will try to mainstream them," says Mr Mehta. "You've also made cities compete for the first time, and generated a lot of interest."

"This is the first government in India that is talking about smart urbanisation," says Mr Kant.

Even with such initiatives, however,

India still faces an uphill battle to improve its cities and the quality of life of their residents.

According to Shirish Sankhe, a director at consultants McKinsey, India has been spending just $17 per city resident per year on infrastructure and services while the actual need is about $130.

Although Mr Modi's schemes will raise urban expenditure slightly, they still fall far short of the nearly $950bn that a high-level panel estimated that India needs to spend on urban infrastructure over 20 years to meet the needs of its cities.

Solving such problems is not just a question of funding. India also requires new political arrangements to help administer its growing cities, which are now managed by short-term municipal commissioners who usually serve just two years before moving on.

"Indian cities are not well governed," says Mr Sankhe. "The political empowerment of cities is poor, and you can't really hold anybody fully accountable."

Even the matter of how many Indians currently live in urban areas is a subject of significant debate. According to India's 2011 census, just over 31 per cent of the country's 1.2bn people live in areas that are recognisably urban, up from 27.8 per cent of its population a decade earlier.

Yet many of these urbanised areas are not even officially recognised as cities or governed as such. India now has more than 3,900 of what it calls "census towns", which are urbanised areas that are still classified as rural and governed with traditional rural arrangements, such as village councils.

Many places prefer to remain designated as "rural" as they gain access to more government-funded programmes — including social welfare schemes, such as the rural employment guarantee scheme — that are not available in urban locations. Yet these increasingly non-rural areas are then excluded from appropriate urban services and expand in a haphazard manner.

India's biggest problem is that most of the strong revenues generated by its cities — through such means as property taxes — are not spent to improve the cities themselves but are instead used to support rural areas. Answers to these problems will becoming increasingly important as up to 590m Indians, are expected to be living in cities by 2030, up from 340m in 2008.

## The Future of Cities

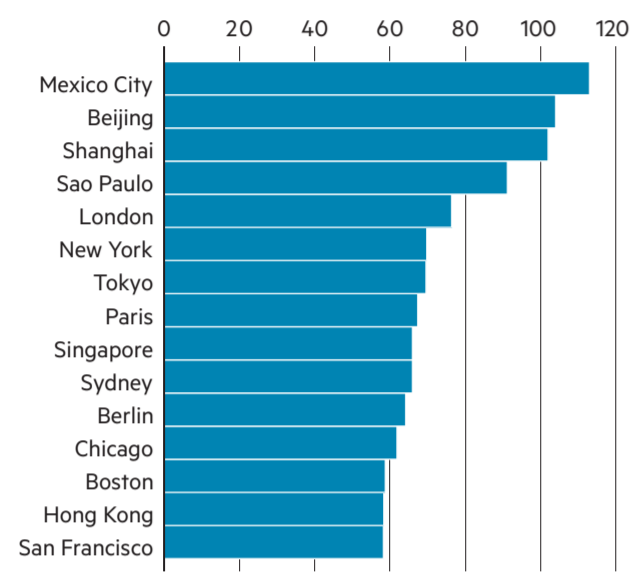### Unaccommodating cities: squeezing out the lower paid

**Four charts examining how high housing costs lead to bigger wage bills and restrain discretionary spending**

#### Commuting

In many growing urban economies junior and mid-tier employees are struggling with housing, often face long commutes and spend increasing proportions of their salaries on accommodation. This in turn drives up the wages employers need to offer to attract the best staff.
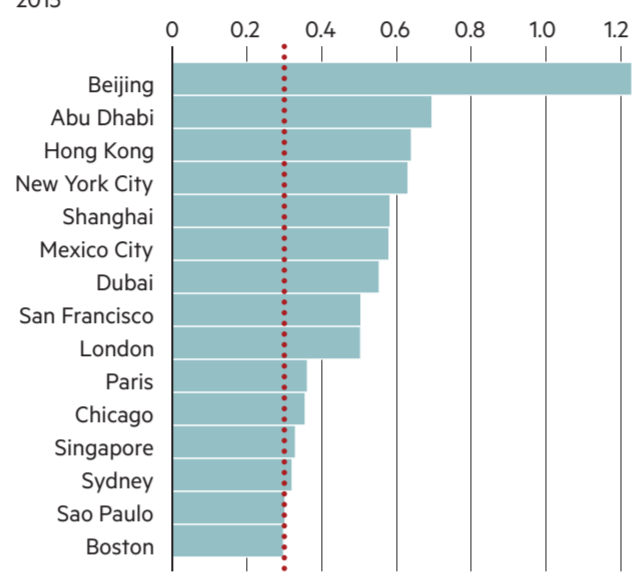
Average commuting time (roundtrip) in minutes

| | 0 | 20 | 40 | 60 | 80 | 100 | 120 |
|---|---|---|---|---|---|---|---|
| Mexico City | | | | | | | |
| Beijing | | | | | | | |
| Shanghai | | | | | | | |
| Sao Paulo | | | | | | | |
| London | | | | | | | |
| New York | | | | | | | |
| Tokyo | | | | | | | |
| Paris | | | | | | | |
| Singapore | | | | | | | |
| Sydney | | | | | | | |
| Berlin | | | | | | | |
| Chicago | | | | | | | |
| Boston | | | | | | | |
| Hong Kong | | | | | | | |
| San Francisco | | | | | | | |

#### Housing as a share of earnings

House prices have implications not just for employees who struggle to find accommodation, but also for city-based businesses that find it hard to attract and retain workers. This is especially difficult for industries that rely on workers in lower-paid occupations.

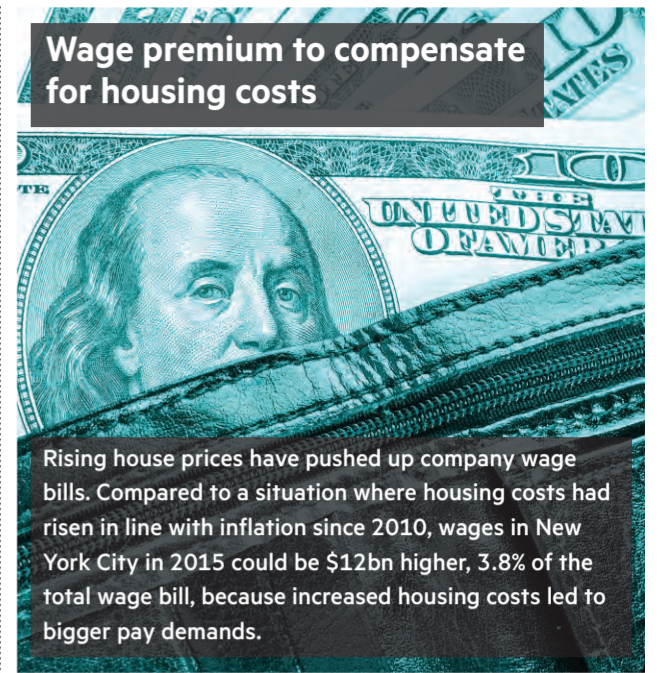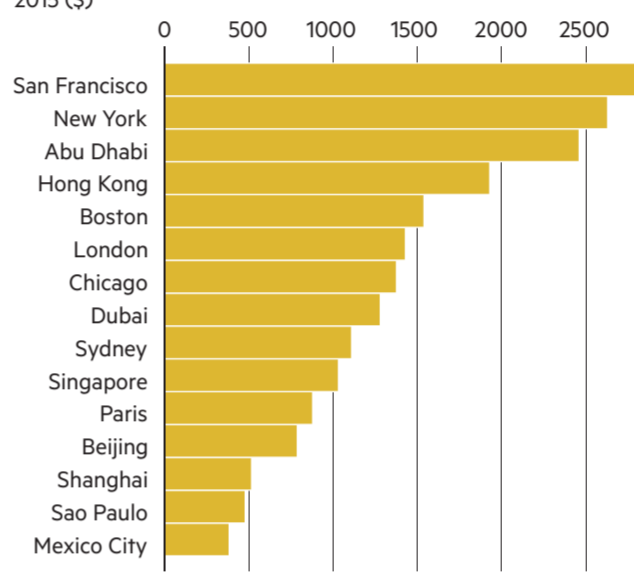Average cost of housing as a share of net earnings, 2015

| | 0 | 0.2 | 0.4 | 0.6 | 0.8 | 1.0 | 1.2 |
|---|---|---|---|---|---|---|---|
| Beijing | | | | | | | |
| Abu Dhabi | | | | | | | |
| Hong Kong | | | | | | | |
| New York City | | | | | | | |
| Shanghai | | | | | | | |
| Mexico City | | | | | | | |
| Dubai | | | | | | | |
| San Francisco | | | | | | | |
| London | | | | | | | |
| Paris | | | | | | | |
| Chicago | | | | | | | |
| Singapore | | | | | | | |
| Sydney | | | | | | | |
| Sao Paulo | | | | | | | |
| Boston | | | | | | | |

Affordable housing

#### Monthly rents

Out of the 15 cities examined, San Francisco had the most expensive average monthly rents of $2,824. This was closely followed by New York and Abu Dhabi at $2,629 and $2,460 respectively. The cheapest housing was available in Mexico City and São Paulo at $385 and $480 respectively.

Average local monthly rental costs per household, 2015 ($)

| | 0 | 500 | 1000 | 1500 | 2000 | 2500 |
|---|---|---|---|---|---|---|
| San Francisco | | | | | | |
| New York | | | | | | |
| Abu Dhabi | | | | | | |
| Hong Kong | | | | | | |
| Boston | | | | | | |
| London | | | | | | |
| Chicago | | | | | | |
| Dubai | | | | | | |
| Sydney | | | | | | |
| Singapore | | | | | | |
| Paris | | | | | | |
| Beijing | | | | | | |
| Shanghai | | | | | | |
| Sao Paulo | | | | | | |
| Mexico City | | | | | | |

#### Wage premium to compensate for housing costs

Rising house prices have pushed up company wage bills. Compared to a situation where housing costs had risen in line with inflation since 2010, wages in New York City in 2015 could be $12bn higher, 3.8% of the total wage bill, because increased housing costs led to bigger pay demands.

Aggregate wage premium resulting from high housing costs, 2015 ($bn)

| | 0 | 5 | 10 | 15 |
|---|---|---|---|---|
| Hong Kong | | | | |
| New York | | | | |
| Beijing | | | | |
| Sydney | | | | |
| San Francisco | | | | |
| Sao Paulo | | | | |
| London | | | | |
| Mexico City | | | | |
| Singapore | | | | |
| Paris | | | | |
| Shanghai | | | | |
| Boston | | | | |
| Abu Dhabi | | | | |
| Chicago | | | | |
| Dubai | | | | |

FT graphic   Sources: Global Cities Business Alliance 2016; UBS Prices and Earnings

# Migrants create new identities in old locations

**Planning** Conflicting demands pose a dilemma for planners, reports *Judith Evans*

Global migration means millions of people are starting new lives in cities far removed from the places they were born, where they will help to shape the urban fabric of the communities around them.

Despite accusations from some that all cities are becoming alike, these newer citizens are carving out identities distinct from both their ethnic origins and those of the longer-standing inhabitants around them.

For example, when Annika Marlen Hinze conducted a study of families of Turkish origin in Berlin, she found they identified themselves as neither Germans nor Turks, but as Berliners or even as residents of a particular neighbourhood. "One woman told me: 'I'm telling my son he's both Turkish and German, but I also tell him he's a Kreuzberger,'" says Ms Hinze, assistant professor of political science at Fordham University in New York.

Kreuzberg and Neukölln are two areas of the German capital that have shaped their inhabitants of Turkish origin, who themselves have contributed to Berlin's landscape after they started to come as guest workers in the 1960s.

The experience of these migrants in establishing mosques and kebab shops near the Berlin Wall may be particular to them, but one in five of all migrants live in the world's 20 largest urban centres, the International Organization for Migration says. In 2015, fresh waves of migrants, including Syrian refugees, brought the effect of mass migration on urban centres to wider public attention.

May Day in Kreuzberg: residents in different Berlin suburbs have developed quite separate identities
*Stephanie Pilick/dpa*

Christopher Choa, director for cities and urban development at Aecom, a design and engineering consultancy, says trade and migration shape the built environment: "The DNA of the city is baked, in physical terms, into the pre-existing forms of the streets, but the cities are adapted by new [groups] and by the services [they] prefer."

This creates a dilemma for planners, who may either want to preserve a city's traditional shape or swing in the direction of creating spaces designed for more recent arrivals.

"There's usually a strong traditional theme that runs through the populations in all these cities," says Mr Choa. "They are seeking to protect the urban qualities that make the cities unique in the first place, the architectural patrimony.

"But if cities cannot absorb new waves of immigration you can end up with a kind of marginalisation or ghettoisation. You miss out on those positive mutations of the landscape."

On their most obvious level, such battles may be fought over the buildings of minority religions, such as mosques in Germany and elsewhere in Europe.

These arguments are not confined to the western world. Protests against the opening of Starbucks in Beijing's Forbidden City and a McDonald's restaurant in a historic villa in the Chinese city of Hangzhou carried similar symbolic weight. Arguments also centre on new housing as populations swell. In London, traditionally a low-rise city, residents are fighting proposals for the construction of about 318 residential towers despite a severe housing shortage, and in Hong Kong a long controversy rages over the potential use of country park land to build homes.

In Paris, the preservation of its historic centre resulted in a ring of suburbs or *banlieues*, where many families of migrant origin live in poverty. In San Francisco a similar decision to retain the historic waterfront has resulted in a housing squeeze as the technology industry attracts newcomers.

But some cultural fusions have been

> One in five of all migrants live in the world's largest urban centres

in less tense. While Asian migrants have created Chinatowns around the world, China's big trading centres have taken inspiration from the west. "Shanghai now looks much more like an American or European city than a Chinese city," says Aecom's Mr Choa. He thinks global cities are becoming more similar to one another, which he sees as a positive development enabling the exchange of "ideas, younger populations, the next generation of wealth creators".

But sociologist Saskia Sassen takes the opposing view of this phenomenon, calling it a "monster . . . coughing out tall towers everywhere . . . killing the people's houses and small shops and little streets and squares", with the result that "everywhere became nowhere".

It may be such tensions are just inherent in cities subject to mass migration, but there is no evident uniformity in Berlin's Turkish districts.

Indeed, residents of Kreuzberg and Neukölln have strongly different and separate identities. Kreuzberg has a strong history of protest while Neukölln is known for its strong integration policies for migrants.

Meanwhile, second-generation Turkish-German children have begun travelling the other way, migrating to Istanbul to discover their roots and exploit their command of both languages, says Ms Hinze. One example is the Turkish-German architect Cem Arat, who has designed a stadium for Istanbul's Galatasaray football club.

However, Ms Hinze says many of these second-generation migrants, often the children of working-class parents from rural Turkey, find themselves once again feeling like outsiders when they reach Istanbul.

"A lot of them were curious to see this interesting, bustling metropolis," she says. "But they tell me: 'We feel really different.'"

# Urbanisation is 'money-printing machine' for social good

**Interview** Joan Clos
Barcelona's former mayor says careful planning can lift whole populations out of poverty, writes *Edwin Heathcote*

Joan Clos, one-time doctor and former mayor of Barcelona, is hoping to encourage politicians to see cities not as problems but as opportunities for lifting entire populations from poverty.

"Urbanisation is not a passive outcome of development but a creator of value . . . [it] is like a money-printing machine," says Dr Clos, executive director of UN-Habitat, which studies human settlements.

The organisation has been looking at how to cater for the urban population explosion. "From now until 2050 we're going to double the current level of urbanisation. Another 3bn people will be living in cities," says Dr Clos.

"Most thinking and writing about urbanisation is about the problems, poverty, housing and so on — there's not enough about the value that the urban tissue generates."

The idea that cities can generate wealth and help tackle rising inequality are messages he intends to convey to delegates at Habitat III in Quito, Ecuador, in October. This, the latest in a series of conferences that are held every 20 years, will examine the link between urban planning and the human condition.

For example, in London, New York and Paris there has been increasing economic segregation and exclusion of the poor from their centres. In the UK capital there has been much reporting of how the poor and even the middle classes are being priced out.

Many experts say there is no effective UK social housing policy, which they argue has been handed over to the private and charitable sectors despite the need for government and municipal attention.

The irony, Dr Clos says, is London was arguably the first world city to seriously address housing in the 19th century. Tackling housing need was at the centre of strategy and much of the housing stock created in the centre of cities has retained its desirability.

"If we look at public housing in London, or in Amsterdam or Vienna from the 19th century, we see that it was so successful that it has now

> 'There can be no successful urbanisation without a budget'

become desirable for the bourgeoisie," says Dr Clos. "Today's mass housing is not economically active, it is a dormitory, outside the city, on poor land and poorly located. It is stigmatised and the result is, when someone becomes slightly better off, they leave, only to be replaced with more poor people. It stays poor."

Examples of such places can be found across the globe, from Paris to Detroit. However, he praises some US cities such as Los Angeles, which is attempting to revitalise its once-seedy downtown and suburban centres.

Dr Clos says successful urban policies need to be set nationally and have three elements: rules and regulations, urban design and financial planning. "We talk of the rule of law," he says, "but we also need a rule of urban law. There might be inadequate legislation, or too much unclear legislation, or a lack of enforcement. We need regulations to ensure we have decent public space, we have urban building rights and development, and we have building codes and standards to regulate quality."

Public space is especially important to the less well-off who may lack gardens and other private areas for recreation and leisure.

"The final issue is the financial plan," he says. "There can be no successful urbanisation without a budget. We need to think about local authority taxation systems as well as some subsidies from central government to sustain the city."

Since joining UN-Habitat in Nairobi, Dr Clos has become embroiled in a controversy. His efforts to transform the organisation, including eliminating senior staff privileges and reducing costs by 40 per cent, were followed by allegations of misconduct and racism, which Dr Clos' spokesman says are false and unsubstantiated. An official UN investigation was announced earlier this year but it has yet to publish any conclusions.

Dr Clos' supporters may feel that an ideal city might look like Barcelona, where he was mayor from 1996 to 2006. This now has generous streets and dense, robust "city blocks" that embody the idea of mixed-use development and have been able to absorb changes in the way the city works, as well as parks, squares and a beach that was once a dock.

Although Dr Clos criticises the "technocratic approach of Asian cities" he says their success cannot be ignored. China has, according to the World Bank, taken 600m people out of poverty thanks to urbanisation between 1981 and 2004. Dr Clos says this is a staggering testament to the power of city planning to create wealth and reduce inequality — a population larger than that of Europe has been lifted from subsistence farming to urban existence in barely a generation.

**The Future of Cities**

# Communities risk being segregated by wealth

**Inequality** Economic differences are being felt across the world, says *Martin Sandbu*

When Bill de Blasio successfully ran for mayor of New York City in 2013, he campaigned against a "tale of two cities" divided between rich and poor.

And when Sadiq Khan won London's mayoral election in May, he did so after promising a "London living wage" and a "London living rent" to combat low pay and high housing costs.

Economic inequality, increasingly central to international and national economic policy discussions, is making its mark on city-level politics as well.

Studies show income inequality has risen in cities across the US and Europe. Edward Glaeser, an economics professor at Harvard, says there was a "dramatic increase in inequality in [US] cities between 1980 and 2006." A study, co-authored by Mr Glaeser, says: "with one exception all metropolitan areas went up in inequality in this period".

Similarly, a study of 13 European capital cities has found that in 10 of them, economic inequality rose in the first decade of this century. Maarten van Ham, a professor at the universities of Delft and St Andrew's and one of the authors, adds that socio-economic segregation — the degree to which the rich and the poor live in different parts of the city — rose in 12 out of the 13.

"Often when inequality increases it takes [time] to see increased segregation," says Mr van Ham. "We think segregation by income will increase even more in the next decade."

The harm such segregation may cause is only now being understood. In the US, the Stanford University economist Raj Chetty caused waves by demonstrating that intergenerational mobility varies enormously according to the neighbourhood a person grows up in.

Each year children spend in the most upwardly mobile neighbourhoods, Mr Chetty found, causes their adult incomes to be 0.8 per cent higher compared to the national average. Each year in the worst neighbourhoods lowers their adult incomes by 0.7 per cent.

But scholars caution against thinking inequality can be primarily addressed at city level. "The processes that led to segregation reflect global economic changes in the structure of the labour market especially," says Mr van Ham.

"The number of professionals has been increasing a lot and there are also a lot of low-income families."

In Vienna, "the number of professionals doubled in a decade", Mr van Ham and his colleagues found. "These are people with high incomes and, if you have money, you can choose a nice place to live. So housing got much more



**Neighbours: cities may struggle to reduce inequality** — Chris Ratcliffe/Bloomberg

> A city may be more unequal than another not because of poverty, but because it has more rich people

expensive in the most attractive parts of Vienna and the lower paid could not afford to live there any more."

Mr Glaeser points out that if national-level inequality does not improve, more egalitarian cities would simply mean reshuffling rich and poor citizens into separate cities, resulting in more segregation rather than integration.

And while more unequal US cities in the 1980s were poorer ones, he found, that relationship has changed. Today, a city may be more unequal than another not because it has more poverty but because it has more rich people.

"If you increase inequality by plopping in a bunch of tech billionaires in an area, that can't be bad for growth," Mr Glaeser argues. "What we should be worrying about is whether cities are places of opportunity for the poor."

Mr van Ham agrees. "If you see segregation as a problem, then I see as the solution investment in people, education, jobs, children — offer them opportunities. You can't solve inequality in one generation."

The ability of city leaders to reduce inequality is limited. Anything that smacks of crude redistribution is likely to be ineffective, says Mr Glaeser, as this will just drive the rich to the suburbs.

That does not mean leaders such as Mr Khan and Mr de Blasio can wash their hands of the problem. In Europe, Mr van Ham says: "If we're not careful, in 15 to 20 years our cities will be much more segregated than now."

He worries about rushing the job of settling refugees recently arrived in Europe. "People say let's move them to places where there are houses available," Mr van Ham notes, while pointing out that these are places where nobody wants to live because of a lack of amenities and opportunities. "That creates problems for the future. How will they respond in 15 to 20 years?"

While cities may try in vain to reduce inequality directly, Mr Glaeser suggests they can help us learn about policies that at the national level would make a difference. "There are a lot of [socio-economic challenges] to which we don't know the right answer," he says. He cites the provision of pre-school education at a reasonable cost and the training of entrepreneurs as examples.

"What cities should be are laboratories for opportunity, where we experiment with different things," Mr Glaeser says. "Cities should do what they do best, which is fundamentally to produce knowledge."

---

# Civic chiefs must lead climate change fight

brownfield sites in inner cities.

For good reasons of public health, the internal combustion engine has a limited future in the world's biggest cities. Ask politicians in Beijing where they see the most acute sources of popular discontent and they are most likely to point to the smog-filled skies. Talk to the global plutocrats who have made their home in London and fast-deteriorating air quality is one of their biggest gripes. The future of urban transport lies in rapid transit systems and electric cars: battery technology, and thus journey range, is advancing by the year.

Above all, what is required is co-ordination: between urban planners, developers, energy and transport specialists and the business community. The goal? To minimise demand for carbon-intensive energy and maximise the supply possibilities for renewables.

A report from the think-tank the Chicago Council On Global Affairs points to a strategy developed by the European Innovation Partnership on Smart Cities and Communities as a possible model. This focuses on speeding up the transformation of European cities into "smart cities", with an emphasis on:
● Sustainable urban mobility: alternative energies, public transport, efficient logistics and planning.

| **2050** | **10C** |
|---|---|
| Year by which 2.5bn more people will be living in cities | Amount big city temperatures may exceed that of hinterlands |

● Sustainable districts and built environment: improving the energy efficiency of buildings and districts, increasing the share of renewable energy sources used and improving the living conditions of communities.
● Integrated infrastructures and processes across energy, information and communication technologies, and transport: connecting infrastructure assets to improve the efficiency and sustainability of cities.

If all this sounds expensive, the costs of doing nothing are likely to be higher. They will include bills for flood and storm defences, the disruption of com-

plex urban economies threatened by extreme weather, the loss of high-value industries to less-polluted locations and increased personal and public health costs. On the other side of the balance sheet are the opportunities: rapid urbanisation creates a chance to develop cities that are at once more dynamic and sustainable; innovation promises to be a source of economic growth; and better urban environments will promote human welfare.

The task cannot be left to cities alone. Though mayors and city halls can learn from each other, it will fall to national governments to provide the regulatory regimes and fiscal incentives to accelerate development of climate mitigation and resilience. The ideal answer would be a globally agreed carbon tax, but in the absence of such an agreement, national authorities must set the frameworks. National treasuries should also encourage the expansion of private financing through green bonds and other innovative instruments.

There is an additional role for international financial institutions. In the wake of last year's COP21 agreement in Paris, mayors of leading cities have also called for the UN Intergovernmental Panel on Climate Change to produce a special report focusing on the impact of, and response to, global warming in cities. This should provide a platform for multilateral organisations to play their part in promoting sustainable urban development, in providing finance and in spreading best practice and technological innovation.

The future belongs to cities. What sort of future will depend on how successful those cities are in nurturing more sustainable environments for citizens and workers. Mitigating and adapting to climate change comes at the top of the list. The good news is the more effective they are in meeting the challenge, the more prosperous and hospitable they will be.

---

## Contributors

**Philip Stephens**
Associate editor

**Judith Evans**
Property correspondent

**Edwin Heathcote**
Architecture and design critic

**Amy Kazmin**
South Asia correspondent

**Sarah Murray**
Freelance writer

**Martin Sandbu**
Economics editorial writer

**Adam Jezard**
Commissioning editor

**Steven Bird**
Designer

**Alan Knox**
Picture editor

For advertising details, contact:
**Brendan Spain**, +1 917 794 8524,
brendan.spain@ft.com, or your usual FT representative.

All editorial content in this report is produced by the FT.

Our advertisers have no influence over or prior sight of the articles.

All FT Reports are available at:
ft.com/reports

Follow us on Twitter @ftreports

# Technology is crucial in the fight against terrorism

**Paris attacks** Capital harnesses CCTV in attempt to deter future incidents, reports *Adam Thomson*

The 46m shoppers who annually visit the Quatre-Temps shopping centre on the edge of Paris now have their bags security checked before passing through its glass portals. In the heart of the city, tourists at the Louvre are subjected to longer queues since the authorities improved safety checks at the museum.

Habits here are changing after 2015's terrorist incidents: in January three Islamist extremists murdered 17 people in targeted shootings launched against the Charlie Hebdo magazine, police and a Jewish supermarket. In November gunmen and suicide bombers left at least 130 dead and hundreds injured.

So what is the city doing to minimise the risk of further attacks and how might this change Paris? In an interview with the FT, Jean-Louis Missika, deputy mayor of Paris, says that technology will play an increasingly important role both in preventing future incidents and in dealing with them if they should occur.

The city's leftwing government has started a 3D-scanning programme for thousands of public and private buildings to help security forces react better to siege situations, a need that was underlined by the hostage takings that took place during last year's attacks.

Mr Missika says: "We have to have a much better vision of public spaces." He adds 3D scans are "a way of visualising the entire building — inside and out — to help us deal with emergency issues".

He says the scheme, which includes all publicly owned buildings and other selected private structures, from large offices to supermarkets, was financed

publicly and privately. It costs between €3,000 and €10,000 to scan each building. Local government is also co-ordinating various networks of CCTV cameras, he says: "After November's attacks we discovered that police can follow a car in Paris but the system of cameras outside the city is different."

Mr Missika adds there are about 40,000 public and private CCTV cameras in Paris. This number is thought to lag behind London, which is one of the world's most monitored cities. He says a seamless link between cameras is more important than numbers.

The French capital's newly inaugurated Les Halles project — an undulating, 2.5 hectare roof spanning a large pedestrian area with shops and restaurants — is an example of this approach. It has a command centre where police can see all cameras in the complex, whether publicly or privately owned.

However, Raffaello Pantucci, director of international security studies at London's Royal United Services Institute, says CCTV cameras are more useful after an attack than in preventing one. Many cameras are not monitored all the time, although there will be more regular monitoring of CCTV in places thought to be at greater risk. "Most of these cameras are recording for potential use in investigations."

Mr Pantucci says one of the biggest challenges authorities face is big gatherings such as those that will doubtless form during France's hosting of the 2016 European football championship this month. "There is a great fear around crowded spaces because of the high impact that an attack can have."

Paris, one of the world's most popular tourist cities, had about 32m visitors in 2013 and organising queues at sporting events and attractions is a particular concern given the heightened risk of terrorism. Mr Missika says new ways must be found to manage queues "because if

you create them outside buildings, they become targets for terrorism", adding: "How you check people, and where you check them, may mark the biggest difference in the way you go about constructing public buildings in the future."

In the meantime, Paris is trying to use innovation and technology to come up with some answers. In January, Xavier Niel, the French tech and telecoms billionaire, worked with the police and the city government to organise a "hackathon" aimed at using the city's nascent start-up scene to provide a response to terrorism.

One idea was an app, still in the making, that allows event organisers to reduce queues by using incentive schemes to persuade ticket-holders to arrive earlier. Another was a technology that could prioritise distress calls to emergency services based on background noises and stress levels in the caller's voice.

Mr Missika says that applying technology to combating terrorism could even reduce the need for bigger changes in cities. "Digital or virtual solutions will not force you to reorganise people's physical landscape," he says.

But RUSI's Mr Pantucci says one thing that is already changing is the approach by architects and urban planers to materials and so-called street furniture, such as barriers. A push towards extending the use of shatterproof glass to reduce the risk of injury from bomb explosions is now well under way in the UK and beyond, he says. Bollards to protect against vehicles carrying bombs ramming into buildings are also becoming more commonplace.

But, Mr Pantucci says, none of this is likely to be a deterrent. Terrorists were not intimidated last year when they tried to attack the Stade de France, which had many security checks in place. "At the end of the day, if they want to attack, they will try to find a way."

*En garde: soldiers patrol the Louvre after last year's attacks* — Charles Platiau/Reuters

---

# How to avoid high-tech 'crash and burn' ghost towns

**New cities**

Patience is a virtue when creating up-to-date centres that will stand the test of time, reports *Sarah Murray*

Yamoussoukro in Ivory Coast is a city with roads wide enough for jumbo jets to land on, a vast presidential palace and a basilica modelled on St Peter's in Rome. However, while it was named the nation's capital in 1983, most commercial and administrative activities still take place in another city, Abidjan.

Yamoussoukro's failure to become the country's primary urban centre is an example of how grand plans for new cities do not always live up to expectations.

From the ghostly eco-cities of China to Malaysia, where Cyberjaya, built as the country's version of Silicon Valley, has so far failed to thrive, there is plenty of evidence of how difficult it is to create a city from scratch.

"A lot of them are not filling in as expected," says Sarah Moser, director of urban studies at Canada's McGill university, who, with her students, is compiling a new cities database.

On paper, the points for such greenfield developments are strong. Pressure is growing to house rapidly expanding urban populations, particularly in emerging economies. Policymakers in these countries have seized on building high-tech cities as a way of joining the club of wealthier nations. "Since the 1990s, and increasingly in the past 10 years, this has become a staple financial strategy for countries in the 'global south'," says Ms Moser. "It's seen as a way to leapfrog the economy from the production of raw materials and manu-
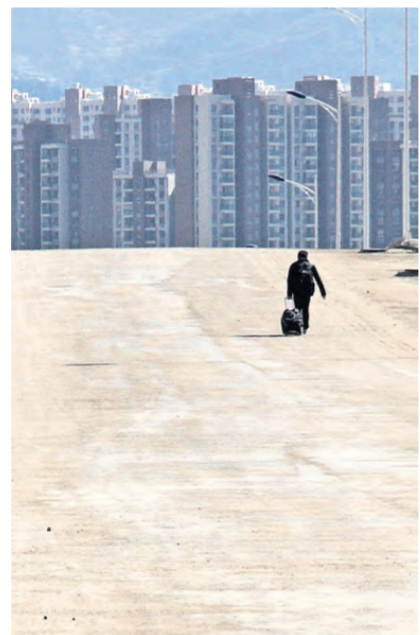
*Empty existence: Chenggong, China*

facturing into this new, high-tech era."

As cities produce more than 70 per cent of the world's human-generated carbon emissions, according to UN-Habitat, attempts are also being made to design "green" or "carbon-neutral" cities such as Masdar in Abu Dhabi.

Yet for Dirk Hebel, assistant professor of architecture and construction at Singapore's Future Cities Laboratory, Masdar and similar projects borrow too much from older European models.

He says we should not build large-scale cities in defined locations — so drawing on the principles of older cities that needed defensive walls — but plan smaller settlements, some of which may grow, some of which may merge and some of which may stay small.

Mr Hebel argues that, while urban planners must still provide infrastructure such as transport systems, health

and education services, developments should be more organic. "It should be a system not a single location."

Another challenge for new cities is persuading people to move into them.

"You can populate those cities in China but you need to put [people] in buses and make sure they don't leave," says Michele Acuto, director of University College London's city leadership initiative. He thinks building new cities is a flawed concept. "You could spend exactly the same amount on improving current structures and systems and fostering innovation in existing places."

But Ms Moser points to some promising examples, such as Yachay, north of Ecuador's capital Quito, planned as a centre for scientific, academic, economic and technological research and innovation. Much of its focus has been on sustainability and planting local species to minimise water use.

But Ms Moser believes another factor may aid Yachay's success. Unlike many new cities, it is integrating its existing residents rather than moving them on. Agricultural workers, who may lose jobs once the city expands on to farmland, are being given work in composting plants or raising saplings for the city's street trees. Others can take courses to give them the skills to open businesses.

How many of the almost 150 brand new cities in her database does Ms Moser think will succeed? "It's really too soon to tell," she says.

"One of the keys for what makes a successful city is that it needs patient capital," says Suzanne Gill, a partner at law firm Wedlake Bell, who runs debates aimed at stimulating discussion about long-term sustainable investments. "Some of these [new] cities are like young men in hurry," she says. "And some will crash and burn."

---

**Opinion** Unpredictability is an important factor in making a metropolis great

How can we design great cities from scratch if we cannot agree on what makes them great? None of the cities where people most want to live — such as London, New York, Paris and Hong Kong — comes near to being at the top of surveys asking which are best to live in.

The top three in the most recent Economist Intelligence Unit's liveability ranking, for example, were Melbourne, Vancouver and Vienna. They are all perfectly pleasant, but great? The first question to tackle is the difference between liveability and greatness. Perhaps we cannot aspire to make a great city, but if we attempt to make a liveable one, can it in time become great?

There are some fundamental elements that you need. The first is public space. Whether it is Vienna's Ringstrasse and Prater park, or the beaches of Melbourne and Vancouver, these are places that allow the city to pause and the citizens to mingle and to breathe, regardless of class or wealth. Good cities also seem to be close to nature, and all three have easy access to varied, wonderful landscapes and topographies.

A second crucial factor, says Ricky Burdett, a professor of urban studies at the London School of Economics, is a good transport system. "Affordable public transport is the one thing which cuts across all successful cities," he says.

For example, when Enrique Peñalosa, mayor of Bogotá in Colombia (he held the post from 1998 to 2001 and was re-elected at the end of last year), introduced a fleet of public buses he transformed the city. They could be brought in quickly and relatively cheaply — unlike, say, an underground train system. The buses could travel to the urban slums — *favelas* — and the more precarious hillside communities. Mr Peñalosa also introduced bus lanes that excluded cars, to the fury of car drivers, that made taking the bus

quicker than commuting by car. A successful city, Mr Peñalosa said, is not "one where the poor move about in cars [but] where even the rich use public transportation".

A city built from scratch must also be capable of accommodating change. The architecture and the infrastructure need to be robust enough to adapt.

If we think of the industrial buildings of New York's SoHo or Chelsea, or London's Shoreditch, these solid structures have been able to accommodate successive waves of activity, from garment manufacture to warehousing, from studio space to loft apartments.

What is also critical is the kind of space that is left open — the cracks between and beneath buildings that can adapt quickly to anything from workshops to nightclubs.

A city's structure can be established with relatively anonymous architecture if it is robust and resilient enough to accommodate change. But most new cities, from Brasília, capital of Brazil, to

India's Chandigarh, never learnt this lesson and instead have buildings that cannot be easily adapted as conditions change.

What great cities do have in common is planning. Joan Clos, head of UN Habitat, told the FT that "urban planning is a resource for development and a critical tool for reducing inequality" (*see interview on page 2*).

The great cities were rigorously designed with good infrastructure, wide streets, a variety of buildings and rules about what could be built — whether height restrictions in Paris (tentatively being abandoned) or setback skyscrapers in Chicago that allowed the light to reach the sidewalks no matter how high the buildings rose.

In a *laissez-faire* era, when development is left to the private sector, rules become more important. In London, the sudden explosion of high-rise towers is not leading to a greater city but to a sense of resentment among residents that the historic skyline is being wrecked because of a lack of coherence in the rules.

In New York, the rise of the "skinny skyscraper", super-tall towers rising around Central Park and casting shadows across the city, is causing similar resentment in an environment known for its tall towers.

A fascinating analysis of why cities have been successful comes from Saskia Sassen, professor of sociology at Columbia University in New York: "One of the reasons that cities have outlasted all these other more powerful and organised systems of power is their incompleteness.

"That gives them a longevity because no tyrant can truly run a city, it's too diffuse — the city will always fight back."

So perhaps it is precisely the unpredictability of the great cities that makes them so exciting and so resilient. The paradox is, exactly how do you plan for unpredictability?

**Edwin Heathcote**

*New York subway: good transport is crucial in successful cities*

---

# Nature is now a weapon against threat of global warming

**Green infrastructure**

Assets such as grass roofs, parks and plants can protect the man-made environment, writes *Sarah Murray*

China's response to the encroachment of its northern deserts on cities such as Beijing is a tree-planting exercise, the Three-North Shelterbelt. But while the so-called Green Great Wall is one of the world's most ambitious environmental projects, it is just one of many attempts to protect cities against pollution, storms and temperature rises by tapping into a valuable resource: nature.

It has long been known greenery improves air quality, which is why large urban parks, such as the Maidan in

Kolkata, India, or New York's Central Park, are often referred to as the "lungs of the city". But as pollution and increasingly intense storms threaten urban areas, planners are starting to recognise that nature has more than one purpose.

So-called "green infrastructure" can be used to soak up water that can otherwise inundate municipal areas. When superstorm Sandy hit New York and New Jersey late in 2012, for example, storm water flowed through subway tunnels and shut down ground-level power and communications networks.

"The frequency, unpredictability and intensity of storms is overwhelming a lot of conventional systems," says Jason Scott, co-managing partner at Encourage Capital, an asset management firm specialising in investments that can help to resolve social and environmental problems.

Severe rainstorms are responsible for

sending large amounts of untreated water — containing everything from motor oil and lawn fertiliser to raw sewage — into drinking water systems and open waterways.

"In places like Milwaukee and Chicago, storm water is combining with sewer overflow and going in people's homes, so it's not a theoretical problem — it's very real," says Mr Scott.

Green infrastructure — such as grass roofs, planters and permeable pavements that allow water to filter to soil below them and soak up storm water —

The unpredictability and intensity of storms is overwhelming a lot of conventional systems

can help prevent this. "The idea behind the green infrastructure approach is to mimic the way nature handles water," says Larry Levine, senior attorney in the water programme at the Natural Resources Defence Council, a US environmental group.

Nature can improve cities' air quality. In Ahmedabad, the Indian state of Gujarat's largest city, where summer temperatures can be above 40C, a development plan includes linking the city's Sabarmati River with lakes, building a series of parks and planting trees.

Such schemes can help to control summer temperatures, says Ian Mell, lecturer in planning and civic design at Liverpool university. "They're using trees and better management of the lakes and river to moderate the extremities of the climate," he says.

Other natural assets can be tapped, too. "In some parts of the world,

mangroves are tremendous at flood protection and preventing soil erosion," says Mr Levine. "Green infrastructure of that sort is very much part of the toolkit for climate change adaptation."

But while green infrastructure does much to tackle flooding, air pollution and inhospitable city temperatures, it can be hard to persuade developers and investors it is worth the extra money.

"It's about learning how to understand the upfront costs and how they translate to benefits over time," says Eric Mackres, building efficiency manager at the World Resources Institute's Ross Center for Sustainable Cities.

This is a particular difficulty in growing economies, where the race to develop means that urban centres are being built at terrific speed, often without sufficient planning. "The scale of development means climate change gets addressed later," says Mr Mell.

Some older cities are creating financial incentives for developers to go green. In Washington DC, for example, regulations have been introduced that make it mandatory for buildings in certain areas to include green infrastructure. The city has introduced a stormwater retention credits trading scheme for developments where this is not technically feasible.

Credits, which are traded in an open market, can be bought from developers operating in parts of the city not covered by the regulations but who have nonetheless invested in sustainable projects.

Mr Scott believes that more of these kinds of innovative financial arrangements will be needed to increase the adoption of urban green infrastructure. "A lot of the solutions are financing solutions because the capital markets don't know how to value these projects," he says.