

# The extreme future of megacities

Like it or not, the megacity is coming, says **James Canton**. Will it be urban dystopia, or ordered, smart, green and secure? As a billion rural dwellers vote with their feet, will numbers overwhelm us?

In January this year newspapers widely reported China's creation of the biggest city in the world. Nine cities around the Pearl River Delta in southern China, from the massive Guangzhou – population 24 million, already the second biggest city in the world – to Shenzhen, just north of Hong Kong, were to be merged. The "Turn The Pearl River Delta Into One" plan would create a 16 000 square mile urban area 26 times larger than Greater London, or twice the size of Wales, and accounting for nearly a tenth of the Chinese economy. It would house 42 million people. And it was to be completed within six years.

A few days later the Chinese authorities denied the report. The plan was only to strengthen the cities' public services and transport links, said a spokesman. Nevertheless, such is the scale of China's population explosion, and the speed of its urbanisation, that no expert in demographics or urban planning had questioned the reports. There was nothing unlikely or impossible in such a solution to China's growth.

A change came upon the planet in 2008. That was the year when, for the first time, more than half of the world's population was living in cities. Another change is coming. By 2040, most of the world's population will be living in megacities. A megacity is a city containing at least 10 million people. Megacities already exist. There are as many as 26 of them on the planet today<sup>1</sup> (see Table 1). A characteristic of megacities is the difficulty in defining their outer limits and hence of accurately estimating their populations; this is just the first of many uncertainties about megacities. But some things about them are known. By 2020 there will be almost twice as many of them as there are now. China today has three, perhaps four; fifteen years from now it will have 12. By 2050 India, Asia, Latin America and Asia will be where the largest megacities will be found.

Most of the megacities will be in the developing world. As the global population explodes, the megacities

of Asia, Latin America and India will dominate the global needs agenda. Prosperity – or the hope of prosperity – is what will bring the megacity. Growing affluence, the rise of the middle class and improved health care are driving their growth. The collision of cultures between the ageing developed world and the youthful developing world will sharpen the tension over the next decades.

A power shift is coming as the population and affluence meter shifts not from developed to developing nation, but from developed to developing cities. Here are some key megacity trends to watch for:



Table 1. The world's 26 megacities

Rank	Megacity	Country	Continent	Population	Annual growth
1	Tokyo	Japan	Asia	34 200 000	0.60%
2	Guangzhou	China	Asia	24 900 000	4.00%
3	Seoul	South Korea	Asia	24 500 000	1.40%
4	Delhi	India	Asia	23 900 000	4.60%
5	Mumbai	India	Asia	23 300 000	2.90%
6	Mexico City	Mexico	North America	22 800 000	2.00%
7	New York City	USA	North America	22 200 000	0.30%
8	São Paulo	Brazil	South America	20 800 000	1.40%
9	Manila	Philippines	Asia	20 100 000	2.50%
10	Shanghai	China	Asia	18 800 000	2.20%
11	Jakarta	Indonesia	Asia	18 700 000	2.00%
12	Los Angeles	USA	North America	17 900 000	1.10%
13	Osaka	Japan	Asia	16 800 000	0.15%
14	Karachi	Pakistan	Asia	16 700 000	4.90%
15	Kolkata	India	Asia	16 600 000	2.00%
16	Cairo	Egypt	Africa	15 300 000	2.60%
17=	Buenos Aires	Argentina	South America	14 800 000	1.00%
17=	Moscow	Russia	Europe	14 800 000	0.20%
19	Dhaka	Bangladesh	Asia	14 000 000	4.10%
20	Beijing	China	Asia	13 900 000	2.70%
21	Tehran	Iran	Asia	13 100 000	2.60%
22	Istanbul	Turkey	Europe/ Asia	13 000 000	2.80%
23=	London	United Kingdom	Europe	12 500 000	0.70%
23=	Rio de Janeiro	Brazil	South America	12 500 000	1.00%
25	Lagos	Nigeria	Africa	12 100 000	3.20%
26	Paris	France	Europe	10 197 678	1.00%

- Over 600 cities by 2025 will host between them 2 billion people, in over 735 million homes.
- These cities will generate over 60% of global GDP or \$64 trillion.
- By 2030 megacities will be the dominant consumer of energy on the planet.
- The majority of megacities in the world will be located on the coast and at risk from climate change.
- The developing world's megacities will dominate the population.
- More than 120 million people, equivalent to nearly half the population of the USA today, will live in China's megacities by 2025.
- By 2030 China will have over 200 cities with populations of 1 million or more. By 2035, more than 1 billion people will be living in China's cities.

Megacities will usher in a change that will challenge global organisation and sovereign

states as they attempt to meet the needs of billions of citizens. And the expectations of those citizens are rising by the second. Expectations for health care, jobs, wealth, security, energy and, above all, opportunities for a better life will shape the future of the city. The urban demographic waves are in motion and, given rising birth rates and productivity levels, it is clear that the megacities of the future are being built today. This may mean a rough ride for many nations ill prepared to meet the challenges of a demanding, entitled megacity citizenry who will be organising to demand their rights to a better future.

My organisation, the Institute for Global Futures, has been conducting a long-range forecasting project on the future of megacities for five years. We came across the subject by accident. In a project for General Electric a few years ago we were looking at the future of health care and energy in the developing world. The realisation came that cities had an evolutionary arc, a new narrative that was

emerging: it became clear that the megacity was going to become a dominant model for future urbanisation. Looking at the future of health and populations, we realised that neither we nor our clients understood what the impact of populations, health, energy and security would be when enmeshed with the future of cities. This began a serious inquiry.

What we discovered were signposts. Few are looking at the future cities from a holistic perspective, integrating technology, communications, health, energy and climate, to name a few domains that relate to cities in the future.

The issues related to population increase get most of the attention. We started with an acceptance of large cities in the future, cities of 10–20 million people. That is where the story begins, not ends. The strategic issue is: how will we manage the megacities of the future? Where will the resources come from? How will climate and energy influence megacities? What kind of planetary management will be required to make megacities sustainable with a quality of life that is desired by the citizens? What is the role of the individual in the megacity, the ultimate population dense star? Can there be a preferred, or even a viable, future for the megacity that empowers people to be innovative, healthy and productive in a free society?

For here is another unknown in the scaling up of the cities we know to megacity size. Richard Dobbs and Jaana Remes<sup>2</sup> in a study for McKinsey say that there are a number of limiting factors in how megacities will work – not only their food and water, their power demands and the waste they need to dispose of and the pollution they will produce, but also their governance. With size comes increasing complexity, and this, they say, may overwhelm the ability to manage them. Lagos is already a megacity, one whose population defies counting. One reason for this statistical uncertainty is the complexity of its governance. Its population has become a political issue, and has been quoted by different sources as 9 million and as 17 million. A reasonable estimate would be 12–15 million. It is barely managed or manageable. It has great wealth and great poverty. Two out of three Lagos residents live in slums with no reliable access to clean drinking water, electricity, waste disposal – even roads. The government estimates that Lagos will have expanded to 25 million residents by 2015. “Lagos will then be the third largest city in the world but it has less infrastructure than any of

the world's other largest cities." So says Francisco Bolaji Abosedo, Lagos Commissioner for Town Planning and Urbanisation – a man whose job it is not easy to envy.

Similar stories can be told of a dozen cities in South America and Asia, each of them already or about to become megacities. Cities will experience an extreme influx of populations that will challenge leaders on a scale never before seen.

### Planetary management

The seminal issue that is at the heart of the forecasts about the future of megacities is not just population growth. It is planetary management in light of global population growth. The population is on course to reach 9 billion by 2050 according to UN and other forecasts.

There is simply no analogue for sustainable planetary governance of 9 billion people. Even today, with 7 billion on the planet, there are huge gaps between developing and developed nations. The carrying capacity of the planet and the resources to actually manage growth to 9 billion are in doubt.

The statistics of food and water availability, rising sea levels, and the rest are in some cases known with some certainty, in other cases hardly known at all. It would be good to include in this overview news of the long-term plans that build on those statistics to guide strategies for coping with our future planet of megacities. No such plans exist. In fact there is not a cogent plan with any international body or sovereign authority that maps out what and how we will manage the needs of 9 billion people either 30 years or 30 minutes into the future. Our inability to see what is coming, perhaps to face down denial, will make dealing with the future of megacities more problematic still.

### Four megacity scenarios

With so complex a future, there are several possible narratives that may unfold. Artists, writers and film-makers have offered us their visions of some of them. They range from the pampered elite and enslaved underclass of Fritz Lang's 1927 silent film *Metropolis*, via the violent, polluted and near-lawless Mega-City One of the *Judge Dredd 2000 AD* comic books, to the ordered and technology-run apparent utopia of Huxley's *Brave New World*. Some

aspects of some of those narratives may come to pass. The future is born of the past and aspects of current megacities, such as Tokyo's density and structured urban planning, Rio's lawlessness and Delhi's poverty offer glimpses of tomorrow.

Political and economic realities will frame the future of megacities just as greatly as their physical needs. Ideology and values, fuelled by political power and economic impact, will drive megacity growth and sustainability. Here are four possible scenarios that may be reflective of different megacity developments in different nations.

#### Chaos City

In this megacity scenario, chaos reigns supreme. This is a classical failed state scenario applied to a city. Order is absent, formal and informal structures have broken down so that there is daily chaos and the city culture adapts to it. Legitimate commerce is reduced to a crawl. Lawlessness is normality. All essential services are unreliable and compromised. Urban refugees stream out and into the city. Survival is the chief commodity. Factions vie for control of power, resources and territory, and conflict and micro-wars are a constant.

Failed states today in the Middle East and Africa, where warring political groups and conflict are the daily experience, are the model for this megacity. Cities that share these characteristics can be found today in Haiti, Lebanon, Congo and Nigeria. Mogadishu in Somalia has perhaps been the prime example.

#### Gang City

A step up from the Chaos City is the Gang City, a somewhat orderly world of warlords and gangs that have informally taken over the security, economy, commerce and resources of the city. In this scenario a reasonable and orderly gang infrastructure may emerge to bring order to chaotic cities where formal governance has broken down. This is not necessarily an unwelcome solution for the populace.

This scenario, much like the previous one, seems to repress individual freedom, democracy and the rule of law. But not necessarily: individual freedom within certain accepted parameters may be the case.

For example, in Afghanistan the Taliban took over a region where an energy facility generates electricity. They took over the management, controls and even the billing of the

power station and continued the service, benefiting both the populace and themselves. In the future this may emerge as a megacity model. Though not ideal and less than democratic, the essential services are still provided by a controlled organisation, albeit a gang.

In the past gang-based models of governance have had rational purposes and integrated their order into the structure of society. Examples are the Yakuza in Japan and the drug cartels' role in Colombia. The gangs in the ghettos of Brazil have been integrated into cities; some would argue that they stabilised those cities. In the future, greater populations will demand

**In a chaotic megacity order is absent, commerce is reduced to a crawl, lawlessness is the norm**

greater services that will no doubt outpace even legitimate power structures; they may even accept informal networks such as gangs.

#### Fortress City

In this scenario the power elites, acting with the consent of the middle class or for the middle class via the electoral process, have created a safe, secure and sustainable city. This will be in reaction to extreme urbanisation, unbridled immigration, crime or conflict between demographic or political groups. Order, discipline, rule of law and a constrained freedom within certain bounds, such as social criticism versus dissent, are tolerated.

The trade-off will be more limited personal freedoms in exchange for a more secure and economically viable society where safety and stability are preferred. Dubai might be considered a model.

#### Smart City

Essential to this scenario is the idea that cities are systems that if intelligently developed and designed can be effective in dealing with any population challenges. The Smart City is one that will use advanced technology and sciences – computing, neuroscience, nanoscience, information science – to address the challenges of the future of the city such as energy, health, safety and commerce.

The Smart City will trade energy with other cities and generate its own energy. Smart City will enable citizens with the latest networks for media communications, entertainment, commerce and productivity.

Advanced materials for building more ecologically aware structures will be the norm. Smart city cars and public transportation will be guided by green strategies. The Smart City

will be the sustainable city of the future where viable environments that are green, safe and optimised for communications and community will be developed.

The Internet will be embedded in every object – everything and everyone will be online. The Smart City will benefit from artificial intelligence, as human intelligence will not be able to manage the complexity of challenges

and decisions that smart supercomputers will be able to.

By 2035 machines with super-intelligence will proliferate, especially in and for managing the complexity of cities. Complex planetary challenges related to climate change, pollution control or geo-engineering will only be able to be managed by a city's artificial intelligence. Mobile artificial intelligence will be the brains that will run the Smart City in efficient and cost-effective ways.

The Smart City is coming and the megacity will bring it soon. The actual development of artificial intelligence as an incentive to meet the challenges of the Smart City will set the stage for the future.

### Summary

Nine billion people will be the largest concentrations of human density in the history of civilisation. Some find it almost impossible to imagine it all turning out well.

I do not agree with this fashionable dystopian view. I believe the pessimists have ignored the factor that matters. Innovation can be a driver of better management of future cities. We have the tools, technologies and ability to overcome these challenges if we make smart choices now. As with any great generational challenge, balancing hubris with authentic know-how, even finding a bit of dormant genius to put on the megacity case, would be worthwhile. We have time to plan, build and strategise if we move ahead now in preparing to face the future of the megacity.

What planners, policy-makers, leaders and social scientists should be doing today is getting ready with new models of planetary management. Our lack of readiness for the future is endemic in our civilisation. But it would be good to get this forecast right and prepare for the megacity future.

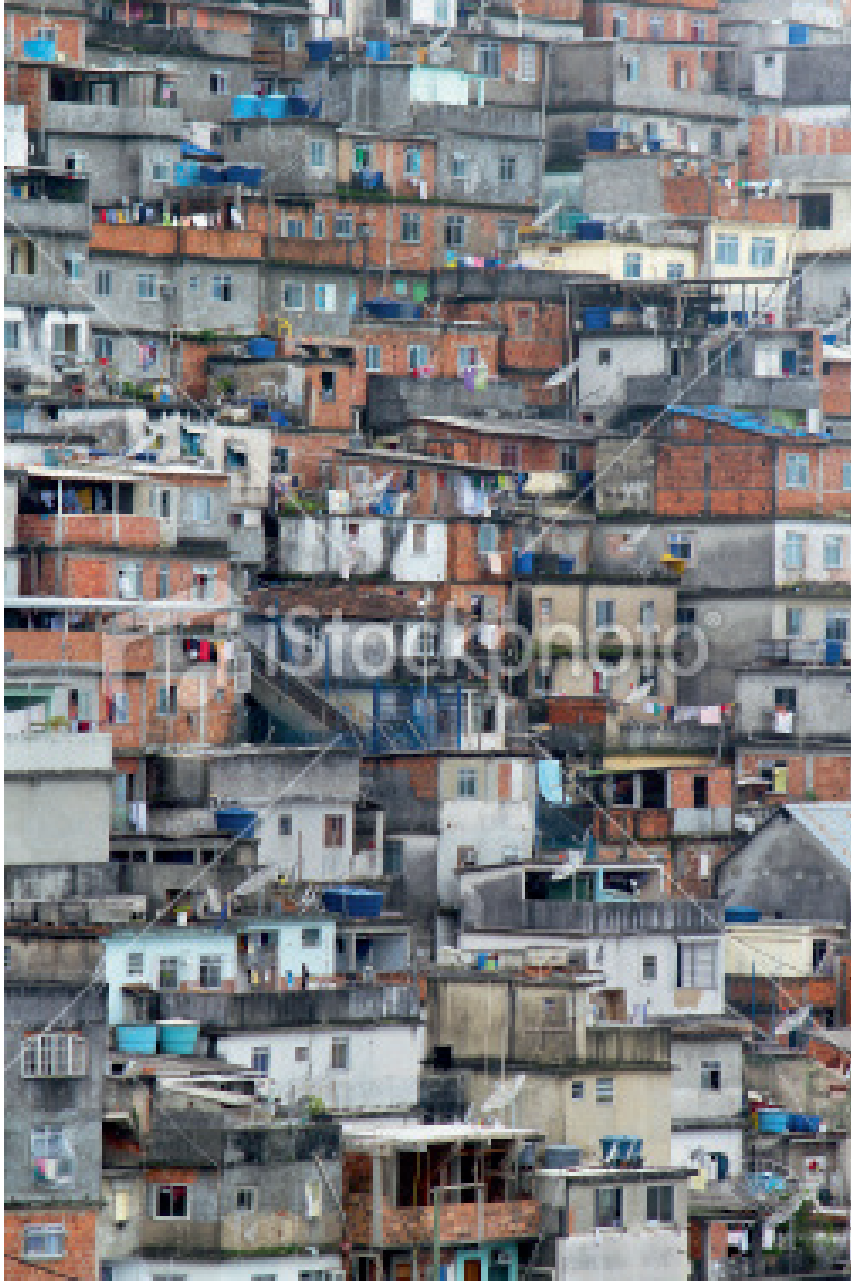
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Favela in Rio de Janeiro. © iStockphoto.com/luoman