A Tale of Two Cities

29 January 2009

A think piece for the British Council's Climate and Cities programme

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BRITISH COUNCIL

Notes from the Future
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"It was the spring of hope, it was the winter of despair,
we had everything before us, we had nothing before us"

Charles Dickens

The Best of Times

The World in 2030 – Take 1

Imagine a world where governments agree a robust global deal on climate change.

The 2009 Copenhagen agreement is the first step, setting out a broad framework for emissions control.[1] A green 'new deal' helps the world tackle the global economic downturn and pushes investment in clean tech into top gear.[2] By 2012, detailed negotiations have triggered a wave of institutional innovation, at global, regional, national and local levels.[3]

From that date onward, a price for carbon is set and emissions are traded globally.[4] Growing numbers of countries take on binding targets, with carbon markets providing finance to help poorer countries develop along a low carbon pathway.[5] Forests and other sinks receive investment in return for the ecosystem services they provide.[6] Adaptation funding is used to make countries more resilient to *all* the climatic threats they face.[7]

As a result, global emissions are already ten years past their peak in 2030, and have fallen to more than 10% below today's levels.[8] The world is gradually converging on equal per capita emissions.[9] By mid-century, the average American is projected to emit a tenth of the carbon they do today, and Chinese per capita emissions will have fallen by half. Meanwhile, Brazilian emissions will have risen for a time, but then fallen back to 2009 levels, and the average Haitian will still be below the global average, but receiving some cash in recompense.[10]

There's been some friction along the way. In 2030, the carbon market is big business, trading over $5 trillion annually, as part of a global financial system extensively remodelled after the depression.[11] But the price has been volatile, creating systemic instability that the International Carbon Fund struggles to contain.[12] In spite of this, the US, European Union and Japan have managed to maintain some unity within an increasingly assertive G20, while the new powers (China, India, Brazil) have assumed enhanced rights and responsibilities on the global stage.

Non-state global networks, meanwhile, have continued to grow in influence, while a new commitment to subsidiarity has strengthened the hand of provincial

and local actors. The nation state has not disappeared, but it has a growing number of rivals on the international stage.[13]

The climate, of course, is still warming. The IPCC has just published its eighth assessment report, with a headline finding that emissions will stabilize around 465ppm CO2e, leading to eventual warming of 2.6ºC above pre-industrial levels.[14] By 2030, the world has already warmed by about 1ºC (a rise locked in by 20th century emissions).[15] The impact of this is obvious for all to see. The climate has become less dependable; floods, famine and drought have all increased in frequency and severity.[16]

In general, however, communities have proved surprisingly resourceful and innovative – both in reducing emissions, and in coping with a changing climate. Top down political action has been met and matched by an effective bottom-up response. The 20th century's climate legacy may have presented the world with its greatest market failure, but the 21st century seems to be up to the task of designing and implementing a collective response.[17]

Low Carbon City

In this world, what will the future city look like?

Here's what we know:

- *It will be bigger*… Today, 3.3 billion people live in the world's towns and cities. By 2030, this figure will have leapt to 5 billion. There will be eight 'hypercities' with more than 20 million inhabitants; another nineteen 'megacities' with at least 10 million citizens, and 48 or so large cities where more than 5 million people live.[18]

- *…or smaller...* Half the world's urban dwellers live in a 'long tail' of towns of less than 500,000 inhabitants.[19] These towns are too numerous to be counted, but by 2030 there will be at least 700 million *more* people living in them (that's twice the population of the USA).

- …*but considerably poorer*. Even if economies grow strongly, 2030's *average* urbanite will have a lower standard of living than he or she does today. Cities in rich countries will barely grow over the next twenty years and some will shrink. But developing countries will have 1.4 billion more urban dwellers, with the very poorest cities growing fastest of all.[20]

But while tomorrow's towns and cities face massive challenges, they still act as dynamos in the global economy. Even poor cities have huge economic importance, with a country's largest city commonly accounting for 20% of its GDP.[21] As the World Bank points out, "No country has developed without the growth of its cities. As countries become richer, economic activity becomes more

densely packed into towns, cities and metropolises."[22] Not only do cities offer residents the chance of a better life, over time the benefit tends to spread to the surrounding countryside as well.[23]

But tomorrow's city must perform a tricky balancing act. It will have to grow at breakneck speed, while providing both services and economic opportunity to its people. And it must do this in a world with *severely* constrained access to the carbon-rich energy sources that underpinned the twentieth century's complex urban environments.[24]

This will require a revolution in energy use:

- At present, towns and cities account for 67% of the world's energy consumption and 71% of energy-related CO_2 emissions.
- Assume business as usual, and urban emissions will grow by 55% over the next twenty years – equivalent to double the US's current emissions. Almost 90% of this growth will be in the developing world.
- Under this scenario, cities and towns in 2030 will be using 70% more coal, 60% more gas, and 35% more oil than they are today. Fossil fuels would make up 85% of all urban energy use, virtually unchanged from current levels.[25]

But the world we have described is one where such rapid emissions growth has been made impossible, where fossil fuel use is below current levels, and where carbon constraints on trade will have changed the relationship between a city and its hinterland.[26]

By 2030, then, the future city will have substantially reconfigured its energy and transportation systems. It will have found a way to house, feed and clothe a growing population using materials that have drastically reduced levels of 'embedded carbon'.[27] And it will have set new standards for energy efficiency (low hanging fruit that have accounted for over a third of its decarbonisation).[28]

The Worst of Times

The World in 2030 – Take 2

Now imagine a world where things don't work out so well, where 2009 is remembered as the high water mark of global interdependence – the year that globalization began a slow and painful retreat.[29]

Copenhagen produces a deal, but it's simply Kyoto II – delivering short term targets, with patchy coverage.[30] The treaty is hard to ratify, poorly implemented,

and has negligible impact on global emissions. Developed countries continue to relocate their energy intensive industries to countries without targets. They produce a little less carbon, but – once imports are taken into account – consume even more than before.[31] Subsequent talks tighten the regime a little, but by 2030 it's clear that there's little chance of stabilization below 650ppm.[32]

At the same time, there is a broader loss of confidence in international cooperation. A deep and persistent global depression triggers increasingly nationalist and protectionist responses the world over.[33] The result is a demographic disaster. Rich countries struggle to cope with their retiring baby boomers, while poor countries produce growing numbers of workers, but have decreasing numbers of jobs to offer them.[34] The news is not universally bad, but most countries in most years see their economies perform at levels well below their theoretical potential.

To make matters worse, a nasty scarcity dynamic creeps up on policymakers while their attention is focused elsewhere.[35] Energy, food, water, land and, to a lesser extent, emissions, become increasingly constrained, as the world's population rises towards 8 billion.[36] Oil production peaks (partly as a result of chronic underinvestment), and alternative energy sources continue to underperform.[37] Food prices are driven up by increased demand, competition for land, water scarcity and the rising cost of energy.[38] Conflict over water becomes increasingly common – both between and within states.[39]

The consequences of this are toxic. On the one hand, economic growth tends to trigger, and then be limited by, a series of resource price shocks. On the other, successive waves of resource nationalism do little to enhance prospects for global co-operation. Tit-for-tat is now the dominant force at the heart of the international system, as nations and regions jostle and compete for the resources the world has left.[40]

By 2030, climate change is beginning to accelerate all of these problems. Rich countries have been hit, but poor countries have suffered worst. In the coming decades climate change may push the number of displaced people in the world up to one billion.[41] With conflict on the rise, a remodelled UN Security Council is spending a growing proportion of its time on climate security.[42]

But the worst of the impacts are yet to come. Within another fifty years, 600 million more people are likely to be acutely malnourished; 1.8 billion people will suffer from water shortages; 200 million will experience coastal flooding; each year and up to 400 million more people will be at risk from malaria.[43]

In 2030, then, *this* future is an increasingly bleak one for hundreds of millions and perhaps billions of people. And for their children and grandchildren, things are by now certain to get much worse.

The Feral City

So what are the prospects of the future city in this darker world?

The underlying demographic drivers, of course, will not have changed. Urban areas will see the same surge in population (or perhaps an even greater one, given that poverty tends to keep birth rates high). But with the global economy stagnating, people will no longer be *pulled* into cities by economic opportunity. Instead, they'll be *pushed* out of the countryside by disaster, war and famine.[44]

Worse still, new arrivals will often be moving to the wrong places. 13% of the world's urban population lives in coastal areas that are less than 10 metres above sea level.[45] Today, there are over 3,000 cities and many more smaller towns close to the waterfront – a figure that will have risen substantially by 2030.[46] As sea levels rise by a metre or so, Buenos Aires, Rio de Janeiro, Los Angeles, New York, Lagos, Cairo, Karachi, Mumbai, Kolkata, Dhaka, Shanghai, Osaka-Kobe, Tokyo and thousands of smaller towns and cities will all come under threat.[47]

By 2030, many, if not all, urban areas will have experienced a gradual *intensification* of their current vulnerabilities. Natural disasters reveal how fragile modern cities can be. Katrina shut down New Orleans, causing $80 billion damage, and costing 1,836 lives.[48] But by 2030, there's a good chance that the US will have experienced its first $500 billion hurricane.[49] The winds won't need to be any stronger – poor planning and pressure to build in vulnerable areas will have inexorably driven up the level of risk.

Nor does the breakdown of a city have to be so dramatic. In Europe, the heat wave of 2003 killed 35,000 people, most of them old and living in urban apartments.[50] Families had abandoned the city centres for the beach, while hospitals were short staffed. No-one realised that the region's worst peacetime disaster was underway. By 2030, the world can expect to see a doubling of heat related deaths.[51]

But the threat from climate will be at its most acute in the chaotic, sprawling, endless cities of the developing world.[52] Today, 800 million urban dwellers live in slums, and most of them lack proper water, sanitation and housing.[53] By 2030, without rapid economic growth, that number will have grown by 50% or more.[54]

These cities will be beset by a growing 'dirty' environmental burden. At present, 800,000 people die each year from urban air pollution and many more suffer from ill health.[55] Indoor air pollution is prevalent in slums and shanty towns, where many women cook using wood fuel and dung, often in poorly ventilated rooms.[56] Uncollected waste and sewage is another pressing problem, and causes at least as many additional deaths.[57] Slums also tend to be built in the

most hazardous places, with little or no drainage, where the risk from flooding is high.[58]

Without economic growth and better planning, these problems will steadily worsen, making the future city a dangerous and unpleasant place to live. The result will be an inevitable wave of crime, social unrest and, at worst, conflict. Some cities will be simply unable to cope, and will fail in the face of an insupportable social, environmental and economic burden.

These will be tomorrow's *feral cities*. No longer a driver of growth and increasing prosperity, but "a vast collection of blighted buildings, an immense petri dish of both ancient and new diseases, a territory where the rule of law has long been replaced by near anarchy in which the only security available is that which is attained through brute power."[59]

The City of the Imagination

Signals from the Future

Climate change presents cities with an immense challenge.

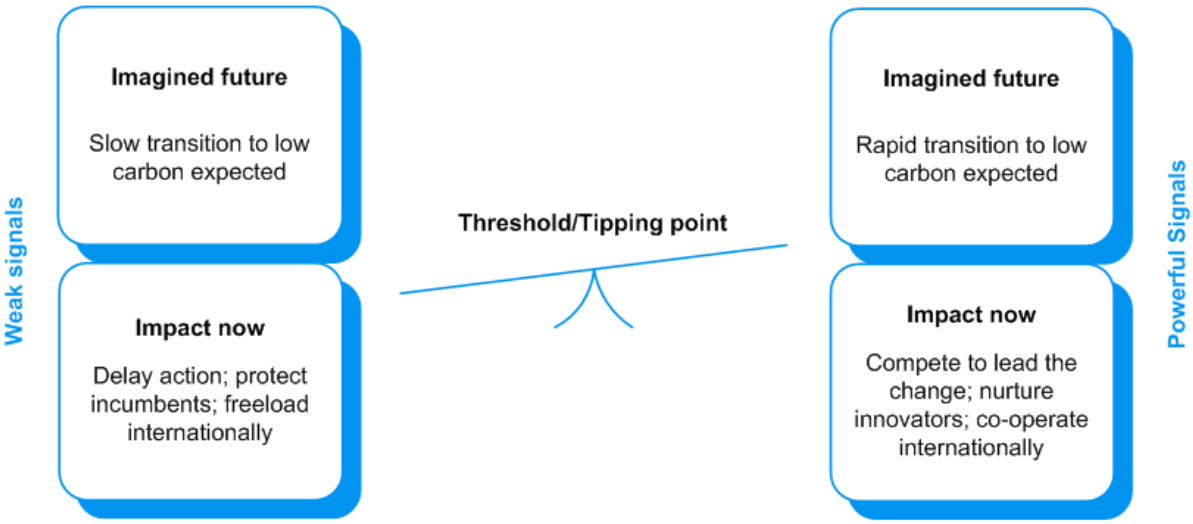
Assume the *best of times* (a rapid, co-ordinated effort to stabilize the climate) and they must undergo revolutionary transformation in little more than a generation. Very few city leaders grasp the scale, depth and speed of the changes that will be required.

Assume the *worst of times* (uncontrolled emissions growth, with three, four or five degrees of warming on the way) and cities will lose their place on the cutting edge of an advancing civilization. All will struggle to adapt. Some are certain to fail.

Which path we take depends on *signals from the future*.[60] The tipping point is a psychological one, with actions taken today being influenced by what people believe the future holds:

- If politicians, investors and citizens expect a rapid transition to a low carbon world, then their incentive is to act now – locking in leadership in emergent industries, while avoiding decisions that make meeting future targets more painful and expensive than they need to be.

- If however, they think the change is going to come slowly, or not at all, then their incentive is to delay action and free ride where possible. Countries then have a strong incentive to block global agreements. The logic is circular: why should a state take on targets now that it is so poorly positioned to meet them?



A strong signal from the future, then, promotes a self-fulfilling cycle of action, co-operation, and binding international enforcement. With weak signals, the logic turns vicious, leading to intense and equally self-fulfilling zero sum competition.[61]

That's why today's policy disconnect is so corrosive. Citizens are highly sceptical that their leaders will ever make, implement and enforce a robust global deal.[62] That belief, while understandable, further erodes the political conditions needed to make a deal possible.

So what role can cities play in breaking this double bind? As the world's creative hubs, they bear much of the burden of developing fresh approaches and innovative solutions.[63] The example they set (or fail to set), the way their citizens think about and tackle the climate problem, and the advocacy of their leaders will have a huge influence on the future direction of their countries. Without leadership from cities, climate stabilization will not happen quickly, or at all.

A New Cosmopolitanism

In the coming years, the need for greater innovation will be great. Cities must:

- *Revolutionise their economies*, squeezing four or five times as much value out of every tonne of greenhouse gas they emit, and pioneering new ways to meet global consumer demand.[64]
- *Rebuild their infrastructure*, investing in new energy and transportation systems, and buildings that are massively more frugal in their use of resources.

- *Develop the political, regulatory, and financial institutions* needed to track, control and price *national* emissions with sufficient transparency and accuracy to satisfy *international* standards.[65]

The scale of what's required goes far beyond developing a few new technologies. Innovation will need to reach deep into both formal and informal economies, with the latter certain to remain critical in developing country cities throughout much, if not all, of the twentieth first century.[66]

But the challenge is more than just an economic one. For the climate to be stabilized, cities must be at the head of a *profound cultural, social and psychological transformation*, one that touches all aspects of their citizens' lives, changes the way people think and behave, and creates a world that is different in many unanticipated ways from the one we live in today.[67]

And this shift must happen across most (and probably all) major cities. Climate change, as Scott Barrett has argued, depends on the aggregate efforts of all rowers in the boat.[68] Pioneers will find their effort is wasted, unless they share their experience widely, and in particular with the sprawling megacities of the developing world.

Climate, meanwhile, will be only one of many challenges that cities face. As we have seen, urban centres of all sizes will continue to grow at a staggering rate, with population, power and influence shifting steadily from the developed to the developing world. Resources will be tight, while global systems are likely to struggle under the demands that are placed on them. Even optimists expect the road to 2030 to be a rocky and uneven one.[69]

Cities must therefore also invest in resilience – the capacity of a system to "absorb disturbance and reorganise while undergoing change."[70] Many of today's urban centres are brittle and over-centralized, and have worryingly few reserves. It's as if citizens believe their city is immune to the impact of climate change, and that the brunt of the impact will be felt somewhere else (by the poor, in the countryside, in other countries etc.).

Increasing resilience is thus not simply about being ready for the occasional natural disaster, but about a broader effort to build a coherent, long-term and inclusive response to a range of risks.[71] That means mobilising urban networks and communities, and building a new understanding of risk all the way from a city's government to its grassroots.

Resilience may have to substitute for innovation, if global co-operation on climate breaks down. But the two will be stronger if they go hand in hand, with resilient cities better able to respond in creative and dynamic ways to the climate challenge. Taken together then, they provide a recipe for a new cosmopolitanism

– one that brings the energy of cities to bear on the most complex problem the world has ever faced.

About the Authors

David Steven is a policy analyst, strategic consultant and researcher. He is managing director of the consultancy River Path Associates, and a Demos associate, where he runs a programme on the new diplomacy.

In 2008, David was commissioned to explore the future of multilateralism by the British Prime Minister for presentation to heads of state at the Progressive Governance Summit, with New York University's Alex Evans. Subsequently, they co-authored a paper on multilateral responses to the global financial crisis.

David presented on the politics of global climate deal at the United Nations University G8 symposium on climate in July 2008. This presentation provided the basis for a study for the UK's Department for International Development on the global institutions needed to support a post-2012 global deal on climate. He returned to UNU in January 2009 to explore reform of the international system.

David was a featured speaker at the last two RUSI conferences on resilience. His paper on the topic will shortly be published by the journal, Renewal. He also co-edits the website, Global Dashboard, (http://globaldashboard.org), which explores global risks and foreign policy responses.

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Previously, Peter was Director in Thailand; the regional leader for education; and Director of the Education and Training Group with responsibility for the Council's global education developments. He has worked closely on education policy with governments both in the UK and overseas, was responsible for a series of UK based initiatives such as the Global Gateway, and was the architect of the Anglo-French educational agreement signed by both governments in 2003. Peter has worked closely with the World Bank on Distance Learning and ICT, with UNESCO on Vocational education and Training and with the National College of School Leadership on international partnerships.

The authors would like to thank **Guy Edwards** for his research assistance and **Victoria Collis**, **Alex Evans** and **Ali Fisher** for their helpful comments.

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[4] The OECD, for example, models the achievement of a 450ppm CO_2e stabilization. In this simulation the carbon price rises from US$2.4 per tonne of carbon in 2010 to $155 in 2050 (in 2001 dollars). OECD, Environment Outlook to 2030, OECD, Paris, 2008

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[22] ibid

[23] ibid

[24] Thomas Homer Dixon and Joseph Tainter both explore the links between energy intensity and urbanization, with Tainter arguing that fossil fuels provided an 'energy subsidy' that allowed a significant leap in the complexity of societies. Homer Dixon believes that energy stress will increase as oil supplies decline, with no substitute fuel providing as attractive as oil. See: The Upside of Down; Catastrophe, Creativity and the Renewal of Civilization, Knopf, Island Press, 2006; and Joseph Tainter, The Collapse of Complex Societies, Cambridge University Press, Cambridge, 1990

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[26] Figures are drawn from Table 18.3, International Energy Agency, World Energy Outlook, 2008, op cit

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[37] IEA estimates that production rates from oilfields will be declining at 10% per year in 2030 (absent major cuts in demand due to climate change policy); $5 trillion of investment would be needed to bring sufficient new capacity onstream. International Energy Agency, World Energy Outlook, 2008, op cit
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[39] For a detailed discussion of climate security, see Nick Mabey, Delivering Climate Security: International Security Responses to a Climate Changed World, Whitehall Papers No. 69, Royal United Services Institute, 2008
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[41] See Christian Aid, Human tide: the real migration crisis, Christian Aid, London, 2007
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[43] UNDP 2007 op cit
[44] See Satterthwaite for a discussion of the economic attractiveness of cities, even in Africa. David Satterthwaite, The Transition to a Predominantly Urban World and its Underpinnings, Human Settlements Discussion Paper Urban Change 4, International Institute for Environment and Development, London, 2007
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[70] The definition is provided by Brian Walker, C.S. Holling, Stephen R. Carpenter and Ann Kinzig, Resilience, Adaptability and Transformability in Social-ecological Systems, *Ecology and Society,* Volume 9, No. 2, Art 5, 2004. The full version is: 'the capacity of a system to absorb disturbance and reorganise while undergoing change so as to still retain essentially the same function, structure, identity and feedbacks'
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