

Policy in Focus

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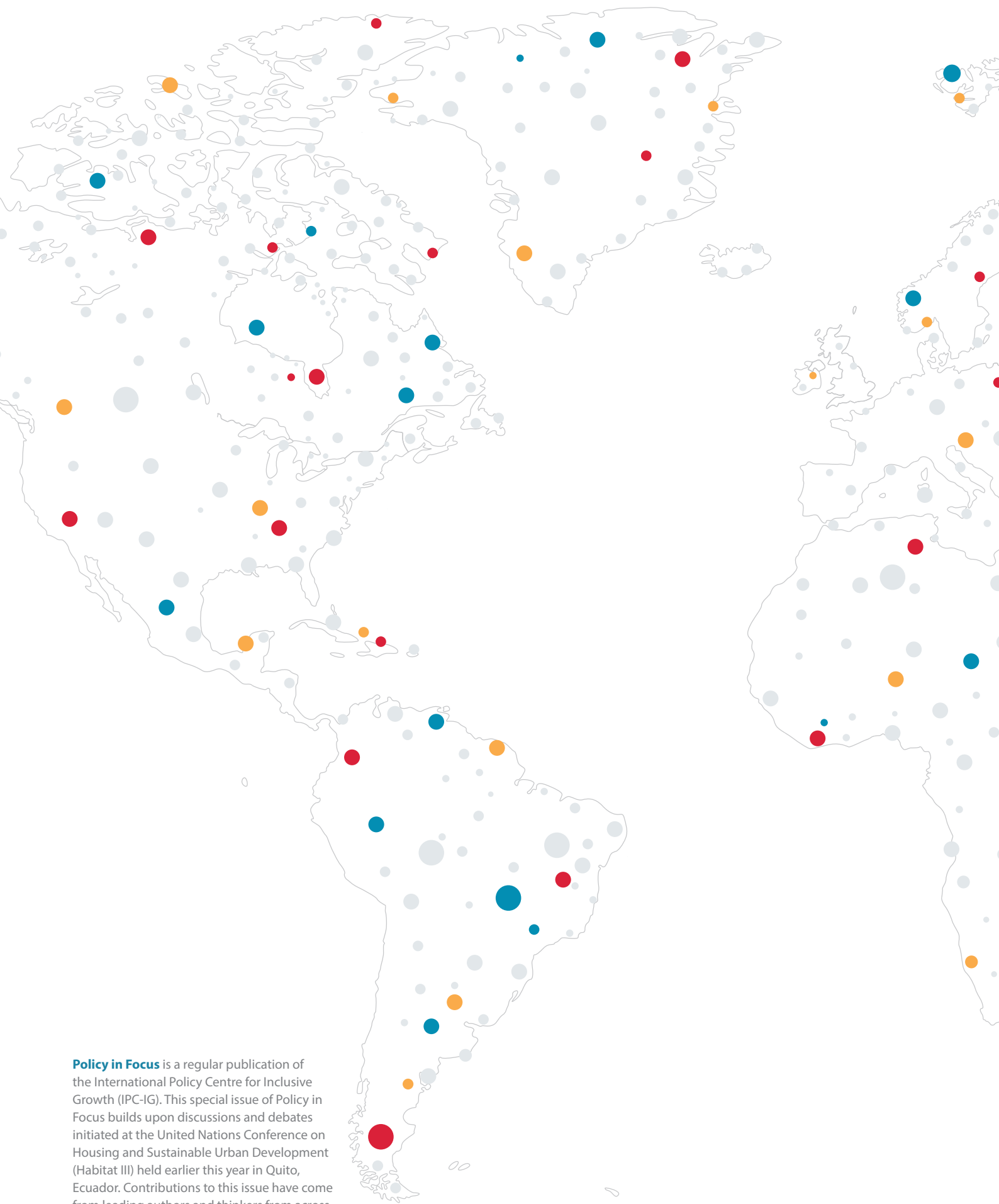
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A new urban paradigm:
pathways to sustainable development



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Policy in Focus is a regular publication of the International Policy Centre for Inclusive Growth (IPC-IG). This special issue of *Policy in Focus* builds upon discussions and debates initiated at the United Nations Conference on Housing and Sustainable Urban Development (Habitat III) held earlier this year in Quito, Ecuador. Contributions to this issue have come from leading authors and thinkers from across the globe addressing different aspects of sustainable urban development, innovations, and metropolisation from several different local and regional perspectives.



Policy in Focus



The International Policy Centre for Inclusive Growth (IPC-IG) is a partnership between the United Nations and the Government of Brazil to promote South–South learning on social policies. The Centre specialises in research-based policy recommendations to foster the reduction of poverty and inequality as well as promote inclusive growth. The IPC-IG is linked to the United Nations Development Programme (UNDP) in Brazil, the Ministry of Planning, Budget and Management of Brazil (MPOG) and the Institute for Applied Economic Research (Ipea) of the Government of Brazil.

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Editor's note: A new urban age has bestowed cities with environmental, social, economic, political and even diplomatic clout, pushing them into new positions of power as agents and locations of change for solutions to not only local challenges, as sites where positive social economic development outcomes may be scaled, but also to increasingly nebulous global problems.

This special issue of Policy in Focus sheds light on new ways of thinking about our world, and contributes to a new body of knowledge to better equip policymakers and academics to face the challenges and seize the opportunities of an era of shifting global systems and an emerging new urban paradigm.

On behalf of the UNDP IPC-IG, I would like to express our gratitude to UN-Habitat for their support in the development of this special issue. In particular, we would like to extend a special thanks to all of the authors for their generous and insightful contributions, without which this special issue simply would not have been possible.

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Editorial

Humankind has entered a new 'urban era', where the majority of the population lives in urban areas. It is, therefore, not surprising that sustainable urban development has become an integral pillar of the 2030 Agenda for Sustainable Development, including the adoption of a specific goal dedicated to cities.

An analysis of the state of the world's urbanisation over the last 20 years by UN-Habitat, the lead United Nations agency on urban development, reveals that the current trends are not only not sustainable, but also very damaging for the quality of life of future urban dwellers and for the planet as a whole.

Our cities are increasingly less planned and less dense, consuming 78 per cent of the world's energy, producing more than half of all greenhouse gas emissions and taking up much more land than needed, with unaffordable housing. The consequences of these trends are dramatic.

With the adoption of the New Urban Agenda at Habitat III, the debate over the positive and transformative outcomes of well-planned urbanisation has led us to challenge this paradigm. This paradigm shift is crucial, as it reaps the benefits of good urbanisation in seeking solutions to many of the problems the world is facing today.

If we get urban development right, cities can be centres for creating jobs, promoting social inclusion and protecting local ecosystems. Cities, when planned and managed well, are engines of national economic growth, social prosperity and environmental sustainability.

To that end, the New Urban Agenda offers five strategies that will help countries to address the current urbanisation challenges.

First, developing national urban policies that establish mechanisms of coordination between central and local governments, preventing the duplication of services and costs: The New Urban Agenda calls for new and reinforced cooperation between central and local governments. The role of central governments in the quality of urbanisation is very relevant. National urban policies amalgamate the dispersed energy and potential of urban centres within a national system or hierarchy of cities and towns. They help to coordinate the work of different sectors and tiers of government, establish incentives for more sustainable practices and provide a basis for the allocation of resources.

Second, ensuring proper urban legislation: Urbanisation should be based on the rule of law. Robust legislation and its equitable implementation shape operational principles and stabilise organisational structures, fostering institutional and social relationships that underpin the process of urbanisation.

Third, supporting urban planning and design: The capacity of urbanisation to generate prosperity is closely linked to the physical design. Good planning can change a city's internal structure, form and functionality, contributing to a more compact, integrated and connected layout and leading to sustainable solutions. Densification, social diversity, climate change mitigation and adaptation, the sustainable use of natural resources, and adequate public spaces, including vibrant streets, are all results of good urban planning and design.

Fourth, financing urbanisation: Urbanisation is one of the few social and economic phenomena in which public investment generates private value. To create employment, urban areas and regions require strong economic growth strategies that take into account regeneration, cluster development and industrial zones. Strengthening municipal finance comprises realigning fiscal authority, responsibility and revenue sharing—i.e. achieving the right balance between different levels of government, designing new financial mechanisms and exploring new sources of capital, improving systems of revenue collection and improving budget management and transparency.

Finally, the local implementation of the New Urban Agenda: In expanding a city, we must maintain planned city extensions and planned city infills. This results in lowered costs of basic urban services, urban energy use and greenhouse gas emissions.

I would like to thank the International Policy Centre for Inclusive Growth (IPC-IG) for launching this special edition of *Policy in Focus*, continuing the discussions facilitated by Habitat III and enriching the current debate towards a new urban paradigm.

**by Dr. Joan Clos, Secretary-General
of Habitat III/Executive Director of UN-Habitat**

Inequality and patterns of urban growth¹

by Ricky Burdett²

In 1950, the fishing village of Shenzhen in south-east China had 3,148 inhabitants. By 2025, the United Nations predicts it will reach over 15 million. Congo's capital, Kinshasa, will have gone from a population of 200,000 to over 16 million people, growing over the next decade at the vertiginous rate of 6 per cent per year (about 50 people per hour). Meanwhile, Brazil's economic engine, São Paulo, will have slowed to the rate of 1.2 per cent per annum, nonetheless experiencing a tenfold expansion over the 75-year period (UN DESA—2014).

Earlier this year London overtook its historical high of 8.6 million people, reached at the outset of World War II, bucking the trend of many European and North American cities, which have experienced only slight or even negative population growth. Compared to other global cities, London is inching forward, with only 9 new residents per hour, compared to double that number in São Paulo and over 70 in Delhi, Kinshasa and Dhaka. Nonetheless, London will accommodate an additional 1 million people by 2030 (ibid.; LSE Cities 2015).

These snapshots reflect deep differences in patterns of urban growth and change across the globe, often masked by the crude statistic that the world is now more urban than rural, and that we are heading towards a 70 per cent urban–rural population ratio by 2050.

Historically, urbanisation has always been closely linked to economic development. While growth in the mature cities of Europe and North America accelerated in the 19th century, most reached their peak by the mid-20th century. Other regions of the world have seen their cities grow most significantly since the 1950s. Tokyo's wider metropolitan region grew by more than half a million inhabitants each year between 1950 and 1990, Mexico City and São Paulo by more than 300,000 each per year, and Mumbai by around 240,000 per year (UN DESA 2014).

The only exceptions in this period were cities in China and sub-Saharan Africa,

which experienced only modest growth. But from the 1990s onwards—with the impact of globalisation and the opening up of the Chinese economy—cities continued to grow rapidly in South and Southeast Asia, with China experiencing a sustained growth spurt that is palpable even today. For example, the South Guangdong metropolitan area (which includes Shenzhen, Guangzhou and Dongguan) saw its 5.5 million inhabitants in 1990 increase sixfold to reach almost 32 million in just two decades (ibid.).

The result of this process of growth and change is an uneven distribution of urbanisation across the globe. Europe and South and North America are the most urbanised of the five continents—with 73 per cent, 83 per cent and 82 per cent of their population living in cities, towns and other urban settlements, respectively. Africa stands at around 40 per cent, and Asia at 48 per cent. Both regions are set to experience exponential growth in the coming decades, a combined effect of increased birth rate and migration.

There are stark differences in patterns of urban growth across the globe. Most large cities in Europe and parts of North America hit their current size by 1950. Latin America, the west coast of the USA, Japan and some Asian cities grew substantially in the years leading up to

1990. However, the bulk of urban growth will be experienced in sub-Saharan Africa, India and China and other Asian cities such as Dhaka and Manila, while Tokyo will experience relatively modest growth over the same period.

There are equally stark differences in the patterns of distribution of inequality. All cities display some level of inequality—some are more pronounced than others, depending on their national and regional contexts, and the level of economic development and informality. What we are observing today, especially in cities in the developing world, is that social inequality is becoming increasingly spatialised. In her observations about inequality in São Paulo, the anthropologist Teresa Caldeira, who is Professor of City and Regional Planning at the University of California, Berkeley, has described a dual process of confrontation and separation of social extremes. The former is captured by the powerful image of the water-deprived *favela* (shantytown) of Paraisópolis in São Paulo overlooked by the expensive residential towers of Morumbi with swimming pools on each balcony. Caldeira (2008) defines the latter as a form of urbanisation that “contrasts a rich and well-equipped centre with a poor and precarious periphery ... the city is made not only of opposed social and spatial worlds but also of clear



Photo: Alicia Nijdam. Inequality in Rio de Janeiro, Brazil, 2008 <<https://goo.gl/xEFT6H>>.

“Many urban projects of the last decades have contributed to a physical reinforcement of inequality.”

distances between them. Since these imaginaries are contradictory—one pointing to the obscene neighbouring of poverty and wealth and another to a great distance between them—can both represent the city?”

These imaginaries translate into distinct urban realities. Designers, developers, investors and policymakers are faced with increasingly tough choices as to how to intervene within changing urban physical and social landscapes. How do you maintain the identity of the city when it undergoes profound transformations? Who is the city for? How do you reconcile public and private interests? Who pays, and who gains? The city planners of London, Paris, Barcelona, Hamburg and New York are grappling with the same questions as the urban leaders of African, Latin American and Asian cities such as Johannesburg, Mexico City or Jakarta, even though the levels of deprivation and requirements for social infrastructure are of a different order of magnitude.

Many urban projects of the last decades have contributed to a physical reinforcement of inequality. Gated communities and enclaves proliferate. They cast differences in stone or concrete—not for a few undesirable outcasts, but for generations of new urban dwellers who continue to flock to the city in search of jobs and opportunities. The key question for urban designers and policymakers alike is what role, if any, does the design of the physical environment play in exacerbating or alleviating inequality? Should we, as Suketu Mehta³ (2015) has recently asked, design cities that are fully inclusive? Or should we settle for urban neighbourhoods that at least do not exclude anybody?

In many African and Latin American cities, inequality is indeed a stark reality. Despite recent improvements, Rio de Janeiro

and São Paulo (for example) still top the Gini index charts, which measure the differences between the more affluent and more deprived members of society (see LSE Cities 2015). Inequality in these cities is nearly twice that of London or Berlin, even though it remains less extreme than some African cities such as Johannesburg and Lagos or other Latin American cities such as Mexico City, Santiago (Chile) and the highly planned Brazilian capital of Brasília (UN Habitat 2010/11).

London, for example, has average income levels four times higher than Rio de Janeiro. Yet it has a marked intra-urban distribution of inequality. The most economically deprived neighbourhoods are concentrated in the east and south, with more affluent residents concentrated in west London and the periphery of the city (the suburbs on the edge of the Green Belt). In Paris, by contrast, social deprivation is concentrated on the edges of the city, with poorly serviced, predominantly migrant communities living in 1970s block typologies in the *banlieues* beyond the *périphérique*.

While few European cities display the stark racial and spatial segregation of so many US cities, such as Chicago, St Louis and Los Angeles, they are equally exposed to the sort of inward-looking mentality which exacerbates social exclusion. The trend towards greater physical separation of distinct socio-economic groups is being implemented across the urban landscape of many cities, especially in those experiencing a very rapid form of informal growth. In this respect, architecture and urban design play an important role in laying the ground for potential integration, rather than creating environments that are intentionally exclusive.

Ultimately, the urban question revolves around issues of inclusion and exclusion. As expressed by Mehta (2015), what is important is “not that everyone is included. It’s that no-one is excluded. It’s not that you’ll get invited to every party on the beach. It’s that somewhere on the beach, there’s a party you can go to.” The spatial dimension in this equation is critical. It is the loss of porosity and complexity that Richard Sennett (2015) has identified as the critical characteristic of contemporary urban malaise: “I don’t believe in design determinism, but I do believe that the

physical environment should nurture the complexity of identity. That’s an abstract way to say that we know how to make the Porous City; the time has come to make it.”

The reality of the urban condition reveals that in many parts of the world urbanisation has become more spatially fragmented, less environmentally responsive and more socially divisive (Burdett and Sudjic 2011, 8). Adaptable and porous urban design, coupled with social mix and density will not solve social inequality on its own, but these measures will go a long way in mitigating the negative impacts of exclusionary design and planning. By developing a more open form of urbanism that recognises how the spatial and the social are inextricably linked, perhaps we will be proved right that cities can help provide solutions and not just exacerbate problems. ●

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1. This text draws from research carried out by LSE Cities, a research centre which is directed by the author at the London School of Economics (LSE).

2. London School of Economics (LSE).

3. Suketu Mehta, author of *Maximum City: Bombay Lost and Found* (2004).

Can mayors really rule the world?

On an interdependent planet without borders in an era of governance revolution and the decline of national sovereignty, they can and must

by Benjamin Barber¹

Urbanist Ed Glaeser has said we are an urban species, and urbanisation has been a salient global trend at least from the Industrial Revolution—some would say it started with civilisation itself. But it is only in this new millennium that the United Nations (UN) announced that a majority of the world's population now live in cities and that economists have recognised that 80 per cent or more of global gross domestic product (GDP) is being produced in cities. Yet by themselves, these are no more than interesting long-term trends.

In the setting of current crises of governance, democracy and national sovereignty, however, urbanisation acquires far greater significance. And given our stunning incapacity to solve global problems—whether of climate change and terrorism or pandemic diseases and refugees—the role of cities becomes a matter of urgency. It was the confluence of the cross-border global challenges we face and the increasing dysfunction of nation states in responding to them that led me to write *If Mayors Ruled the World: Dysfunctional Nations, Rising Cities*, in 2013. It was here that I proposed the time had come to think about cities rather than nations, mayors rather than prime ministers, as the key players of this new urbanising century. Nothing that has happened recently has dissuaded me from the idea that cities must play a more prominent role in planetary problem-solving. Government gridlock in the USA, the rise of anti-democratic populist parties in Europe, the persistence of corruption in Latin America and throughout the world, and the beginning of the exit of the UK from the European Union all have

conspired to render national governments less than efficient in addressing the critical tasks for which their sovereignty makes them responsible.

In short, we appear to have reached the end of the era of nation states and their dominion. For more than four centuries, the traditional state's national borders and insular sovereignty defined political jurisdiction and democracy. But these old markers of national independence can no longer accommodate the borderless interdependence of the contemporary world. As states decline, their sovereignty ever more in default, cities are rising. Their pragmatic capacity to solve problems and their inclination to transactional cooperation across borders makes them more successful politically than any other extant political body. Put bluntly, cities are emerging as the de facto sovereigns of the 21st century.

The enduring vitality of the metropolis, now fully restored, is hardly surprising. After all, cities are much older than the nation states to which they belong, and much more open and multicultural, hence also more transactional and tolerant than mono-cultural states. Moreover, citizens view the city as the quintessential home or *Heimat*—‘*chez nous*’, the French would say. *Cité* and *citoyen* in French, *Burg* and *Buerger* in German, suggest the deep etymological link between cities and citizenship, cities and civic identity. As the primary source of identity, it is the municipal neighbourhood where attachments are grounded. ‘Neighbour’ is perhaps even a more visceral salutation than compatriot. States are in their origin abstract and contrived—more ‘imagined’ than given, as Tony Curtis Wales has written. Cities are where we are born,

grow up, go to school, marry; where we play, pray, create and work (thus Richard Florida's definition of ‘the creative city’); where we retire, cultivate our grandchildren, grow old and die.

Little wonder then, given this irresistible rise of cities to political pre-eminence, that a governance revolution is under way. This revolution is the consequence of two trends: the first, a devolution revolution in which, as former UK Chancellor of the Exchequer George Osborne explained in early 2016, England will “deliver radical devolution to its great cities”, giving them “levers to grow their own local economies”. The second emerging radical trend, grounded in the results of the first, is urban empowerment as the consequence of the manifest capacity of cities to work together across borders in addressing such common global issues as climate change, refugees and crime. As Mayor Bill de Blasio of New York City has said, “when national governments fail to act on crucial issues like climate, cities have to do so.”

Cities have been cooperating for millennia, from the ancient Mediterranean League of Cities to the Hansa League of the 10th century (reborn today as the New Hansa). Climate and sea rise have been particular concerns of cities. Although the Conference of the Parties (COP) 21 meetings in Paris finally achieved a modest general agreement, calling for nations to prevent temperatures from rising by more than 2 degrees Celsius over average temperatures in the pre-industrial era, it appears that real implementation of this cautious and (scientists say) insufficient goal will depend on cities, where 80 per cent of greenhouse gas emissions are generated and the political will is present to act more forcefully than nations are likely to do.

“ Both devolution and global urban empowerment are fact rather than theory, although the pace of change needs to be accelerated.



Photo: Breno Pataro/PBH. Work realised through participatory budgeting, Belo Horizonte, Brazil, 2008 <<https://goo.gl/RC4htJ>>.

The evidence is already in, as seen in the work being achieved by such urban networks as ICLEI and the C40 Climate Cities. Indeed, cities will be the key to the success or failure of the Paris agreement. Unless its modest goals are exceeded by the hard cooperative work of cities, humanity will face a devastating rise in sea levels of up to 6 metres by the end of the century, inundating many great coastal cities around the world, including New York, Miami, New Orleans, London, Venice, Shanghai, Hong Kong and Sydney, among many others. As always, wealthy people will move, while poor people will be forced, by way of no viable alternative options, to stay in place and suffer the consequences.

Both devolution and global urban empowerment are fact rather than theory, although the pace of change needs to be accelerated. The leadership of mayors in addressing the real problems of citizens from climate change, education and inequality to transportation, pandemic diseases and security has inspired trust by citizens in local governments that is more than double that of their trust in national politicians. On average, only a third of citizens around the world say they trust their national governments, while two thirds or more trust mayors and other local officials. And cities are not only cooperating within nations through associations such as the National League of Cities and the US Conference of Mayors in the USA, the Mexican Association of Mayors, the Austrian Municipal

Association or the National Confederation of Municipalities (*Confederação Nacional de Municípios*—CNM) in Brazil, but they are also collaborating across borders in successful global urban networks which go far beyond the beguiling but modest sister cities programme. These global networks embrace not only the climate networks noted above (the environmental collective ICLEI and the C40 Climate Cities founded by former Mayors Livingstone of London and Bloomberg of New York) but also institutions such as United Cities and Local Government (UCLG), the Hiroshima-based Mayors for Peace, the European Forum on Urban Security (EFUS), Strong Cities, EuroCities, Metropolis, the Compact of Mayors and the cities collective offering refuge to artists called ICORN. The UN-Habitat programme convened its third world meeting of cities this year (Habitat III). In other words, it is not just that cities *can* collaborate, they *do*.

Moreover, even as citizens have grown cynical and resentful towards national governments, as democratic participation erodes, democracy remains relatively robust at the municipal level. Even larger cities such as New York and Paris have borrowed the innovations of ‘participatory budgeting’ and ‘participatory zoning’ from Latin America, where experiments that brought citizens into budget decisions and gave them authority to expend funds and pass on zoning regulations were pioneered in the era of the Porto Alegre anti-globalisation meetings at the beginning of the past decade. More than 300 cities around the world now invite

citizens to do participatory budgeting. Bike-share programmes which began in a few select cities are now active in hundreds of cities where a decade or two ago bicycle traffic would have been deemed unthinkable (New York, Paris or Los Angeles, for example).

Building on this foundation of intercity cooperation aiming at addressing the increasing dysfunction of independent nation states in dealing with interdependent, cross-border crises, and seeing a need for a capstone governing body to place in the wide arch of urban networks, mayors from around the world convened an inaugural sitting of a Global Parliament of Mayors (GPM). Following successful planning meetings in Seoul, Korea (Mayor Park won-soon), in New York (then Mayor Michael Bloomberg) and in Amsterdam (Mayor van der Laan and his Dutch G-4 colleagues), Mayor Jozias van Aartsen hosted more than 70 cities large and small, Global North and Global South, developed and developing, seaside and land-locked, on 9–11 September 2016 in The Hague. The ‘city of peace and justice’ that in 1922 became home to the League of Nations Permanent Court of International Justice, in 1945 became host to the International Court of Justice and since 2002 has hosted the International Criminal Court, The Hague is the ideal founding city for the GPM. And although its annual meetings will move from city to city (and be supplemented by a new virtual platform that will allow mayors to meet digitally from smart screens in their own city halls), The Hague will be home to the GPM’s secretariat.

World cities from North and South, large and small, developed and developing have participated in an inaugural meeting devoted to find common ground to act on climate, refugees and governance issues—the first convening’s key subjects.

The GPM, now under the direction of a steering committee (‘Initial Committee’) comprised by the mayors of The Hague, Mannheim, North Delhi, Oklahoma City, Cape Town and Tres de Flores (Buenos Aires), will make real the heady idea of empowering cities to speak in a common global voice and develop a platform for common global action, which is now on the threshold of becoming practice. The inaugural sitting of the GPM aimed at common action on

crucial global challenges that manifest themselves as urban crises. Hence, in the first GPM meeting the focus was on climate change, where cities need to help realise the modest goals of the Paris climate agreement by acting as the engines and enablers of national states, whose divisive ideological politics can stand in the way of climate action; and on refugees, where it has been cities that have borne the real burden of the movements of millions of people escaping civil war, terrorism and oppression or seeking work and new lives for their families, and where the solutions to integration and security must be fashioned.

The establishment of a GPM as a governance keystone in the organisational arch of impressive urban networks alluded to earlier in this article will shore up and build on their extensive achievements. It serves as an experiment in organising and deploying the common power of cities putting muscle on the bare bones of urban networks and municipal cooperation. It will afford cities the opportunity to forge common policies and laws through common legislation—but on an opt-in basis. The opt-in approach will emphasise the bottom-up federal nature of municipal governance and the ultimate sovereignty of citizens themselves in authorising legitimate governmental authority. Participation, collaboration and consensus will comprise the working methodology of the GPM, not top-down mandates via hierarchical decision-making.

The aim of the new urban governance system is not just to represent traditional municipalities but to encourage emerging ‘metro-regions’ that encompass old cities and newer suburbs and exurbs, and even surrounding agricultural regions (in the way medieval market cities once did) to take part.

The metro-regional restructuring of the urban landscape is already under way. Paris, for example, is developing a plan for a ‘Grand métropole Paris’ that incorporates wealthy inner city *arrondissements* and the *banlieues* or suburbs beyond the *Périphérique*, where so many unassimilated immigrants live, and where despair and poverty have been a breeding ground for alienation, violence and even home-grown terrorism. In Italy, the former mayor of Florence, Prime Minister Matteo Renzi,

has engineered a constitutional revision in which nine great metro-regions have replaced the traditional provinces in the Senate and made metro-regional organisation a reality. Not every problem is solved, since the metro-region can simply import into the city the divisions that separated it from its surroundings, but the challenges are clearer and the imperative for resolution more compelling.

The GPM arises from the fundamental impulse to secure a ‘glocal’ (global and local) means of effective self-government, and hence to empower cities and their citizens to act forcefully, consensually and in common. Its aim is neither to compete with nor to encroach upon sovereign nations. On the contrary, it aspires to cooperate with them and with the UN in solving common global problems that traditional governing bodies have found it hard to address. That is clearly enunciated in the Hague Declaration signed by member cities.² Cities have not just a responsibility to act, but a right to do so on behalf of their citizens, who represent a growing majority of the world’s population and more than 80 per cent of its wealth generation.

The GPM cannot pretend to represent everyone, but will manifest the ultimate right of urban majorities across the globe to take action together, beyond the confines of the borders of the states to which they belong, above all in domains where the global agenda has been stalled or thwarted. It will, in effect, act in the name of the sovereign power of states where those states have fallen into what may be called a ‘sovereign default’.

In the tradition of the social contract and popular sovereignty, sovereignty embodies a contract between individuals and a popularly empowered government in which individuals agree to obey the sovereign in return for the sovereign’s guarantee to secure the life, liberty and property of those same individuals.

This is the language of Bodin, Grotius, Hobbes, Locke, Rousseau and the American Declaration of Independence, which make clear the reciprocity of civic obedience and the capacity of government to govern effectively. When a sovereign can no longer assure the ends for which government is established—when, in modern terms,

“ Cities have not just a responsibility to act, but a right to do so on behalf of their citizens, who represent a growing majority of the world’s population and more than 80 per cent of its wealth generation.



Photo: Roman Boed. Binnenhof, The Hague, founding city of the Global Parliament of Mayors, 2013 <<https://goo.gl/jrlmVX>>.

sustainability is at risk and sovereign states can no longer guarantee it—the sovereign can be said to be ‘in default’. Citizens then have a right to reassume their natural rights and shift their obedience to such governing bodies as can assure sustainability along with life and liberty. That is how sovereignty passed from George III to British colonies in 1776, and how other young nations more recently have secured their right to rid themselves of colonial rulers. This is how not just responsibility but power and sovereignty pass from illegitimate governments to those that can keep the social contract.

We are a long way from having to embark on a municipal revolution, but the empowerment of cities today and the claim of the GPM to legitimacy ultimately do rest on this logic. It is unlikely that it will need to assert so radical an argument to undertake the common work both states and cities are likely to welcome. Yet it is important to note that as power passes from governments made illegitimate by their inability to sustain the lives and liberties of their citizens to new bodies capable of such sustainability, there is a new legitimacy for cities to act rooted in a version of municipal sovereignty. Cities acquire the right to govern by virtue of their capacity to do so, whether they act (ideally) in harmony with nations and international bodies such as the UN, or act despite resistance from such bodies.

Their use of collective power and common action are legitimised by the cities’ capacity

to act, and thus their right to do together what nation states have failed to do. The GPM will serve a sustainable and just planet and all those who live on it, its legislative authority rooted in their right to sustainable and free lives. Mayors are diffident about asserting a right to act even when nations conspicuously fail. But they have a right and an obligation to do so, and the bold may lead the more reticent in asserting their role as guarantors of life and liberty.

The founding of the GPM in September 2016 marked the beginning of an experiment in democratic urban governance that will depend on the vision, prudence and courage of its founding mayors and those who come to join them in The Hague. This innovative cross-border exercise in democracy and responsibility, rooted in the leadership of visionary mayors and their engaged citizens, and founded on the right of citizens everywhere to sustainable and free lives, represents a historic and constructive moment in unruly and destructive times. ●

Barber, Benjamin R. 2014. *If Mayors Ruled the World: Dysfunctional Nations, Rising Cities*. New Haven, CT: Yale University Press.

1. The Global Parliament of Mayors.

2. The work of the GPM was memorialised in The Hague Declaration, which announced the ambitious aims of the new body in action as well as in speech, but also commits to collaboration with national governments, international organisations and the UN.

What makes our cities fragile?

by Robert Muggah¹

If the 19th and 20th centuries belonged to nation states, then the 21st belongs to the city. There is an inevitability about the planet's urban turn. The last 50 years witnessed an explosion of cities, especially in the developing world. It also saw the rise of megacities, urban conglomerations of 10 million citizens or more. We are, truly, as Edward Glaeser (2012) reminds us, an "urban species".

Although the world is rapidly urbanising, not all regions are moving at the same speed. Most population growth in the coming three decades will occur in the sprawling cities and slums of Africa and Asia (UN DESA 2014). Just three countries—China, India and Nigeria—will account for 40 per cent of global growth over the next decade (ibid.). Meanwhile, as many cities across North America and Western Europe deindustrialise and witness sluggish birth rates, they are also shrinking.

The pace of the urban revolution is mesmerising. According to the United Nations, just 3 per cent of the world's population lived in cities in the early 1800s, compared to over 54 per cent today and 66 per cent by 2050 (ibid.). Yet future urbanisation will take place not only in megacities, but in fast-growing smaller and medium-sized cities of the Global South. There are tremendous opportunities in these fast-growing settings, but also unsettling risks.² Some cities are especially susceptible to sudden-onset shocks and long-simmering vulnerabilities.

All cities are fragile. The intensity of their fragility, however, varies considerably across time and space (Muggah, de Boer, and Patel, forthcoming). Some cities—such as Caracas, Homs, Mogadishu or San Salvador—are affected by acute fragility and are close to collapse. Others—such as Abuja, Baltimore, Dhaka and Karachi—are also at risk, albeit to a greater or lesser degree. Even cities such as Amsterdam, Brussels, London, New York, Paris and Tokyo are not immune to either man-

made threats or natural disasters, including rising sea levels and floods.

Fragility occurs when city authorities are unable or unwilling to deliver basic services to citizens. Put succinctly, it is triggered by a rupture of a city's social contract, when citizens lose confidence in the legitimacy of municipal institutions (Muggah 2015b). So what tips cities over the brink? The intensity of fragility depends on the accumulation of risks. And some risks, such as the pace of urbanisation, income and social inequality, youth unemployment, homicidal and criminal violence, poor access to key services, and exposure to climate threats, are more serious than others.

Which cities are most fragile?

This straightforward question is surprisingly hard to answer. Part of the problem is that there is no agreed definition of what constitutes a city. Where does a city such as Delhi, Lagos or Beijing begin or end? More fundamentally, there is a serious deficit of data on the vast majority of the world's cities. While there are dozens of think tanks and private firms gathering data on cities, their geographic and thematic coverage is surprisingly thin.

Today's debate on cities is limited to the world's 30-odd megacities and the 600 cities that, accord to McKinsey Global Institute (Dobbs, Smit, Remes, Manyika, Roxburgh, and Restrepo 2011), are driving international economic growth. They have expanded with dizzying speed: these cities are starting to cultivate a new layer of global governance. Yet there is virtually no discussion about what is happening in the other roughly 3,400 cities with over 100,000 residents.³ And there is a resounding silence about the other 50,000 cities and urban localities around the world.

To start filling some of these knowledge gaps, a new data visualisation platform was developed by the Igarapé Institute and partners to home in on the correlates of city fragility.⁴ We first focused on isolating the drivers, or risks, that make some cities more fragile than others. Next, we started mapping out the geography of

urban fragility, consulting with dozens of specialists and scouring over 100 databases to answer some rudimentary questions.

The fragile cities data visualisation tracks risks in over 2,100 cities with populations of 250,000 people or more. It includes a fragility scale (from 0 to 5, with 0 being no risk of fragility and 5 representing high risk). There are no cities that fall into either the 0 or 5 category, with all of them ranging from 1.0 to 4.0. This scale is based on 11 indicators that are statistically associated with instability. The idea is to provide mayors, planners, business people and civil society groups with access to annualised data on the ways whereby urban fragility is distributed in upper-, middle- and lower-income settings. The preliminary findings are instructive.

At the outset, the data visualisation shows that fragility is more widely distributed than commonly believed. Taking a high-level view, roughly 14 per cent of all roughly 2,100 cities can be considered very fragile (scoring 3–4), including Kabul, Aden and Juba. Another 67 per cent of cities report average levels of fragility (with an index score of 2–3), ranging from St Louis to Valencia. And just 16 per cent of all cities report low fragility (1–2), including Canberra, Sarasota and Sakai. The regions registering the lowest city fragility include Western Europe, East Asia and North America. Interestingly, there are no highly fragile cities in Europe, while 52 per cent of its cities experience medium fragility (2–3), and 47 per cent are reported as having low fragility. The Americas—including North, Central and South America—feature the highest number of cities with medium levels of fragility (78 per cent) and just 4 per cent with high levels of fragility. Roughly 4 per cent of all cities had insufficient data to register a score at all.

Second, city fragility does not appear to be restricted to poor developing countries. There are of course clusters of chronically fragile cities in sub-Saharan Africa and Central, South and Southeast Asia, especially in Afghanistan, Bangladesh,

Iraq, Pakistan, Syria and Yemen as well as the Democratic Republic of the Congo, Nigeria and South Africa. The data visualisation suggests that there are at least as many cities ranking high on the fragility scale (scoring 3–4) in high- and upper-middle-income settings as in lower-middle- and low-income ones.

Third, fragile cities are not confined to countries wrecked by armed conflict. There were roughly 40 war-affected (UCDP 2016) and 33 fragile states in 2015.⁵ There is little doubt that cities in countries such as Iraq, South Sudan or Syria are especially at risk of instability. But cities in these countries are not the only ones at high risk.

Fourth, it is not necessarily the largest cities that are most susceptible to fragility. Rather, it is smaller and medium-sized cities that are most at risk. The data visualisation demonstrates that just three megacities (over 10 million people) and three very large cities (with between 5 and 10 million people) are at high risk of fragility (3–4 on the scale). These include Baghdad, Dar es Salaam, Johannesburg, Karachi, Lagos and Shanghai. But there are another 56 large cities (1–5 million people), 42 medium cities (500,000–1 million people) and 40 smaller cities (250,000–500,000 people) that are classified as ‘fragile’.

Fifth, the fastest growing cities appear to be especially vulnerable to fragility. Most cities around the world are growing at between 0 and 3 per cent. The data visualisation detects 87 cities—most of them in the rust belt of the USA, in the UK, France, Germany, Russia, Ukraine and parts of China—that are shrinking in size (Igarapé Institute 2016). Yet the most-at-risk cities are those that are growing at a pace of 4 per cent or more. The risks are especially prominent in sub-Saharan Africa, the Middle East and South and East Asia, where the vast majority of future city population growth is projected.

Sixth, the most violent cities in the world are not where you think they are. While some research organisations rank cities according to homicide rates, their assessments are often heavily biased due to variations in reporting (Economist 2016). The fragile cities data visualisation tracks

BOX 1: Fragile city metrics: coverage and sources

Population growth: Speed of population growth over a 10-year interval. Data available for 1,666 cities from [UN DESA](#), with the other 434 supplemented with national urban data from the [World Bank](#). The information is available for all cities.

Unemployment rate: Extent of unemployment as share of total labour force. Available for 1,627 cities, including from the [OECD](#) and [America Economia](#), of which 842 were supplemented with national data from the [ILO](#) and [CEPAL](#). There are 473 cities for which no data are available from any source.

Income inequality: The category is measured by the Gini coefficient: the distance in income between the highest and lowest quintiles of the city population. It is available for 1,769 cities from [UN-Habitat](#). Of these, 1,105 cities have information from a range of national statistics office sources. There are no data available for 331 cities from any source.

Access to services: The accessibility to services is measured using a proxy: the proportion of the population with access to electricity (other variables such as sanitation, toilets, floor quality of houses lack adequate coverage). Electricity coverage is available for all 2,100 cities from [UN-Habitat](#) and the [World Bank](#) (African cities). The information is available for a small sample of cities, and the values of 1,965 cities come from urban national averages from the [World Bank](#).

Air quality: Annual mean concentrations of air quality (particulate matter of less than 2.5 microns) are recorded by the [WHO](#). Data are available for 1,883 cities, while 1,047 of these cities were ascribed a ‘city average’ for the country. There are 217 cities for which no data are available from any source.

Homicide rate: The prevalence of intentional homicide per 100,000 in a given city population is available from the [Homicide Monitor](#). Specific city data are available for just 469 cities. The remaining 1,631 cities are not included.

Political violence: The intensity of reported ‘violent’ events on the basis of a big data-mining system of 1,000 media outlets from around the world collected by [GDELT](#). Information is available for 1,529 cities using an algorithm developed by Igarapé Institute. There are no data available for 571 cities.

Terrorist killings: The registered incidents of terrorist-related killings based on lethal violence due to declared ideological motivations collected by [GTD](#). Information is available for all 2,100 cities on the basis of an algorithm developed by the Igarapé Institute.

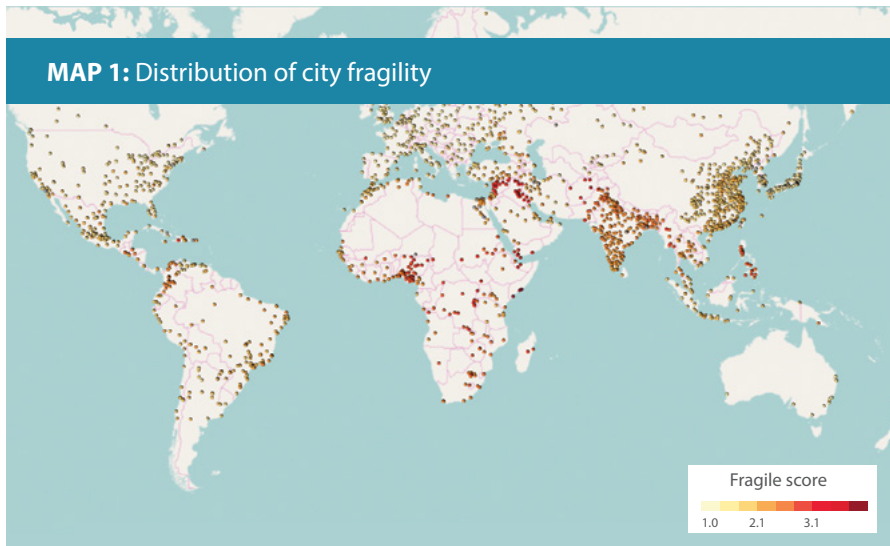
Exposure to natural hazards: At-risk cities were determined by calculating exposure to natural disaster categories—cyclones, droughts and floods—over a population grid, with primary data supplied by [SEDAC and CIESIN of the Earth Institute](#). Igarapé Institute established data for 1,968 cities. There are no data for 132 cities.

National fragility: The countries ranked as ‘fragile’ using the World Bank CPIA score and the presence of an international or regional peacekeeping operation. This accounts for [33 specific countries](#) in 2016, according to the World Bank.

National armed conflicts: The countries in which there is an ongoing ‘armed conflict’, itself defined as an ‘armed incompatibility’ involving armed forces of two or more parties of which one is a government. There are 40 conflicts as of 2015, according to [UCDP](#).

Source: Igarapé Institute (2016).

“ Globally, the future of global security and development will be determined in cities.



Source: Igarapé Institute (2016).

both homicide and reported incidents of violence from a review of over 1,000 media outlets. While homicide is highly clustered in Latin American and Caribbean cities, reported violence is more widely distributed in North and Central American, sub-Saharan African, Middle Eastern and South Asian urban centres.

Globally, the future of global security and development will be determined in cities. Yet we know alarmingly little about what is going on in them. This is especially worrying given the focus of the freshly minted Sustainable Development Goal 11: “Making cities more inclusive, safe, resilient and sustainable.”⁶ The fragile cities data visualisation offers an important new layer of understanding, but it also has major gaps. While it includes basic demographic information on all cities registering more than 250,000 people, it still lacks sufficient data to render a fragility score for many of them. Box 1 highlights the coverage of the specific metrics included in the data visualisation. The team is working to plug these data holes, but it is not a trivial task.

The other good news is that city fragility is not a permanent condition. A recent study by the Inter-American Development Bank and the Igarapé Institute highlights remarkable examples of once dangerous cities turning things around (Muggah, Szabo, Alvarado, Marmolejo, and Wang 2016). How do they do this? They start with enlightened leadership, especially successive mayors

who make a plan and stick to it. The best cases involve evidence-based and targeted approaches to mitigating risks. Cities that purposefully build inclusive public spaces, support predictable transport, invest in hot-spot policing, create meaningful opportunities for young people and plan carefully to mitigate natural disasters are the most likely to shift from fragility to resilience (Muggah 2016). ●

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1. Igarapé Institute.

2. See, for example, Muggah (2015a).

3. See more UN statistics on cities at <http://unstats.un.org/unsd/demographic/products/dyb/City_Page.htm>.

4. The data visualisation is available at <www.fragilecities.igarape.org.br> and was designed in partnership with United Nations University, the World Economic Forum, 100 Resilient Cities and xSeer.

5. The World Bank publishes an internal list of fragile states using what is called a Country Policy and Institutional Assessment (CPIA) score. The specific underlying data are not made transparent.

6. For more on SDG 11, see <<http://www.un.org/sustainabledevelopment/cities/>>.

Cities are the engines of global progress: they can act as economic engines for entire countries¹

by Richard Florida²

The 21st century, we increasingly recognise, will be a century of cities. Today, some 3.5 billion people, roughly half the world's population, live in cities and urban areas. As recently as 200 years ago, only about 3 per cent of the world's population did. By 1900, after a century of industrialisation, the urban share of the population had risen to roughly 15 per cent. The world's urban population is projected to almost triple over the next century or so, peaking at nearly 10 billion people, roughly 85 per cent of a total population of between 11 and 12 billion (Fuller and Romer 2013). To put all this in perspective, consider that in 1800 there was only one city in the world—Beijing—whose population exceeded 1 million people. In 1900, a century later, there were 12. By 1950, the number had increased sevenfold to 83, and by 2005 it had ballooned to 400. Today, there are more than 500.³

Economists and urbanists have long noted the powerful connection between urbanisation and economic development, but that connection may be breaking down today. For the past several centuries, urbanisation has been society's premier

engine of cultural, technological, political and economic progress. But the long-held connection between urbanisation and growth that has shaped the development of the advanced cities and nations of the West has become much more tenuous in today's rapidly urbanising regions, a trend that has been dubbed 'urbanisation without growth'.

The profound divide between the less advantaged cities of the developing world and their more affluent counterparts in advanced nations can be gauged by comparing cities and metropolitan areas by what is perhaps the most basic metric for economic development: —the amount of economic output produced by each person. Using data from the Brookings Institution (Parilla et al. 2015), the map in Figure 1 segments the world's cities into four basic economic groups.

The first group includes the world's most developed and affluent places, superstar cities such as New York, London, Paris, Singapore and Hong Kong; tech and knowledge hubs such as the San Francisco Bay Area, Boston and Washington, DC; and a handful of energy-rich places in the advanced developing world. The economic output

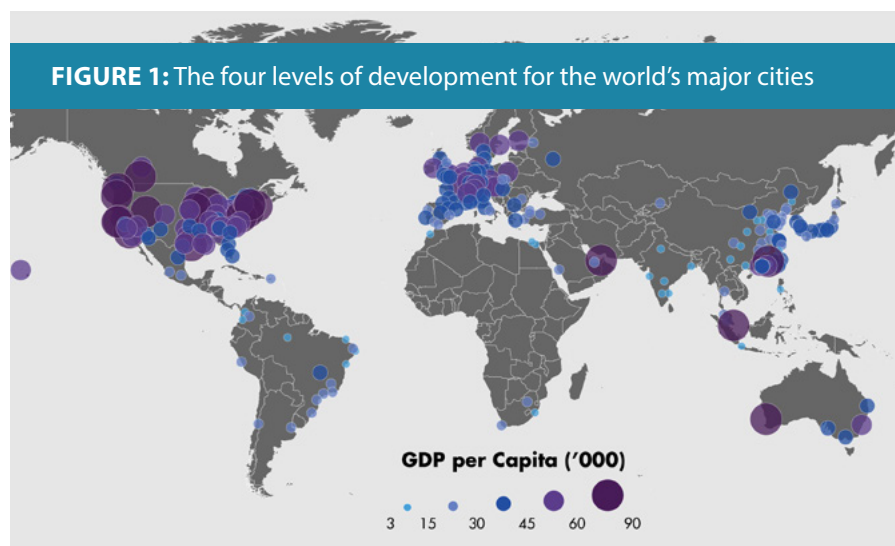
of these metros ranges from USD45,000 to USD94,000 per person per year. Home to 4 per cent of the world's population, these 100 or so metros produce roughly 16 per cent of all global economic output.

The second group includes relatively well-off cities in advanced nations, which generate between USD30,000 and USD45,000 in economic output per person per year. They include Miami, Toronto, Vancouver, Melbourne, Copenhagen, Berlin, Barcelona, Madrid, Milan, Rome, Seoul and Taipei. These 100 metros produce 11 per cent of the world's economic output, while housing just 4 per cent of its population.

The third group is made up of less affluent places where economic output is between USD15,000 and USD30,000 per person per year. They include struggling industrial cities in the developed world such as Liverpool, Cardiff and Naples, as well as up-and-coming cities in the developing world such as Istanbul, Mexico City, Guadalajara, São Paulo, Rio de Janeiro, Bogota, Shanghai, Beijing and Bangkok. These 70 metros are home to 6 per cent of the world's population and produce about 9 per cent of global economic output.

The fourth group consists of poorer and less advantaged places that produce just USD4,000 to USD15,000 in economic output per person per year. These metros are mainly in the Global South and include some of the world's largest urban areas, such as Manila, Jakarta, Cairo, Alexandria, Durban, Medellin, Cali, Mumbai, Kolkata, Delhi and Bangalore, as well as numerous metros in China. These 30 or so metros house roughly 4.3 percent of the world's population and account for just 3 per cent of total global economic output.

The divides between the world's richest and poorest cities are great, but there is still room for tempered optimism. The rapidly urbanising cities of the developing world still hold a substantial economic advantage over the alternative



Source: Map by Martin Prosperity Institute based on data from Parilla et al. (2015).

of rural poverty. Indeed, the productivity of cities, even very poor ones, tends to be considerably greater than that of less developed areas of their countries. This can be seen in a basic metric the team at the Martin Prosperity Institute built for hundreds of cities and metro areas across the world—an urban productivity ratio⁴—which compares the productivity of metros (based on the conventional measure of economic output per person) to the productivity of the rest of their nations (minus those metro areas).

The typical large metro or urban area in the USA, Europe or Japan has an urban productivity ratio of 1 to 1.5, indicating productivity on par with about 50 per cent greater than the rest of their nations. At 1.6, San Jose—Silicon Valley—has one of the very highest urban productivity ratios in the developed world. London's is 1.5; Boston and San Francisco's is 1.4; New York's is 1.3; Los Angeles and Barcelona's is 1.2; Tokyo, Frankfurt and Chicago's fall between 1.1 and 1.2.

However, urban productivity is substantially higher in the cities and metro areas of the developing world. More than 80 metros, including São Paulo, Istanbul, Shanghai, Beijing and Mumbai, have urban productivity ratios that are at least double the ratio for the rest of their countries. Roughly 50 of them have urban productivity ratios that are three to nine times higher. And a few of them, including Manila (13.6), Bangkok (12.6) and Lima

(12.6), have urban productivity ratios that are at least 10 times greater.

This urban productivity metric ratio is limited by the Brookings data, which cover just the world's 300 largest metro areas that account for less than a third (31 per cent or so) of the world's population. It leaves off a large number of poorer and less-developed cities around the world. To get at this, data from satellite images of the world at night were used to create a proxy measure for it. (While light emissions are not a perfect proxy for economic output or productivity, they do provide a reasonable and useful approximation, especially for places where census and survey data are unavailable or flawed.)

Figure 2 charts the urban productivity ratio using this light-emissions metric. (This measure compares urban productivity to the national average including the city in question.) The reader should note how many metros with high or very high urban productivity relative to national productivity are located in Africa, India, China and Southeast Asia.

All in all, we found more than 125 cities across the developing world that had urban productivity ratios of 3 or above. Forty of these, mainly in Asia and Africa, had ratios greater than 5. And seven of them—again in Asia and Africa—had urban productivity ratios that were more than 10 times their national average.

Not all cities in the developing world have such high comparative productivity, but only a very few have productivities that are significantly worse than their nations' ratio.

Urbanisation has become a key part of economic growth in today's world. In many places, cities have provided a critical spur to overall economic growth. But the benefits resulting from urbanisation have been uneven. Across the developing world, roughly 850 million people—two and half times the population of the USA—remain trapped in global slums. Still, even in the poorest and least developed places on Earth, the vast majority of cities and urban centres offer a better way of life than the undeveloped and far poorer countryside. ●

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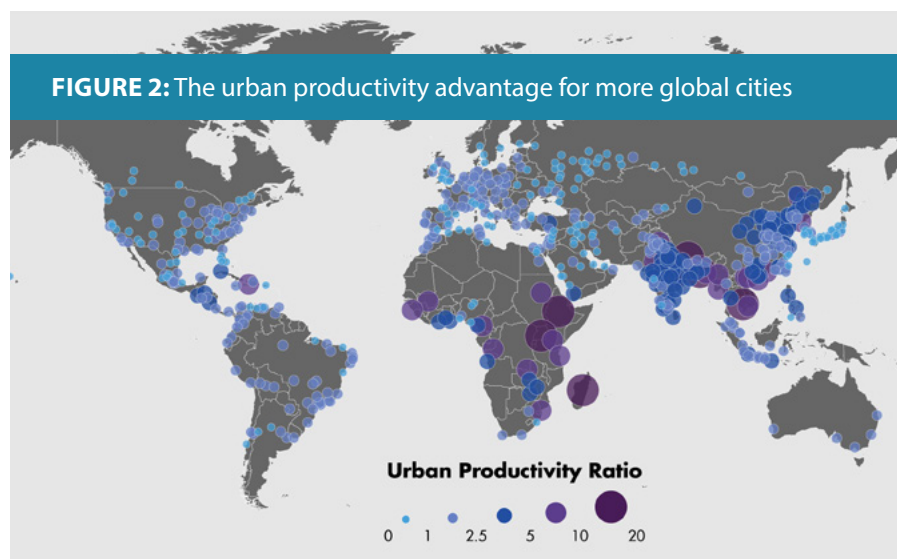
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Source: Map by Martin Prosperity Institute based on data on night-time light emissions. See Florida et al. (2010). Note: The Urban Productivity Ratio is the ratio of urban economic output per capita to national economic output per capita. Economic output is measured as light-based regional product (LRP). See Florida, Mellander, and Gulden (2010).

1. This article introduces themes further developed in the forthcoming book *The New Urban Crisis*, to be published by Basic Books in spring 2017.
 2. Richard Florida is University Professor and Director of Cities at the Martin Prosperity Institute in the University of Toronto's Rotman School of Management, a Global Research Professor at New York University (NYU), and the co-founder and editor-at-large of *The Atlantic's CityLab*.
 3. For the data projections out to 2030, see OECD (2015).
 4. See Florida (2015).

Exploring new parameters for the future planning of cities in Africa

by Nancy Odendaal¹

The inclusion of an urban goal (SDG 11—“Make cities inclusive, safe and resilient”) in the 2030 Agenda for Sustainable Development signals a hopeful departure from anti-urban discourses and policy neglect that have accompanied urbanisation in Africa. It is now a well-established fact that the future in Africa is urban. It is the most rapidly urbanising region globally, in some parts 11 times faster than in Europe (UN-Habitat 2016). Patterns of growth vary across the continent of course; cities with less than 1 million inhabitants make up 62 per cent of the urban population in Africa (ibid.).

Attention is needed beyond the usual focus on larger city-regions and careful consideration of the various settlement typologies that make up African urban spaces, their relationships to peri-urban areas, connections to rural spaces and the underlying land issues that impact on development. Intervention in urban spaces needs to contend with the backlogs reflected in inadequate service infrastructure and housing shortages, as well as rapid urbanisation within a context of climate change and global disparities in economic distribution. It is this less predictable and more volatile unfolding that many policymakers on this continent find overwhelming and threatening (Pieterse 2010). The need for meaningful intervention, as emphasised in the New Urban Agenda, implies an important role for the urban planning profession. Adopted at the UN Habitat III forum in Ecuador in October 2016, the New Urban Agenda sets out actions and values through which sustainable urban development can be achieved over the next 20 years. Explicit references to the centrality of spatial planning are encouraging and signify a timely moment for the consideration of the parameters of spatial planning in the African context.

Urbanisation in Africa is substantially different from the evolution of the planning profession in the early 1900s.

Interventions that assume industrialisation, employment and financial and institutional capacities to provide infrastructure will not work. The conditions that inform change in African urban spaces need to be examined carefully, if urban planners are to deliver on the promises of the 2030 Agenda. This article reflects on what the characteristics of such an approach should be.

Traditional planning has assumed strong state intervention and, more recently in the North, decentralisation of planning functions to autonomous and capacitated local government agencies. Many African countries share a legacy of limited decentralisation. Others work in a context where political wrangling renders planning decisions irrelevant (often implemented under pressure from bilateral and donor agencies). The trend towards more collaborative planning approaches moving away from rigid legislative frameworks is simply not accommodated. Thus there is limited autonomy in local governments and generally a weak state bureaucracy (UN-Habitat 2009). Consequently, limited human and financial resources are meant to manage outdated and ineffective master plans that are inherited relics from colonial regimes (Watson 2009).

There is, of course, variation across such a vast continent. Temporal informants such as the political status of the moment and colonial remnants influence planning. Planning is also informed by the status of the profession and its principles, and has become increasingly complex globally. In African cities, the liberal basis of planning to act in the public interest has given way to a narrow instrumental rationality that chooses regulation over facilitation. Examples are: over-regulation of informal trade that constrains livelihoods, inappropriate zoning regulations that are too narrow in scope and master plans that assume high rates of growth. Where pro-poor values are indeed stated in policy and delivery frameworks, such as in the South African context, implementation is fraught with local politics—which is inevitable,

since planning is inherently political. Interventions in difficult circumstances are sometimes time-consuming and protracted, leading some to fall back on technocratic solutions. Planning education is enmeshed in a web of institutional and legal relations that evolve out of colonial constructs of what planning is, and what it is supposed to do. Despite the efforts of many, a control-centred, technocratic and static interpretation of planning persists (Watson and Odendaal 2013; Odendaal 2012).

For planning to be effective, it needs to be mindful of the underlying economic and social processes that determine space, and how these trends and energies either assist or block meaningful change, and then work through the most effective means to enable sustainable and inclusive cities. In this article, we present five suggestions that might enable planning to go beyond the limited technical activity it has been in many places.

The first argues that given that economic life in African cities is not predictable, informality needs to be a central concern of planners. The many people unable to find work in the formal economy or permanent homes rely on a range of strategies to survive. Informality as manifested in informal work, trade and settlements is a visible feature of urban life for those at the margins. Inadequate access to shelter, work and land causes many to rely on negligible livelihoods. In many sub-Saharan African cities, this constitutes the majority of the urban population, of which 62 per cent live in slums and 60 per cent work in the informal sector. In Francophone Africa alone, 78 per cent of urban employment is informal (UN-Habitat 2009). Thus, careful consideration of how poor and marginalised people survive, and not impeding those efforts through excessive regulation, would be an important first step towards formulating pro-poor planning in African cities.

The second recommendation is to consider the relationship between the many actors that co-produce space and how



Photo: UN Photo/Christopher Herwig. Urbanisation in Monrovia, Liberia, 2008 <<https://goo.gl/5tkiHO>>.

“ Intervention in urban spaces needs to contend with the backlogs reflected in inadequate service infrastructure and housing shortages, as well as rapid urbanisation within a context of climate change and global disparities in economic distribution.

that interfaces with planning. Planners wield limited power in circumstances where those living in informal settlements find their own ways to access economic opportunities and social amenities. On the other end of the spectrum, national governments are often embroiled in romancing investment through selective high-end, stand-alone developments that have little to do with the rest of the city (Eco-Atlantic in Lagos, Nigeria, for example) or its plans. A patchwork of opportunities emerges which often has little to do with a city's spatial plans but is reflective of a disjointed range of vested interests. Ongoing negotiation and resolution of a myriad of interventions and interests within the realm of an overall spatial vision for the city, therefore, becomes a critical planning function.

Many cities in Africa have come to rely on large-scale infrastructure investment for engendering economic growth and investment. In the African context, in particular where donor funding and bilateral aid funds—as well as the private sector in some instances—are engaged in large infrastructural investment, spatial planning often occurs in isolation from infrastructure planning and delivery. The latter is often determined by funding arrangements between governments and donor agencies, or by line-function departments which are not integrated with spatial planning. Traditional approaches to spatial planning have thus far assumed that infrastructure would follow spatial

(master) plans, yet rarely does. Traditional planning approaches that evolve from Anglo-American systems assume predictable urbanisation trends, stable economies and a strong state. Urbanisation trends in the South seldom display these characteristics, as informal housing and trade typify household responses to inadequate infrastructure and employment opportunities.

The third consideration then is to reflect on the spatial implications of these large-scale investments and how well they relate to broader processes of spatial change. Infrastructure investment often happens outside the realm of city planners, and with scant consideration of the interface with land use. Yet a central concern for cities in the future is the need for effective mobility systems, best accommodated and optimised through careful consideration of the relationship between land use and the transportation infrastructure, for example. As a corollary, we must also carefully consider the socio-economic limits of infrastructure-led development and the need for a more holistic approach that considers social processes and the many factors that impact on the interface between people and place.

The proliferation of slums on unstable and unsuitable land is largely due to limited access to land for shelter. Land tenure is a complex issue across Africa and requires careful consideration. Different systems of tenure and uneven legislative parameters for the release of land for development

“ The ingenuity of those surviving on the margins should not be over-romanticised, but nevertheless it speaks of an ability to innovate, adapt and transform.



Photo: Adam Cohn. Coastal cities are the most affected by global warming, Cape Coast, Ghana, 2008 <<https://goo.gl/mKXfz>>.

can foil most well-intentioned spatial plans. Lengthy systems of registration, outdated land legislation and unrealistic policy parameters in relation to available capacity are all significant issues in this regard. Land security and effective and transparent methods of land development are important, yet they often impose costs and processes that are impossible for poorer people to meet. Furthermore, many planners on the African continent work in a legislative environment framed by outdated colonial legislation (Berrisford 2011). There are often poor linkages between directive plans and the realm of land administration, leading to limited implementation capacity. In addition, limited understanding of the interface between land access and property markets has led to two ineffective responses: allowing parts of the city (usually on peri-urban fringes) to grow without much intervention, or using imported land assembly and planning mechanisms afterwards (Napier et al. 2013). Both options present limited opportunity for restructuring cities into more inclusive forms.

Finally, the growth of cities cannot be considered without careful consideration of the impacts of climate change in all its dimensions. The impact of urbanisation on the natural environment is known, but limited work has been done on the impact of global warming on African cities and what that entails for the training of planners. Implications for Africa in particular are profound. The potential impacts go beyond the urban,

as rising temperatures and increased natural disasters threaten food security. Climate change impacts are especially evident in local economies reliant on small-scale agriculture and pastoralism, with food insecurity affecting migration and the growth of informal settlements on city fringes (UN-Habitat 2014). Coastal cities are vulnerable due to sea-level rise and extreme weather events. Planners require the technical literacy necessary to understand the underlying natural processes as well as the strategic skills to intervene in the most appropriate way.

Despite these challenges, planning in Africa offers many opportunities for creative intervention, meaningful engagement with livelihoods and opportunities to make a difference. The ingenuity of those surviving on the margins should not be over-romanticised, but nevertheless it speaks of an ability to innovate, adapt and transform. It is, therefore, questionable whether traditional conceptions of planning fit with the emergent properties of African cities. The suggestions presented in this article essentially argue for ‘new’ ways of looking at the classic parameters of urban planning: the role of the state as planner, economic assumptions, the power of infrastructure investment, land dynamics and the natural environment and its connection to social processes.

The New Urban Agenda could signify a profound moment for the planning

profession. Innovation and commitment to the initial ideals of the profession, combined with acting and upholding the interests of the disenfranchised, can make the difference necessary to enable sustainable and resilient urban futures. ●

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An alternative New Urban Agenda for Africa

by Edgar Pieterse¹

There has been a sea change in official political attitudes towards urbanisation across Africa over the last decade. For the longest time, most African leaders were in denial about the inevitability of urbanisation and its economic importance. This was most acutely reflected in the policy obsession with realising a green (agricultural) revolution for Africa and becoming the bread basket of the world. One consequence of this stance was that most African governments paid some lip service to decentralisation reforms but in practice held on to centralised policymaking and investments (Pieterse and Smit 2014). It is hard to pin the massive prevalence of slums in sub-Saharan African cities and towns on these political attitudes, but they have certainly not helped.

The embracing of urban policy is reflected in the African position on the United Nations Conference on Housing an Sustainable Urban Development (Habitat III); the explicit connection between the call for structural economic transformation of African economies and urbanisation policy; and the 2014 adoption by the African Union of the African Charter on the Values and Principles of Decentralisation, Local Governance and Local Development, signalling more political fortitude to empower subnational governments—a necessary precondition for addressing urbanisation. However, a closer reading of these policy shifts reflects a generic discourse (in line with the Habitat Agenda of 1996), which is not sufficiently grounded in the political economy of national and local change to have meaningful impact.

This brief article will provide a snapshot of the informal nature of urbanism in most of sub-Saharan Africa, and the implications of the convergence of slum urbanism, an expanding youthful population and labour force, marginalisation in an international, interconnected economic system, infrastructure investment shortfalls and weak (local) public capacity to prioritise effectively and resolve inevitable conflicts will be drawn out. These already complex dynamics are further overlaid

with the devastating impacts of climate change. The upshot is that mainstream urban development policy thinking and incrementalism is simply not up to the task of addressing the complexity of urban exclusion and injustice in much of Africa.

Spatial convergence of development trends

Africa and Asia will account for 95 per cent of all urban growth between 2015 and 2050, according to the most recent United Nations projection (UN-DESA 2015). In absolute numbers this means the urban population will treble from 450 million to 1.2 billion people over this time frame. The population quantum is of course greater in Asia, but the Asian region has a strong economic and infrastructural backbone to allow it to leverage its urbanisation as an economic advantage. The same cannot be said of most of sub-Saharan Africa, in large measure because the contemporary situation is incredibly dire, reflected most acutely in a slum prevalence rate of 62 per cent (Mo Ibrahim Foundation 2015).

Slum living conditions go hand in hand with predominantly informal economic systems (Skinner 2010). Most African economies are lopsided. Due to colonial determinations, compounded by an asymmetrical global trading regime, most African economies have remained stuck in a commodity-driven export model, rendering them particularly vulnerable to the vagaries of global markets and continuously devoid of investment capital to transition to more diversified economic activities (Jerven 2015).

It is vital to appreciate that the labour force (people aged 25–64) will increase by almost two and a half times between 2015 and 2050. According to the Economic Commission for Africa (2016), “The active working age population (25–64 years) is growing more rapidly than any other age group, from 123.7 million (33.3 per cent) in 1980 to 425.7 million (36.5 per cent) in 2015. Projections show that the active working age population will continue to increase, reaching 559.2 million in 2025 and 1.045 billion in 2050.” Given the structural economic position of marginality in the context of the global economy, inevitably,

as the labour force expands, the formal economy is simply not able to grow fast enough to generate sufficient employment opportunities to absorb a rapidly growing youthful population bristling with globalised consumerist aspirations.

This cohort of un- and under-employed young people is increasingly forming the most important social constituency in African cities. They are confronted by the exhausting post-colonial legacy of poor education, limited infrastructure, clientelist politics, limited entrepreneurial support, and so forth. This generation is less prepared to put up with weak, corrupt or mediocre governments. They expect more and are willing to act to achieve accountability and responsiveness from their governments (Branch and Mampilly 2015). Of course, it is early days, and many governments’ first reaction is repression and/or ignoring the voices of the urban youth. But it is just a matter of time before deeply entrenched and stale political systems will have to reinvent themselves to contend with a new political culture, more demanding citizens and the increased information-driven scrutiny that mark most African countries. For now, it points to political systems that breed frustration and conflict, and this, combined with weak subnational governments, means that the state does not have the institutional capacity to address the frustrated political demands of key urban constituencies.

The problem with this is that future challenges will only become more complex as the historical backlogs combine with growing demands, and more intense exogenous pressures due to continued migration, climate change impacts and, crucially, a rapidly changing multipolar world intent on capturing Africa’s precious tracts of land, minerals and other natural resources, further reinforcing the continent’s narrow economic base.

The material effects of these dynamics are obviously incredibly challenging for the majority of urban households. However, this has also stimulated a vital compensatory economy and social ecology. Amid large-scale deficits in

formal service delivery, a rich and multivalent system of compensation pulses relentlessly to support everyday lives and livelihoods (Meyers 2011). Thus, outside South Africa, in much of sub-Saharan Africa, city-building is predominantly an organic and non-state affair, hinting at vast systems of social organisation, exchange, oversight, regulation, violence, reciprocity and unremitting recalibration as households adjust to the demands of local power brokers (de Boeck 2011; Simone 2004). This means that in most cities service delivery and social reproduction is profoundly mixed: a combination of formal infrastructure and service delivery systems, and informal, makeshift systems to provide the daily consumption needs of slums dwellers (Jaglin 2014).

New African commitments to sustainable urbanisation

On 25 February 2016 in Abuja, Nigeria, African Ministers of Housing and Urban Development (as a sub-committee on Urban Development and Human Settlements of the African Union Specialized Technical Committee on Public Service, Local Government, Urban Development and Decentralization) adopted a Common African Position on Habitat III. This declaration is unfortunately too extensive and diluted, lacking focus and practical solutions, seeing that every conceivable development topic is listed, creating a policy soup that is simultaneously exhausting and mind-numbingly dull. For example, a sample of issues mentioned includes: slum

upgrading, tenure security, inclusive economic growth, connectivity between rural and urban areas, fostering resilience of human settlements, partnerships with the private sector, upscaling participatory slum upgrading, preserving ecosystem services, ensuring safety and security, expanding continental spatial development programmes, and the list goes on (African Union 2016). Of course, it is understandable that formal government policies err on the side of being comprehensive, but the problem is that when policy agendas become laundry lists it is a recipe for inaction.

In the political economy of African urban policy formulation, putting everything on the table without any sense of prioritisation or institutional responsibility effectively means that no leadership is being provided. Furthermore, most African civil society groups and private-sector actors are seemingly ignoring these pronouncements and not putting their priorities on the table either, which means there is essentially a vacuum at the core of urban policy formulation. This means that the status quo will in all likelihood remain.

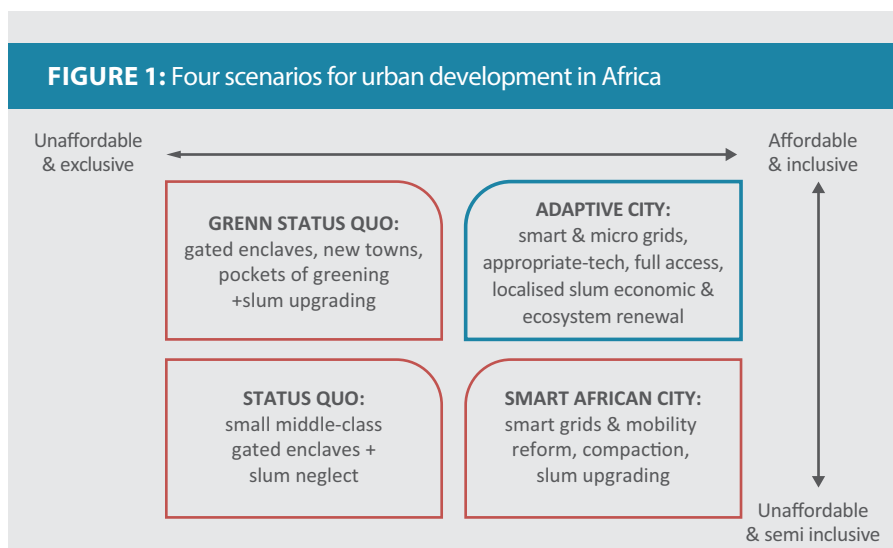
Fostering a grounded new urban debate

The African Centre for Cities (ACC) is working closely with Cities Alliance, the African Urban Research Initiative, the Association of African Planning Schools and others to pioneer a more radical and grounded debate. It is beyond the scope of this article to provide a rounded account, but a brief summary will have to suffice.²

First, it is important to consider the competing imaginaries and trajectories that are available to African cities and policymakers in pursuing the New Urban Agenda after Habitat III. Figure 1 provides a stylised illustration of four potential scenarios, anchored by the imperatives of affordability and radical inclusion of all urban dwellers. The left-hand side reflects the status quo and a middle-class-based greening of the built environment agenda. The right-hand side reflects more transformative pathways. The smart city option (bottom right-hand corner of Figure 1) reflects the vision of forward-looking corporate interests that place too much stock in ICT-based solutions, and in contrast, the adaptive city vision is where the deep work of learning, experimentation and innovation reside.

Second, these scenarios offer a simple device to have more explicit public policy discussions on the relative trade-offs to be made in thinking through urban investments and what it means for resource efficiency and the form of a city; but the more important work is to learn from experimentation. In this regard the ongoing experimentation work prioritises the importance of catalytic infrastructures at the city-regional scale: renewable energy, integrated mass public transport and universal access to affordable high-speed internet services, linked to intelligent land-use reform that can connect sustainable urban development to new revenue streams for urban governments.

A complementary dimension falls under the rubric of radical localisation, which connotes the importance of better understanding and improving the 'organic' service delivery models in popular neighbourhoods. Building on the idea of hybrid service delivery models, theorised by Sylvia Jaglin (2014), this agenda is about engendering new and more inclusive circular economic models at the neighbourhood scale, which in turn can restore ecosystem services, expand access to basic services and create a stronger democratic sense of place through improved environmental health and safety. In other words, citizen-driven place-making through localised service delivery models can offer a culturally appropriate and viable urban development model for most African cities, but it requires local coalitions across



Source: Pieterse (2015).



Photo: Miville Tremblay. Laundry in Langa, Cape Town, 2015 <<https://goo.gl/Gz4UO6>>.

“ It is just a matter of time before deeply entrenched and stale political systems will have to reinvent themselves to contend with a new political culture, more demanding citizens and the increased information-driven scrutiny that mark most African countries.

political, sectoral and class divides to design and sustain these alternative approaches to urban well-being and aspiration.

None of these substantive ideas can come to fruition in the absence of robust political contestation, where the diverse and conflicting interests in the urban realm can be identified and addressed through democratically mediated processes. This in turn assumes organised democratic grassroots movements with an agenda for city-wide transformation, alongside coherent political formations that represent the agenda of the state across all levels, and both formal and informal organised business associations. Lessons about effective urban experimentation in other geographies suggest that knowledge intermediaries are equally important to support the political and policy dialogues between these interest groups, linked to concrete experiments at the national, city-region and local levels. It is precisely this role that ACC and its partners seek to play at a time of exciting and daunting urban transformation. ●

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Shifting mobility landscapes in the Global South

by Susan Zielinski and Komal Anand Doshi¹

Transportation is at a tipping point, with particular implications for the Global South. Having traditionally played more of a supporting role in sustainable development, mobility has recently climbed the priority agenda as the world urbanises and globalises, and as climate change, demographic shifts and economic and geopolitical dynamics make transport (or more precisely, access) much more pivotal to meeting basic human needs.

Meanwhile, ubiquitous and increasingly affordable information technologies and social networking tools supported by big data and coupled with new business and service models are having some very transformative and (for the most part) positive impacts. Not only are they providing a broader range of more sustainable, nimble, data-driven, multi-modal and inclusive mobility options and improvements, they are also generating new opportunities for local innovation, enterprise and employment, including for and by those who are currently underserved. This article describes aspects of the shifting landscape of mobility in the Global South and some related innovative business, integration and policy models.

New Mobility enterprise, employment and economic development

In 2012, the Rockefeller Foundation generously supported the University of Michigan Sustainable Mobility and Accessibility Research and Transformation (UM-SMART), along with a number of key organisations and research institutions around the world, in a global research project called 'Catalyzing the New Mobility in Cities'. Its purpose was to explore new business and service models in transportation, including effects on and opportunities for poor and underserved people in urban areas, primarily in the Global South.

2012 was still early days in the mobility enterprise space (i.e. pre-Uber service); therefore, for us at SMART first on the

agenda was to establish a global award for New Mobility enterprises, stipulating that submissions must be up-and-running businesses. They also had to be doing something good for people, the planet and/or the economy. The award was called MobiPrize. This was a way of crowdsourcing as many New Mobility enterprises as we could find worldwide so that we could get a better read on this emerging ecosystem.

Considering it was the first year, submissions were surprisingly varied. They came from all over the world, and were not only about moving people but also about moving goods, and even about moving less (creating opportunities for decreased movement but increased access including tele-commerce, tele-work, tele-medicine, as well as local production and distribution and urban agriculture). They ranged from car-sharing, bike-sharing and auto rickshaw services to apps for way finding, fare payment, parking, safety and security, to eco-monitoring and sensors, to traffic management, to innovative and dynamic transit and shuttles, to non-motorised and alternative fuel, vehicle and design innovations, to automated and self-driving vehicles and technologies, to innovative urban freight movement, to urban agriculture and more.

A few submissions provided technical platforms for seamlessly linking multiple modes and services door to door, as a whole product, meeting the full range of people's diverse needs. One example is the 2012 winner, Hangzhou Omnipay Co. Ltd. It is a transport-sharing system that includes the Hangzhou public bicycle-sharing and car-sharing systems and Segway Personal Transporter rental system in the city of Sanya and an electric-bike-sharing system in Shandong province, both in China. Omnipay employs an innovative credit-sharing system for poor people in urban areas that is different from traditional money-based credit. People can get points and discounts by using public transport (users get an extra 30 minutes of free bicycle rental after a public

bus ride through a one-card solution), by sharing resources (one hour free rental on bike share) and by taking part in environmentally friendly practices such as recycling and garbage classification.

MobiPrize has evolved since the 2012 award ceremony at the United Nations Rio+20 conference, with the creation of some location-based awards (focused on India and Michigan). There is now also an award for city, state and national governments that support New Mobility innovation and enterprise. This award recognises that setting the right conditions and incentives for innovation and entrepreneurship can be key to local mobility-related innovation and economic development. Along with our EcoMobility Alliance partners, we recently presented the 2016 Cities and States award to the City of Medellin at Habitat III in Quito, Ecuador. The Grand MobiPrize, the Michigan MobiPrize and the Mobi-X India best enterprise prize were also presented at the same conference.

As originally envisioned, MobiPrize has since evolved into a Mobi Platform, a basis not only for finding and recognising mobility innovators and ventures globally, but also for connecting them with other enterprises and corporate partners, investors, customers, researchers, mentors and public-sector support, as well as with key tools and resources.

In some cases, Mobi has helped open up opportunities for adapting, scaling up and exporting local innovations (not just innovating for local needs). This kind of evolution promises to increasingly serve competitive regional industry cluster development and to contribute to national and international joint collaboration and reverse innovation² focused on sustainable mobility. As just one example, this year's Grand MobiPrize winner, South Africa's 'Where Is My Transport', is moving beyond South Africa (its country of origin) to expand into markets across the Global South and beyond.

**Connecting the dots:
mobility as a system of systems**

The same ‘Catalyzing the New Mobility in Cities’ project that spawned Mobi also enabled a deepening of SMART’s multi-modal systems work within the Global South context, in particular in the Philippines and Brazil (focused on inclusive transport) and in India (focused on entrepreneurship and transit connectivity). SMART emphasises holistic, system-wide connectivity, because typically as new challenges and new paradigms emerge, the innovations developed to address them proliferate but do not integrate to serve the user in a cohesive way.

This is partly because mobility decision-makers and influencers—including city leaders, industry leaders, entrepreneurs, non-governmental organisations and academics across a range of mobility-related sectors—all have important solutions and approaches to contribute to the overall system. Yet these players seldom connect with each other, let alone work together to supply people’s seamless door-to-door travel across multiple modes and services. This increasingly adopted holistic, user-focused approach now most often finds its place within ‘Mobility-as-a-Service’ ‘New Mobility’, ‘Smart City’, ‘On-demand Transportation’ and ‘Public-Private Innovation’ ecosystems. One of the ways in which SMART has advanced the implementation of such ecosystems is through a practical methodology for local and regional leaders.

SMART’s practical four-step approach for leaders implementing multi-modal public-private mobility systems

Since 2007, SMART has been evolving and leading its four-step system implementation sessions in over 25 (mostly major) cities around the world (South Africa, India, Brazil, China, Korea, Chile, Ecuador, the Philippines, the USA and Europe). The approach was originally used to simply get an inventory of connected assets to help understand system implementation challenges specific to the transportation complexities of Indian cities. However, as the work evolved, word got around, and SMART was invited to more and more cities, including eventually US cities. As the network expanded, patterns common to all cities began to appear, along with some basic and practical ways to implement connected network solutions. These patterns became known as the ‘four steps’: (i) convening; (ii) multi-modal mapping; (iii) piloting and roll-out; and (iv) marketing and adoption.³

Local co-organisers and even participants of the workshops tell us that the approach has a draw for leaders broadly and across all sectors because it offers a simple, practical and time-effective way of understanding and cutting through the complexity of implementing customised, multi-modal, IT-enabled, sustainable, inclusive, cost-effective door-to-door transport systems. It is also a capacity-building tool for leaders, underscoring the value of enhancing the whole system and building on what already



Photo: UN Photo/Kibae. Traffic in Hanoi, Vietnam, 2011 <<https://goo.gl/3UboMU>>.

“ Mobility has recently climbed the priority agenda as the world urbanises and globalises.

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It is even more crucial at this moment in history to engage and maintain a balance between the public and private sectors through dialogue, innovation and collaborative deployment of mobility solutions.



Photo: Augustus Binu. Buses at Vyttila Mobility Hub, Cochin, India, 2013 <<https://goo.gl/AialKN>>.

exists. The solutions can be as wide-ranging as multi-million-dollar multi-modal hub networks (as in the Vyttila Mobility Hub in Cochin, India, which links the metro, the bus, ferries, parking, motorcycle parking, auto rickshaws and more).

In Manilla, Philippines, in an initiative supported by the Rockefeller Foundation and the Asian Development Bank, leaders launched an inclusive mobility programme including a range of connected and sustainable mobility options, all starting with SMART sessions in three different key areas of the city.

New policy models

Where does policy come into all this? Increasingly it is not only about *which* policies should be adopted, but also about *how* they should be integrated, framed and applied. Here are some innovative mobility policy approaches observed in the course of SMART collaborations:

- **Expanding the policy palette:** The increasing complexity and diversity of cities and mobility demands integration of a wider set of policy issues and players beyond the traditional planning, land use, infrastructure, safety and environment. It is important also to include energy, housing, IT and telecommunications, data management, cyber security, safety, social services, finance, economic development, marketing, tourism and more, all according to local contexts and needs.
- **Access over excess:** Focusing policy on how a solution or approach helps meet people's needs or offers them access—as opposed to how fast it can move people and goods from point A to point B—redefines ends and means. This leads to new markets and innovation opportunities.
- **Public-private innovation:** Public- and private-sector roles in transportation are shifting to enable innovative ventures, partnerships and policy models. However, they can also pose challenges as technology outpaces policy, and as change happens faster. This leads to serious questioning over data ownership and cyber security. It is even more crucial at this moment in history to engage and maintain a balance between the public and private sectors through dialogue, innovation and collaborative deployment of mobility solutions. This can simultaneously protect and support public needs and quality of life and the environment, while at the same time fostering a vital local economy that enables sustainable enterprises and ventures (including those related to mobility) to flourish.
- **Systems, platforms, architectures and frameworks to enable open innovation and responsive ongoing management:** In a context in which 'we don't know what we don't know' (making it even more difficult than usual to pick winners), open and interoperable

needs-based platforms and policy frameworks that overarch strictly detailed policies and regulations need to be nimble and more responsive to human needs and contexts as they arise. ●

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2. 'Reverse innovation' or 'trickle-up innovation' is a term referring to an innovation seen first, or likely to be used first, in the developing world before spreading to the industrialized world.
3. For more detail, see Zielinski (2011).

City climate leadership and the New Urban Agenda

by Emmanuelle Pinault¹

For over 10 years, the C40 Cities Climate Leadership Group (C40) has been a critical driver of climate action in the world's largest and most influential cities. Founded in 2005, C40's network of 86 cities—representing more than 600 million people around the world and one quarter of the global economy—is committed to tackling climate change and driving urban action that reduces greenhouse gas emissions and climate risks. C40 helps cities identify, develop and implement local policies and programmes that have collective global impact, while increasing the health, well-being and economic opportunities of urban citizens.

Working across multiple sectors and initiative areas, C40 empowers cities to connect with each other and share common goals and challenges, providing a suite of services in support of their efforts: direct technical assistance; facilitation of peer-to-peer exchange; and research, knowledge management, city diplomacy and communications. C40 understands that cities are a leading force for climate action around the world and positions them as such, defining and amplifying their call to national governments for greater support and autonomy in creating a sustainable future.

Demonstrating the social and economic benefits of climate action in cities

For the first time, more than half of C40 cities are from the Global South, a reality that not only benefits those cities—which can draw lessons and tap into technical expertise from thriving cities around the globe—but also enriches the knowledge base for cities throughout the network. C40's increasing focus on cities from the Global South represents a concerted push to help address the interlinked issues of equity, climate change and prosperity. By empowering cities to implement climate action, C40 hopes to help member cities become models for achieving equitable, economically sound, low-carbon and

resilient development. In the years to come, C40 will help cities to integrate equity into their climate policies, with an emphasis on underserved communities, such as women, unemployed citizens and lower-income populations located on the city's periphery.

Access to financing is one of the greatest barriers blocking cities from resilience planning and from achieving the sustainable infrastructure projects necessary to cut greenhouse gas emissions and to limit the global temperature rise to 1.5 degrees Celsius (C40 Cities 2016a). Through programmes such as the C40 Finance Facility, the Financing Sustainable Cities Initiative and others, C40 is striving to support cities to overcome these challenges and enable them to implement sustainable projects throughout the Global South. Cycling infrastructure in Bogotá and a fleet of electric buses in Mexico City are the first two pilot projects for the C40 Cities Finance Facility, which will each receive up to USD1 million in dedicated technical assistance, provided by experts in preparing urban infrastructure projects. Those projects will deliver significant reductions in greenhouse gas emissions, supporting the cities' efforts to become sustainable, low-carbon mega-cities.

Habitat III: a highly inclusive process

At the end of 2015, cities played a central role at the Conference of the Parties (COP) 21 in Paris, pushing national leaders to reach the ambitious Paris Climate Agreement. In October 2016, nations convened again in Quito for Habitat III, to adopt the New Urban Agenda (NUA), a global framework designed specifically to guide urbanisation efforts around the globe. The NUA offers a roadmap for national governments, city and regional leaders, investors, international development funders, United Nations programmes, civil society and other stakeholders for the policies and investments needed to secure a bright future for cities everywhere.

Habitat III has been a highly inclusive political process: in the last 12 months, many preparatory meetings have convened all types of stakeholders to discuss all aspects of the urban agenda. The policy papers and the successive drafts of the NUA were made publicly available,² giving all stakeholders the opportunity to contribute.

As a member of the Global Task Force of Local and Regional Governments, C40 has proudly and actively supported the collective advocacy of cities throughout the Habitat III process. This is now acknowledged in the final draft of the NUA, which explicitly references 'local governments', recognises the role of the World Assembly of Local Leaders in its definition and follow-up, and proposes a renewed urban governance structure.

Integrating the climate, urban and development agendas: a missed opportunity

Efforts to address climate change—from green jobs to building efficiency to low-carbon transportation—touch nearly every sector of urban operations. Therefore, the pursuit of low-carbon development across different sectors presents a substantial opportunity for cities to tackle the dual challenges of inequality and climate change together, while ensuring sustainable economic growth.

Habitat III could have been a compelling moment to deliver an implementation plan for the 2030 Sustainable Development Agenda and the Paris Agreement at the urban level. This, unfortunately, has not happened. Although the 2015 frameworks on disaster risk reduction, finance, development and climate change are referenced in it, the NUA does not outline concrete plans to reinforce them and further their aims, missing the opportunity to integrate the urban, climate and development agendas.

Including a much stronger statement on the necessity to build low-carbon and resilient cities in the NUA would have been hugely useful in helping the world

fully achieve the objectives of the Paris Agreement. Aspirational urban climate change goals must better articulate climate action, equity and prosperity in cities.

The economic benefits of climate action are well established: research from the New Climate Economy (C40 Cities 2016b) indicates that investments in public transit, building efficiency and waste management in cities could unlock USD17 trillion by 2050 from energy savings alone (C40 Cities 2015). Although the social benefits of climate action are less known, cities are demonstrating every day the linkages between climate action, public health and social inclusion.

Expanding bus rapid transit (BRT) lines to the disenfranchised periphery, for example, helps save the planet by cutting carbon emissions—and has the added benefit of mitigating the public health crisis of air pollution in the city. New BRT lines also provide underserved populations with access to economic opportunities, while the influx of workers in turn reinvigorates the local economy.

Urban food systems are another great example of how an urban policy can reduce both hunger and carbon emissions in cities, delivering on Sustainable Development Goals (SDGs) 2, 11 and 13—zero hunger, sustainable cities and communities and climate action, respectively (United Nations 2016)—and contributing to the Paris Agreement's goals at the same time.

Innovative local policies around the globe demonstrate that the three pillars of sustainable development have a huge potential to reinforce each other. Through new programmes on co-benefits and inclusive climate action, C40 will work intensively on these issues in the coming years, and invites other climate and development stakeholders to join and support this work.

Mayors are already outperforming the New Urban Agenda, but they need support

In fact, there is little in the NUA that mayors have not either already undertaken or have committed to tackling, from social inclusion to urban prosperity to environmental sustainability, from local climate

action to adaptation and urban resilience, from energy efficiency to sustainable transportation.

While mayors are taking actions to build sustainable cities and are committed to sustainable urbanisation, adequate financing remains a challenge for most of them. The NUA contains some key commitments on finance and capacity-building, which can potentially empower local governments to act, depending on our collective capacity to turn them into action. For example, paragraph 143 (Habitat III 2016) addresses the access of cities to international climate funds but fails to answer the question: how do we actually get there?

Cities need to build a strong roadmap with nations to make this commitment, and others, a reality. They have identified the drivers of change, including creating an enabling environment at regional, national and global levels and supporting transformational projects. Mayors are already delivering on the NUA. With extra help, they could do even more.

At the Habitat III conference, mayors called on national governments and the international financial institutions to help finance low-carbon and sustainable projects, through the C40 Call for Action on Municipal Infrastructure Finance. This call details six reforms that, if implemented, would help create a sustainable and low-carbon future for millions of urban citizens:

- Development banks must be reformed to respond to cities' needs.
- Cities must be granted direct access to international climate funds.
- The power to control finance must be devolved to cities.
- National governments must create a stable policy and regulatory environment.
- Innovation, standardisation, pooling and pipelines must become the new normal.
- Cities must be supported to develop their capacity to prepare and execute projects.

“The economic benefits of climate action are well established.”

These reforms are crucial for implementing the NUA and meeting the goals of the Paris Agreement on Climate Change.

The way forward

C40 remains dedicated to mobilising action-oriented solutions for cities around the world, and driving more inclusive and equitable climate action. Through partnerships with other public and private organisations, and with a deep knowledge of our member cities' needs, C40 will continue to facilitate the climate action needed in cities to secure a just, prosperous and climate-safe future for all. ●

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1. Head of City Diplomacy and Political Engagement, C40 Cities Climate Leadership Group.
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Urban governance and ex ante policy evaluation: an agent-based model approach¹

by Bernardo Alves Furtado, Isaque Daniel Rocha Eberhardt and Alexandre Messa²

This article suggests that better urban governance may be obtained via ex ante policy analysis. Focusing on prognostics, rather than diagnostics, may empower cities in their drive to foster 'sustainable development'.

Governance of cities is a complex matter (Bettencourt 2015). It involves heterogeneous citizens and interests, a number of institutions and values, and businesses of all denominations. These interactions happen over space in time and are conditioned by legislation, politics, administrative boundaries and the environment.

Given this context of multiple actors and multiple interactions that occur dynamically over heterogeneous space, urban governance should definitely make use of all data available on all actors, on their interactions, on their interests, on their location, if possible even on their plans. However, beyond collecting and managing such data coherently, good governance can only happen when data are organised in such a way that they can make sense and resemble the actual processes and outputs of cities. If the city mechanisms can be fully grasped, then policy recommendations and governance should come automatically as a result.

Complex systems (Furtado, Sakowski, and Tóvolli 2015; Mitchell 2011) encapsulate the view that cities are the emergent, ever-changing result of interactions among heterogeneous actors (Bettencourt 2015). Agent-based modelling (ABM) is the methodology that comprises the theoretical baseline of complex systems. In ABM, a computational simulation runs a model in which 'agents' are entities that represent citizens, businesses, institutions and governments (Gilbert and Terna 2000; Macal 2016; North and Macal 2007;

Sayama 2015; Wilensky and Rand 2015). This article presents an ABM framework—Spatially-bounded Economic Agent-based Lab (SEAL)—that aims at simulating citizens, businesses and governments within political-administrative environment boundaries that can be used to evaluate policy proposals ex ante and thus serve as an effective governance tool for the various levels of the government.

The following section of the article contains a description of the model, presenting some of its preliminary and planned applications, and the final section discusses the possibilities, advantages and limitations of applying the ABM to urban governance and policy evaluation.

The basic model: SEAL

SEAL was originally built to investigate the collection of taxes and the redistribution of public services across municipalities in metropolitan regions (Furtado and Eberhardt 2016a). Taking advantage of the additive, modular structure that is typical of the ABM, the model has evolved from a case study into an empirical framework that enables multiple analyses.

The framework is built in Python 3.4.4³ (Downey 2012) in a full object-oriented-programming (OOP) paradigm. That is in accordance with the theory, allowing agents to be independent and react individually according to their personal states and methods, but also according to their local, familiar and temporary environment.

Thus, SEAL contains *classes* for citizens, families, businesses and governments (of each municipality) and is based on official data. The citizens and their family collectives interact with businesses, the government and each other in three markets.

In the goods market, families make consumption decisions on homogenous

products from a selection of different businesses. Families make their decisions based on both prices and distance. In the labour market, businesses seek qualified workers or workers who live closest, whereas likely employees look for businesses that pay higher salaries. In addition, given its importance for urban analysis, there is also a real estate market.

Governments are responsible for collecting taxes from businesses within their own jurisdiction. Taxes are then used to proportionally increase the municipalities' own quality of life index, which is a proxy of available services for citizens. Production and commuting happen every day, whereas most other activities happen sequentially at the end of every month (see Figure 1):

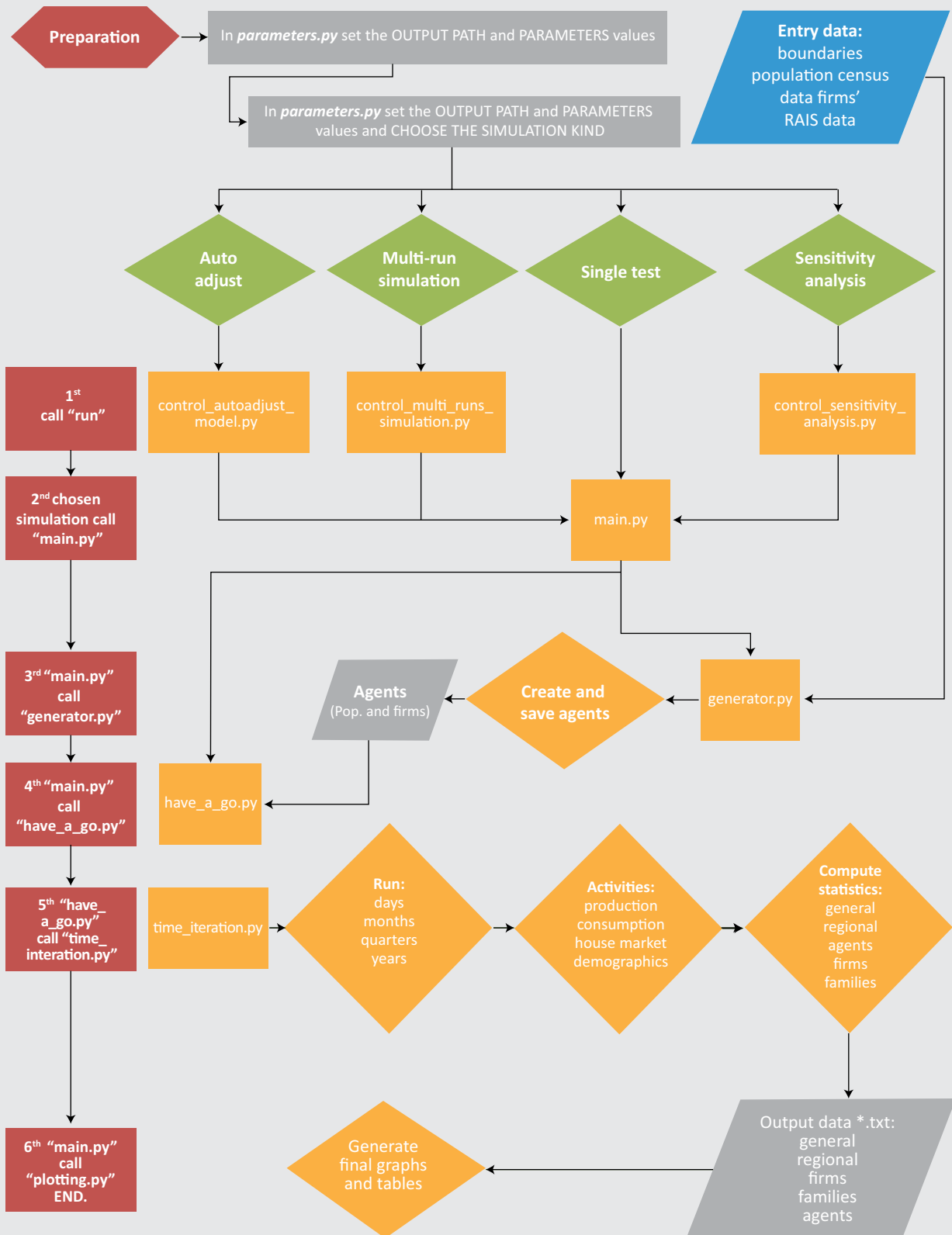
- process demographics (births, aging and deaths);
- firms make payments;
- family members consume;
- governments collect taxes;
- governments spend the taxes collected on improving the quality of municipal life;
- firms calculate profits and update prices;
- the labour market is processed;
- the real estate market is processed; and
- statistics and output are processed.

Sensitivity analysis should also be conducted; it helps build the robustness of the model and evaluate the influence of different policymaking.

Policy applications: current and planned

Up until now, SEAL has been applied as a theoretical preliminary exercise in which the municipalities are merged for tax purposes (Furtado and Eberhardt 2016a)⁴ and as a general analysis of the influence of macroeconomic changes into commuting demand (Furtado and Eberhardt 2016b).

FIGURE 1: Flowchart of general procedures in SEAL



Source: Furtado et al. (2016).

We have also made available an operating manual (Furtado et al. 2016, 2) and an empirical expansion of the model (Furtado and Eberhardt 2016a), including a more detailed tax system.

However, a number of other policy-oriented analyses and applications that are spatially rigorous could be easily implemented, given SEAL's framework:

- demographic analysis: changing fertility and/or mortality rates for coming years as well as implementing migration schemes (Billari, Ongaro, and Prskawetz 2003; Silverman, Bijak, Hilton, Cao, and Noble 2013);
- investment in education: given that agents in the model already have a 'qualification' variable—which is, at the moment, fixed throughout the simulation—but that could easily be a result of endogenous increase;
- transport analysis: adding route possibilities to the current model. Geocoded addresses for firms and households are already implemented;
- corporate innovation, whereby businesses could generate more than one homogeneous product. Currently, businesses are designed to have an inventory of available products, so far containing a single product;
- urban hierarchy and urban integration with likely urban theory development:

using endogenous economic working pools, conditioned to a reasonable daily commuting time;

- macroeconomic analysis: implementing a credit market (on top of already existing 'savings' accounts) and an intermediate sector, with businesses as well as government as buyers; and
- a more detailed tax system implementation.

It is relevant to point out that all those analyses would be made while keeping the other modules intact. That is, while a modeller is evaluating a change of a specific tax policy, the outputs in terms of unemployment, level of consumption, activities in the real estate market and time commuting, to name a few, are continuously being computed and reported. An exact—although simple—example of that is presented in Furtado and Eberhardt (2016b).

Final considerations

This article provided a brief overview of an agent-based model framework (SEAL), presenting its initial and planned applications for policymaking within the complex systems framework.

We can report some advantages⁵ and some limitations of this methodology as a policy tool to empower smart cities governance.

Rapid prototyping and ex ante policy evaluation are some of the first gains for urban governance. Given a solid

foundation of previous work, a small team (under six members) can provide good insights into the effects of a given proposed policy within a matter of days. That is, the team can design additional modules and simulations to have a better understanding of policy impacts across a number of indicators and specific urban areas prior to actual implementation. Such rapid prototyping practices may even be tools for real-time, 'what if?'-type live meetings in which interested actors may suggest tests or changes to the simulation team.

Another positive factor of having an ABM framework is its flexibility. Depending on the shifting interests of governance at any particular time, different emphasis can be applied to evolve the platform. The fact that the platform is additive and modular means that specific branches can be more (or less) developed than others, while the system continues to work in full harmony. This enables a more comprehensive approach to policy evaluation, as opposed to sectoral, isolated analysis.

This approach also has the advantage of being explicitly spatial, dynamic and with an emphasis on individual, local, heterogeneous agents and, more importantly, their interactions. This enables an emphasis of the micro scale, rather than working on aggregate measures. All of that is in tune with the description of cities (and their governance, obviously) as complex systems (Bettencourt 2015).

“Governance of cities is a complex matter. It involves heterogeneous citizens and interests, a number of institutions and values, and businesses of all denominations.



Photo: Kevin.ventus. Town Hall of Sydney, Australia, 2014 <<https://goo.gl/AY6ALU>>.

On top of all that, this proposal includes non-linear relationships between cause and effect and allows for tipping points and emergent behaviour (Fuentes 2015), for example.

There are downsides as well. Its high flexibility may also limit benchmarking comparisons, despite efforts to create protocols and rules (Grimm et al. 2006; 2010). Finally, the lack of certainty in the results—resulting from the impossibility of accurately forecasting stochastic predictions—may not be sufficient for some policymakers used to typical statistics confidence.

Nevertheless, governments and institutions (OECD 2009) have started to use simulations and ABM as additional contributing tools (Page 2007) to help understand likely future outcomes. ●

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1. This text is an adapted version of *Governance for smart cities: a Spatially bounded Economic Agent-based Lab (SEAL) to foster urban analysis and policy evaluation*, presented at the Civic BRICS Conference: Preparing for Smart Cities, in Jaipur, India, 17–19 August 2016.

2. Institute for Applied Economic Research (Instituto de Pesquisa Econômica Aplicada—Ipea), Government of Brazil, Brasília.

3. Python is a high-hierarchy programming language used to operationalise the algorithm of the model.

4. It includes the markets pseudocodes and the ODD protocol notes (Grimm et al. 2010).

5. See also Epstein (2011) and Page (2010).

“ Urban governance should definitely make use of all data available on all actors, on their interactions, on their interests, on their location, if possible even on their plans.

Metropolitan issues and the New Urban Agenda

by Felipe Francisco De Souza¹
and Jean-Yves Barcelo²

Metropolitan areas and why they matter

Metropolitan governance and institutional organisation does matter. A common definition of metropolitan area is the incident of urban growth that expands beyond its pre-established geopolitical boundaries to other contiguous boundaries, subject, therefore, to political rivalries and administrative fragmentation. Fragmented governance was once advocated as beneficial because—in addition to the democratic advantage of having decisions made close to the citizen, known as the subsidiarity principle—it could turn local governments into more competitive entities associated with a wider variety of public services and, consequently, a wider set of choices over their costs (Anas 1999).

But which one of two possible directions—the positive impact of competition among local governments or the positive impact of coordination from one single metropolitan authority—will prevail in determining the competitiveness and wealth of metropolitan areas? In recent research on five countries by the Organisation for Economic Co-operation and Development (OECD), its analysis demonstrated that metropolitan areas with coordinated governance authorities performed better in several dimensions. Considering that not all possible public services in metropolitan areas may benefit from a centralised administration, and that it is not clear whether optimal metropolitan governance relies on a centralised or on a polycentric structure, the research presented a negative correlation between administrative fragmentation and productivity (Ahrend et al. 2014). For a given population size, a metropolitan area with twice the number of municipalities is associated with around 6 per cent lower productivity—an effect that is mitigated by almost half by the existence of a governance body at the metropolitan level. In other words, cities with a fragmented governance structure tend to have lower levels of productivity,

and a well-designed metropolitan authority, working in close cooperation with local governments, can improve economic outcomes and the quality of life in metropolitan areas.

Social equality also matters. Metropolitan areas are big ‘money-making machines’, but their resources—income, health, education, infrastructure etc.—are distributed unevenly, typically through norms of allocation that engender specific patterns along socially defined categories of people.

There is an academic common sense, however, that metropolitan policies should contribute to reduce social inequality, as research evidence strongly relates it with socio-economic stratification and political illness negatively affecting development growth and its sustainability (Berg and Ostry 2011; Ostry et al. 2014). For example, high death rates, stress-related diseases and violent crimes appear to be correlated with high levels of perceived income inequality (Hicks and Hicks 2014); also, in regard to democratic development, deepening inequalities within and between different groups in society were associated with low levels of social cohesion and participatory citizenship (Oxhorn 2003); and, in regard to social conflicts and political instability, social inequality seems to stimulate the establishment of authoritarian regimes (Sirowy and Inkeles 1990). If we are to understand the nature of metropolitan areas, as well as the directions in which they are moving, it is essential to understand the changing patterns of inequality experienced within their societies.

Unequal societies are a function of economic forces acting not at the city scale alone, but at the wider and complex metropolitan scale, which is often perceived as a technocratic scale by citizens in the absence of a clearly defined and democratic metropolitan authority.

Environmental management also matters. Environmental management is both a field of knowledge regarding the problematic relationship between meeting society’s

needs and protecting the urban ecosystem, and a way to intervene in this relationship. Metropolitan ecosystems should be environmentally sound, financially feasible and operationally efficient, and should meet the long-term needs of the beneficiaries through cooperative efforts from participating governments. To achieve such features, a sophisticated understanding of the spatial dimensions of climate, water and soils dynamics, and their parallels with waste and hazardous waste management, is necessary (Pickett et al. 2008). This strongly suggests that a metropolitan area is, in fact, an entirely new type of ecological entity—with an entirely new level of complexity and organisation—and that is precisely why this emergent phenomenon has been studied as a complex, integrated system. In this sense, it is important to note that though sustainability of environmental management has improved (Dunphy et al. 2007), environmental responsibility has yet to reach all the urban stakeholders—such as civil society and the public and private sectors, including the majority of the global companies operating in the markets.

As argued by scholars and practitioners, the major barriers that prevent stakeholders from shifting towards sustainable environmental management practices are related to the difficulties in understanding what sustainability really is and, therefore, having difficulty modelling an economically viable way to switch, and having a flawed—or non-existent—execution plan (Berns et al. 2009).

Finally, spatial structure also matters. Land, particularly geographic locations and mineral deposits, has historically been a cause of conflict, and the metropolitan spatial structure plays a major role in terms of land-use markets and infrastructure provision.

The monocentric structure—or radial-orbital growth model—consists in the main central city engulfing the peripheral ones as it grows. The ever-expanding radius makes the periphery increasingly distant and has a perverse effect on the land market, as being central is essential because it

benefits not only from accessibility but also from the value added by transportation infrastructure. In monocentric and sprawling metropolitan areas, housing is less affordable for low-income households, thus compromising one of the basic human rights. Other spatial structures can be found in metropolitan areas, and have been central to the discussion on how these areas should be planned and guided, such as multipolar and polycentric structures (Chreod 2005). If these models are different in the way conurbation occurs, both have in common the integration, expansion and empowerment—in terms of services and infrastructure—of multiple areas, instead of a unique outward expansion coming from the core area. As argued by Pedro Ortiz (2016), such metropolitan structures must be developed towards the so-called reticular system, because any location must be equivalent to any other in terms of public services and infrastructure.

Moving forward: Habitat III, the New Urban Agenda and metropolitan policies

The Habitat III New Urban Agenda neither exhausts the debate on metropolitan issues nor provides sufficient guidance to address key sustainable urbanisation issues at metropolitan scale in rapid urbanisation contexts. As a contribution to avoid the risk of being late for another 20 years on metropolises (Ortiz 2016), we are introducing below a tentative list of elements to be considered within national urban policies—without relying on any particular model or blue print—targeting the developing South and opening up ways to support sustainable urbanisation in current and emerging metropolitan areas:

- **Multi-level governance:** Based on extensive consultations with local governments and non-governmental stakeholders, national governments should review and improve the institutional, technical and financial framework to support metropolitan areas. Such a framework should clearly define and formalise such areas, allowing differentiation to reflect diverse local contexts, based on common principles of democracy, respect for local autonomy and subsidiarity. Such a national framework should identify areas of responsibility to be mandatorily addressed from the metropolitan scale in coordination with other levels of

government. It should also determine forms of autonomous metropolitan institutions with executive, deliberative and advisory bodies that would allow the credit-based engagement of resources with the private sector, and with shared allocation of tax-based resources for the execution of respective responsibilities and joint implementation of integrated development plans. Finally, such a framework should foster a culture of inter-jurisdictional cooperation to build metropolitan plans and instruments respectful of local contexts but with a clear legal hierarchy for local plans. Most countries have already adopted legal rules for inter-municipal cooperation, and the incremental development of specific metropolitan frameworks should be founded on careful review of existing practices and innovative approaches applied to key sectors such as the metropolitan transport system. Technical training programmes should support the evolution of the legal framework for elected officials, public managers, civil servants and technical staff, focusing on the adaptation from single- to multi-level governance. Financial incentives could facilitate or precede the implementation of new legal provisions.

- **Metropolitan mobility:** National frameworks should promote sustainable, equitable and efficient metropolitan mobility, including through specific financial resources for metropolitan projects that encourage

transit-oriented development (TOD) with residential and commercial mixed-use zoning, increased public transit ridership and dissuasion of the use of private motorcars. Urban regeneration programmes, essential for developing more compact cities, should also apply TOD principles with more public space for enhanced mobility and recreation.

- **Climate change:** Addressing the effects of climate change and global warming at metropolitan level is crucial. Large urbanised areas are the largest emitters of greenhouse gases, and metropolitan authorities should clearly engage in the shift to a low-carbon economy. Risks are amplified in large human and economic concentrations; therefore, extensive programmes for adaptation and mitigation are required. Only the largest and well-organised metropolitan areas have the capacity to set up related policies and programmes, even when taking some political leadership on the issue, calling for national programmes to support their action.
- **Information and communication system:** Metropolitan planning, due its complexity, needs large socio-demographic and economic data, among others, in an open platform to be used to substantiate public policies. Such an information system should be established at national level and use and/or be compatible with international standards and patterns, such as the UN-Habitat City Prosperity



Photo: Toshihiro Gamo. City of Tokyo, Japan, 2014 <<https://goo.gl/6KASAh>> .

Initiative (CPI) and ISO 37120 (2014), for the sustainable development of communities, with indicators for city services and quality of life.

- **Territorial and socio-economic inequalities:** As stated in the 2015 Declaration of Montreal (CMM 2015), “growing urbanization sometimes leads to socio-spatial and socio-economic inequalities, notably because of the absence of well-planned urban development as well as inadequate investments.” Metropolitan areas should produce and distribute resources to foster better livelihoods for urban and rural residents alike. This would require strong regional policy to promote redistributive actions for territorial equity and homogeneity in terms of public services and infrastructure, reducing commuting and avoiding displacements and gentrification.
- **Protection of natural assets and agricultural areas:** Metropolitan authorities, in close consultation with local governments and in the framework of enabling national legislation, should identify agricultural and forest areas to be protected, setting up and enforcing adequate regulations to promote the urban–rural continuum of sustainable development and to restrict speculative urban growth over agriculture. Compensation measures for large and impactful real estate projects are recommended. Furthermore, the debate on protection of nature and landscape heritage plays an important role in building metropolitan citizenship and a sense of belonging—a key element for raising the interest of civil society in metropolitan issues.
- **Mechanisms for shared distribution of costs and benefits of metropolitan works:** The 2015 Declaration of Montreal (ibid.) states that investments required in metropolitan areas will increase significantly over the next decades and that “funding of metropolitan areas should be adapted to this reality in order to mobilize the massive investment needed to meet metropolitan challenges and increased responsibilities”. In this sense, it is important to “encourage better

sharing of available resources between local communities and other levels of government and, in view of our limited resources, improving management efficiency”. That is why it is important to improve new sources of revenue at metropolitan level, especially the capture of added value and real estate valuation coming from large public projects and metropolitan works.

- **Participatory mechanisms and the promotion of the concept of the ‘right to the city’:** Last but not least, it is important to increase public awareness and citizen participation in metropolitan decision-making, including the most vulnerable people and marginalised communities, through the use of collaborative processes accessible to the whole community and by relying on the contribution of academia. It is, therefore, crucial that metropolitan plans, policies and programmes include strong components for integration, safety and service improvement in all settlements, thus meeting all major concerns of low-income populations.

The performance of the national decentralisation framework is, of course, essential to improve sustainable urbanisation in metropolitan areas, and many countries still lack effectiveness in the devolution of responsibilities, capacities and resources to local governments. In such contexts, weak local governments often justify the pre-eminent role of central administrations in the planning and management of metropolitan affairs, hampering metropolitan actors’ ownership of crucial sustainable urbanisation issues. Nevertheless, the capacities of the various stakeholders are always greater in large cities, and metropolitan planning and management should foster the active participation of both local governments and non-governmental stakeholders. ●

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Metropolitan challenges in Mexico¹

by Alfonso Iracheta²

Almost 60 per cent of the Mexican population live in metropolitan areas that produce more than 73 per cent of the country's gross domestic product (GDP) (Centro EURE 2013). It is estimated that by 2030 this population will reach around 135 million people (ibid. 2013). It is expected that the majority of the new population will settle in cities, and that most of them will be part of the lower income deciles.

According to a recent analysis of municipalities comprising 59 officially recognised metropolitan areas, one in 10 does not have an urban plan, only 13 per cent plan in accordance with metropolitan dimensions, and only 38 per cent of urban plans are valid according to their respective state legislation (Centro Mario Molina 2015). These planning limitations are one of the many causes of the uncontrolled, disorderly and unsustainable urban expansion of Mexican cities and metropolitan zones. Evidence for this claim is that between 1980 and 2010 the urban population doubled, whereas urban areas expanded eightfold (Topelson 2012). Therefore, the average density in Mexican cities is now as low as 23 homes per hectare (around 80 inhabitants/ha) (Centro EURE 2013).

This unprecedented urban expansion has also been driven by the national social housing

policy, which encouraged and permitted developers to build houses in areas of lower-value real estate, usually inadequately located in the urban periphery, lacking many basic urban facilities and far away from workplaces, strongly increasing infrastructure costs incurred by local governments (World Bank 2015) and transportation costs paid by inhabitants, forcing them, in many cases, to abandon their houses³ (INFONAVIT 2015).

With this evidence in mind, in the three largest metropolitan areas in Mexico the average distance between big social housing developments and their metropolitan core is around 30 km, with actual distances ranging between 15 and 46 km (ibid.) (see Figure 1).⁴

Such inadequate urban growth patterns can be traced to at least four processes: a) poor spatial planning, governance systems and social participation within the three tiers of government (national, state, municipal); b) mass production of social housing with only a passing concern for their spatial and environmental impacts and the needs of their beneficiaries; c) a lack of well-located and utility-serviced housing land for poor urban communities within cities, thus fostering the expansion of slums and informal settlements; and d) uncontrolled real estate markets that have led to a large oversupply of poorly located urban land in almost all Mexican cities and metropolises.

Mobility in almost all Mexican cities and metropolises has become a very sensitive issue. A study on 36 of the worst-off social housing developments scattered throughout the country (INFONAVIT 2015) showed that average per capita transportation expenditures represented 18.7 per cent of total household income⁵ and that almost 40 per cent of the population require more than one hour for commuting on each leg of their daily public transportation journeys (ibid., 160). It has been estimated that USD2 billion per year are lost in the Mexico City Metropolitan Area (MCMA) alone as a result of a deficient transportation system for the working class (IMCO 2012; 2014), and that excessive use of cars, as of 2009, represented around 4 per cent of metropolitan GDP in five of the most populated metropolises⁶ (Medina 2012).

These metropolitan shortcomings cannot be overcome with the current urban/metropolitan planning system. It has become dysfunctional due to not carrying out the plans as approved and for lacking the participation of local communities. Furthermore, the spatial legal framework has become obsolete, and local authorities are unable to develop proper coordination mechanisms for transportation, environmental, housing and spatial planning, particularly within metropolitan areas.⁷

Towards urban/metropolitan reform

Governing metropolises means achieving a social and political agreement organised in a coherent framework, based on the leading-edge knowledge of effective, long-lasting metropolitan governance. Such an agreement should lead Mexican government and social actors to build an urban/metropolitan reform underpinned by some key ideas:

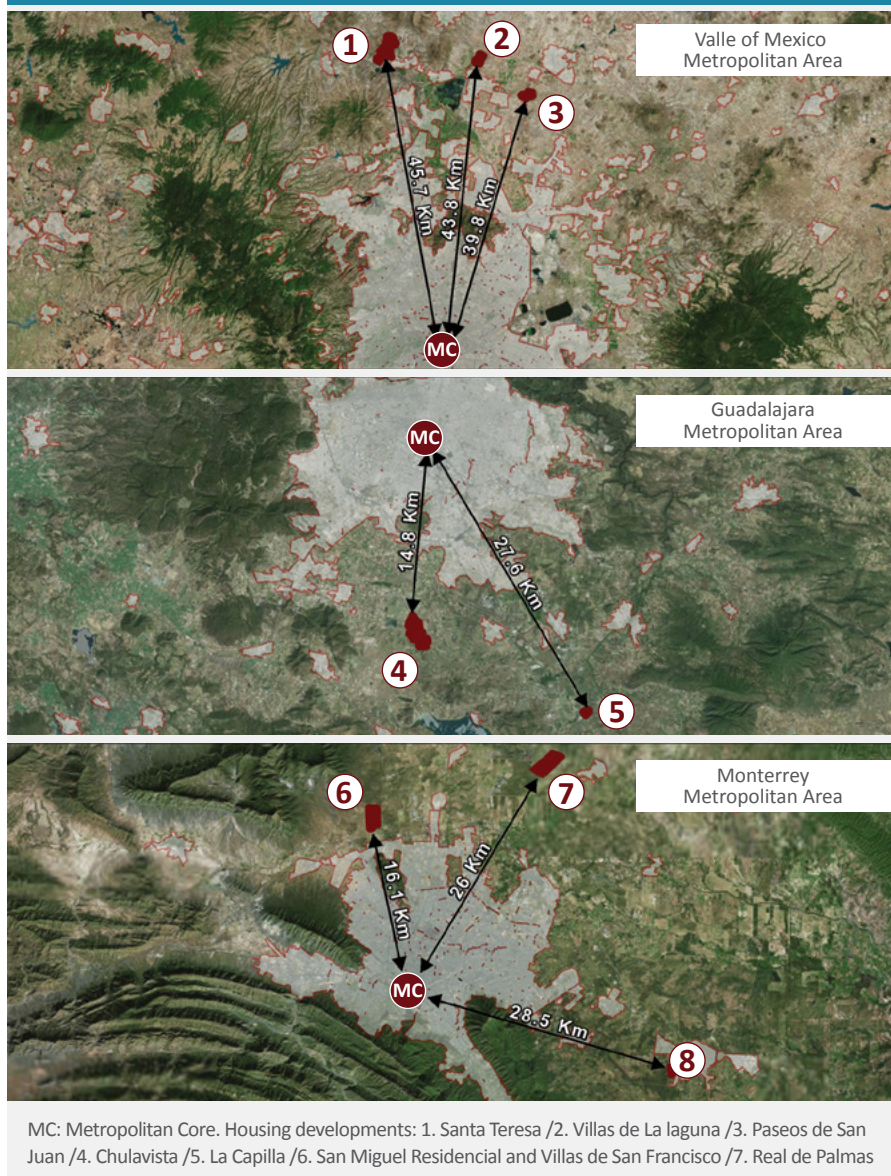
- **The legal recognition and regulation of metropolises:** A clear definition of responsibilities for the three tiers of government within the spatial planning and governance system, promoting and pricing, on the one hand, and making inter-municipal and inter-state government coordination within metropolises compulsory, on the other. This means recognising local



Photo: Jay Walt. Mexico City, Mexico, 2016 <<https://goo.gl/sZ7V7x>>.

“ It has been estimated that USD2 billion per year are lost in the Mexico City Metropolitan Area alone as a result of a deficient transportation system for the working class.

FIGURE 1: Examples of locations of housing developments within the three major metropolitan zones in Mexico, 2015



Source: INFONAVIT (2015, 70).

governments as key stakeholders for building metropolitan governance. In addition, it is desirable that urban municipal plans come from metropolitan plans, to build a participatory vision of the *totality* (metropolis) first, and of its *parts* (municipalities) afterwards.

- **The official recognition of the right of all citizens to the city metropolis:** Since the National Supreme Court of Justice ruled that international agreements signed by the Mexican government are to become law, the first article of the

Constitution was amended to endorse all human rights, thus becoming the reference for a full recognition of the human right to the city.

- **Spatial planning needs to move towards a more consolidated and compact metropolitan spatial pattern:** In this regard, policies have to be set up to approach the public space not only as a key instrument to make the right to the city a reality, but also to use it within neighbourhoods as the cornerstone of a more compact city.

- **A national urban land policy is needed to recover the social function of urban land:** Occupying vacant urban areas, recycling unoccupied homes and the supply of well-located housing plots for poor people in urban areas should be the priority for all three tiers of government.
- **Effective spatial governance requires ensuring real and jointly responsible participation of citizens, social organisations and enterprises in urban planning, and in the decision-making process affecting the everyday lives of urban communities:**

Such an inclusive approach should be present in the territorial legislation and within existing participatory bodies.⁸

- The common element of most urban/metropolitan plans is their poor coordination with others (environmental, socio-economic development etc.), despite addressing the same socio-spatial reality (e.g. metropolitan areas): It is, therefore, paramount to pay attention to the necessary alignment and coordination of all planning systems operating within cities and metropolises, ensuring that such planning is instrumented and carries legal consequences after its enforcement, so as to be respected by all stakeholders.
- The national information system for urban development and planning, and the legal normativity and participatory bodies for public accountability of urban planning and governance have to be up to date: New instruments for urban/metropolitan development and land planning will also be required.⁹

In conclusion, urban/metropolitan governance in Mexico could be achieved if all social forces work together to make urban/metropolitan reform a reality. Today, participatory and long-term spatial planning and governance are already as important as economic and social policies; however, they have so far not been considered a priority by all tiers of the government or social actors. ●

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3. According to the 2010 national census, there were more than 5 million unoccupied homes (15 per cent of the national housing stock), and around 500,000 homes have been wrecked (vandalised), particularly those located within social housing developments.

4. A national average has been estimated at 9 km between social housing developments and city centres (Eibenschutz and Goya 2009).

5. This means that the poorest population spends far more than 50 per cent of its family income (average of four members) on urban transportation.

6. Mexico City, Monterrey, Guadalajara, Puebla-Tlaxcala and León.

7. In November 2016 the Mexican Congress approved the new *Ley General de Asentamientos Humanos, Ordenamiento Territorial y Desarrollo Urbano* (General Law on Human Settlements and Urban Development), addressing some of the urban-metropolitan shortcomings.

8. Such as local/metropolitan planning institutes, urban/metropolitan observatories, deliberative and advisory urban councils, inter-municipal coordination bodies and public-private enterprises, among other entities.

9. Such as capturing and administering urban land surplus value and land betterment resulting from urban-metropolitan development, flexible land taxes, development rights or areas for new professional opportunities such as the social urbaniser, among others.

“ It has been estimated that USD2 billion per year are lost in the Mexico City Metropolitan Area alone as a result of a deficient transportation system for the working class.

Governance and social participation in the metropolitan region of Belo Horizonte

by Flávia Mourão Parreira do Amaral¹

Brazil's 'metropolisation', understood as a dynamic aggregation of urbanised areas of municipalities—composed of economic, social and political power centres, capable of polarising the territory at the national, regional and local levels—has passed through different phases over the last decades and is still undergoing changes. At first, metropolisation occurred in step with the industrial urbanisation process, while today most of those processes are derived from service networks but still reflect and produce social, economic and territorial inequalities. Planning for metropolitan areas and elaborating public policy and solutions for their integrated management remain significant challenges in the process of metropolisation.

Belo Horizonte, the capital of the Brazilian state of Minas Gerais, has been the centre of a metropolitan area on a national scale since the second half of the 20th century and was formally established by a Federal Supplementary Law² in 1973, to achieve the provision of collective services. At that time, the country was going through a period of strong centralisation, with technocratic tendencies that restricted the amount of social participation in the metropolitan planning process.

In 1988, the new Constitution of Brazil, following principles of democratisation and decentralisation, brought greater autonomy to municipalities and delegated the institution of the metropolitan areas to individual states. In addition, it introduced the Master Plan as a "basic instrument" to be adopted by local governments as a way to pursue "the social function of urban property". Moreover, the 1988 Constitution brought several mechanisms of participation and control to civil society. In 2015, the so-called 'Cities Statute' (Law No. 10.257) consolidated many instruments of social participation linked to urban policy. More emphasis has been given to governance than planning, and greater priority has been attached to the creation of participatory processes,

in an attempt to broaden representative democracy (Costa 2012).

Even if it is certainly a very positive result of the changes in urban policies based on municipal autonomy, on the other hand, this autonomy can be a hindrance to the necessary regional approach to territorial policy- and decision-making, as in the case of municipalities that are part of a metropolitan region. In this respect, in 2015 another federal law was approved to broaden the parameters of metropolitan governance: the 'Metropolis Statute'.³

In this interim period, the state of Minas Gerais had approved specific legislation: in 2004 it included a device in its State Constitution,⁴ and in 2006 it approved Supplementary Laws Nos. 88 and 89,⁵ which regulate, respectively, the criteria for establishing metropolitan areas in the state and the new administrative arrangement for the Metropolitan Region of Belo Horizonte (*Agência de Desenvolvimento da Região Metropolitana de Belo Horizonte—RMBH*), an urban agglomeration of 34 municipalities comprising around 5 million inhabitants in the state of Minas Gerais in southeast Brazil. This set of state legislation anticipated what was established by the Metropolis Statute a few years later, though some adjustments are still necessary to bring them into full compliance with federal law.

In RMBH's case, the new administrative arrangement consists of a Metropolitan Assembly (a decision-making body with the participation of the state, mayors of municipalities and presidents of municipal legislative boards), a Deliberative Committee for Metropolitan Development (a collective body for the general coordination of activities related to metropolitan planning, with representations of the state, the state legislature, metropolitan municipalities and civil society) and the Metropolitan Development Agency (a technical and executive entity), in addition to the Fund for Metropolitan Development (with funds mostly sourced from

voluntary contributions of the state and municipalities) and the Metropolitan Master Plan for Integrated Development (*Plano Diretor de Desenvolvimento Integrado—PDDI*).

The PDDI, which was devised during 2009–2011, aims to institute a permanent planning process involving municipalities, the state of Minas Gerais, federal agencies and civil society organisations. This planning process includes building a sense of metropolitan solidarity and identity and also the active engagement of the populations in their territory (UFMG/PUC-MINAS/UEMG 2011), for the realisation of public functions of common interest. The preparation of the PDDI brought together 610 organisations and public, business and civil society entities, which were involved in numerous workshops and discussions (Godinho, Medeiros, and Silva 2014).

The PDDI, prepared by multiple stakeholders, consolidated guidelines on the themes of urbanity, accessibility, security and sustainability, which resulted in 23 political propositions, as well as others concerning issues of territoriality and institutionality. In the new political and social context, the PDDI presents significant innovations in terms of principles, methodology and practice, different from the experiences of technocratic planning.

The Deliberative Committee is in charge of the plans, programmes and projects prioritised by the PDDI, as well as decision-making regarding the destination of resources of the Fund for Metropolitan Development. The Metropolitan Development Agency is tasked with achieving the established goals by coordinating the various actors involved. This can be done by setting up working groups or thematic committees with the participation of representatives from the local government, state executives, the state legislative assembly and civil society.

The PDDI guidelines have spawned other plans and programmes, such as

a metropolitan macro zoning plan, an integrated waste disposal plan and a metropolitan mobility plan.⁶ In addition, every two years a conference is held, where proposals for metropolitan management can be shared, and new members of the Deliberative Council can be elected.

For the composition of the Deliberative Council, it is important to emphasise that, as stated in Complementary Law No. 89/2006, 16 members were to be appointed according to the following distribution: five federal state executives (appointed by the Governor), two federal state legislators (appointed by the President of the legislative assembly), seven executives from municipalities and only two members from civil society.⁷ For the election of Deliberative Council members from civil society, a preliminary and widely publicised preliminary meeting is held before the conference, at which these delegates are elected. These delegates are representatives of: (i) social and popular movements; (ii) working-class entities; (iii) the private sector; (iv) professionals, academics and research organisations; and (v) other non-governmental organisations. These representatives elect two members and two alternates for the Deliberative Council.

There was a large mobilisation of civil society organisations which expressed dissatisfaction with the small space allocated to their representatives on the committee. As a result, a Metropolitan Civil Society Committee was created: an informal but highly effective group of representative stakeholders who identify with metropolitan issues. It currently has 30 members, including representatives of universities, non-governmental organisations, independent professionals (engineers, architects etc.), trade unions, grassroots organisations etc., covering a wide range of different metropolitan issues (Costa 2012).

Finally, it is worth noting that this new institutional structure for metropolitan management and planning is enabling several embryonic forms of stakeholder organisations, which will eventually lead to participatory governance (ibid.). Examples of such initiatives include the Front for Metropolitan Citizenship, the City Council Metropolitan Front and the

West Vector Strategic Plan. The RMBH Development Agency strives to provide support to these initiatives, which are of paramount importance for strengthening metropolitan solidarity and a collective identity. However, to avoid falling into the same centralisation excesses of the past, it is considered that the state—in partnership with its municipalities—should be the one coordinating various institutions working in the metropolitan area, through formal or informal arrangements (Azevedo and Mares Guia 2000), with the ultimate goal of providing common services to the public.

We hope that this article can contribute to spreading the notions of cooperation, solidarity and social participation which are so crucial to the process and which have echoed strongly in Habitat III, the United Nations Conference on Housing and Sustainable Urban Development, held in Quito, Ecuador, in October 2016. We also hope that growing social mobilisation will lead to increased social participation in metropolitan decision-making in the city of Belo Horizonte. ●

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1. Executive Director of the Development Agency of the Belo Horizonte Metropolitan Area (Agência RMBH).
2. Federal Supplementary Law No. 14, 1973, establishes the metropolitan áreas of São Paulo, Belo Horizonte, Porto Alegre, Recife, Salvador, Curitiba, Belém and Fortaleza.
3. Federal Law No. 13,089 establishes the Statute of the Metropolis.
4. Emenda Constitucional No. 65, of 25 November 2004.
5. Leis Complementares No. 88 and No. 89, of 12 January 2006.
6. For more information about these plans, please see <<http://www.rmbh.org.br/en>>.
7. One of the proposals approved at the V Metropolitan Conference held in 2015 was to increase civil society participation in the Deliberative Council.

The Rio Grande do Sul leapfrog economic strategy and the Porto Alegre Sustainable Innovation Zone (ZISPOA)

by Marc A. Weiss¹
and Luis Felipe Nascimento²

The Porto Alegre Sustainable Innovation Zone (*Zona de Inovação Sustentável de Porto Alegre*—ZISPOA), located in the Independência and Floresta neighbourhoods of the Brazilian city of Porto Alegre (Weiss 2016),³ represents the first major step towards the implementation of Global Urban Development's (GUD) 2015 World Bank-funded Leapfrog Economic Strategy (LES) for the state of Rio Grande do Sul (RS) to become the most sustainable and innovative place in Latin America by 2030 (Weiss et al. 2015). Both the LES and the development of Sustainable Innovation Zones, starting with ZISPOA, offer excellent opportunities for the city and the state to successfully achieve both the United Nations Sustainable Development Goals (SDGs) and the New Urban Agenda, and can perhaps highlight ways in which other regions may be able to do so as well.

Sustainable Innovation Zones in Rio Grande do Sul

The focus on sustainable innovation and inclusive prosperity is vital for the success of the RS LES. The future of the world will be about finding ways for billions of people to live and thrive in peace with each other and with nature. In the 21st century, people, places and organisations can literally get richer by becoming greener—earning and saving more money by conserving, renewing and reusing resources much more efficiently. In the future, businesses, jobs and incomes will grow through the 'four greens': green savings, green opportunities, green talent and green places (ibid., 46–48).

Many of the major technological advances of the coming decades will involve enabling people to enjoy economic prosperity and quality of life in ways that conserve and reuse natural resources and protect and enhance global ecosystems. The places in the world that 'leapfrog' into such a future, as some places are already

doing, will have an economic competitive advantage over the rest of the world. The first places among emerging economies in developing countries that can accomplish such technological breakthroughs will leapfrog into the front ranks of global competitiveness.

This will happen for two main reasons. First, because such successful places will have expertise and experience, reflected in their products and services, of enormous value to the rest of the world. Second, because many global resources will flow to such places from elsewhere: talent, technologies, investors, entrepreneurs, students, scholars, traders, tourists, developers, donors and much more. The world has a huge interest in supporting places committed to sustainable innovation and inclusive prosperity, and this growing interest and the global resources that come with it will increase exponentially during the coming decade.

Sustainable Innovation Zones are a centrepiece of the RS LES (ibid., 132–156). These many special areas in municipalities throughout the state will be among the leading centres for research and development of new innovations and technologies; for promoting entrepreneurial start-ups and business incubation and acceleration; for experimenting with state-of-the-art methods for improving sustainability and resource efficiency in business and daily life; for enhancing creativity and collaboration; for reducing burdensome rules and regulations and creating a more supportive business-friendly environment; for establishing public–private collaboration in strategic investments and participatory community management; and much more.

Current and future Sustainable Innovation Zones in RS will be located in mixed-use urban communities near colleges and universities, technology parks and technology business incubators, with commerce, housing and other key amenities and services. They hope to

serve as magnets for international talent and experiments in 21st century technology.

The RS Leapfrog Economic Strategy

The state of RS has been an economic leader in Brazil for a long time. In the 20th century it became one of the first states in the country to successfully industrialise and urbanise, and today it remains the third biggest industrial economy among Brazilian states. More than a dozen RS industries are either the largest or second largest among similar industries in other states in Brazil (ibid., 62).

However, RS is facing considerable economic challenges in the coming decades: relatively slow economic growth, a decreasing working-age population, modest productivity improvements, increasing global competition, and insufficient resources to upgrade infrastructure and education, among others.

An alternative to this projected slow growth in the future is one of dynamic, high growth characterised by broad-based employment and income gains. A way forward for RS to achieve a new level of prosperity and quality of life for families and communities and accomplish such a high-growth future is to become the most sustainable and innovative place in Latin America by 2030. This ambitious plan builds on the GUD approach, referred to as the 21st century LES, designed to accelerate into a more technologically advanced future (ibid., 53–158).⁴

The objective of the LES is to dramatically improve the standard of living, enhancing livelihoods and well-being for families and communities throughout the state. This goal will be achieved through much more dynamic, rapid, broad-based and long-term economic growth driven by sustainable innovation and inclusive prosperity.

Moving forward, the LES hopes to grow jobs and incomes for many people,



Photo: Felipe Valduga. Air view of Porto Alegre, Brazil, 2015 <<https://goo.gl/uwU27V>>.

“The future of the world will be about finding ways for billions of people to live and thrive in peace with each other and with nature.”

expanding public and private resources to enable substantial new investments in cleaner water, more effective sanitation, better housing and many other vital necessities of infrastructure and transportation, health and education, safety and security, stores and services, for all income levels statewide.

The proposed RS LES directly addresses five key economic challenges/objectives over the next 15 years:

- doubling the economic growth rate;
- dramatically increasing productivity by upgrading skills and technologies;
- expanding the working-age population by retaining and attracting a more educated and talented workforce;
- strengthening global competitiveness by producing technologically advanced and innovative goods and services that compete more effectively with imports and are in greater demand as exports; and
- improving infrastructure and education by attracting substantial international and private-sector investment and by enhancing resource efficiency.

One of the best ways to accelerate economic growth in RS is to develop a highly productive workforce, both by enhancing education, skills training and advanced technologies for the state's

residents and involving them more actively in dynamic economic activities, as well as by attracting and retaining energetic entrepreneurs and professionals from other states and from abroad.

The LES strives to maximise economic contributions by fully utilising individual talents and expertise through productive employment and competitive business opportunities, and by ensuring that such contributions are rewarded with rising incomes and asset ownership. The main engine of economic growth will continue to be the massive food production value chain, representing nearly one third of the state's economy in terms of agriculture, livestock, food processing, marketing, distribution and the many closely related business activities in manufacturing and services. Because global food demand is expected to increase by as much as 50 per cent by 2030, according to the United Nations, the food production value chain will have even better opportunities to be 'the rising tide that lifts all boats' in RS.

To become a 21st century leader in sustainable innovation and inclusive prosperity, developing, producing and marketing a very advanced generation of precision production, smart machines and digital technology, comprehensively applied to agriculture, industry and services, will be needed. This is a central tenet of the LES approach which builds on existing RS assets and strengths in metal mechanics and electronics, including automation and control, agricultural machinery and equipment, transportation equipment,

motor vehicles and auto parts. It focuses on higher productivity through new production methods such as precision agriculture, where some RS companies such as Stara are already becoming international leaders, and it will enhance many other key RS industry drivers, including renewable energy and clean technologies; sustainable innovation in advanced manufacturing, precision engineering, new materials, biotechnology, chemicals and polymers; and fashion, design and a wide range of related creative and cultural industries.

The emphasis in the LES on digital technology puts RS businesses ahead of the curve for the innovations of tomorrow, including both hardware and software components of goods, services and production processes. RS can become more globally competitive in digital software by educating, attracting and retaining high-quality talent, especially because of its strong focus on sustainable innovation and inclusive prosperity. A new global influx of talent can facilitate faster economic and technological progress even before major improvements are completed in modern sustainable transportation mobility, efficient renewable energy and broadband telecommunications infrastructure. This strategy maximises existing strengths of RS, even as it builds towards much greater capacity to develop and use advanced technologies by 2030.

The evolution of ZISPOA since 2015
ZISPOA and the *Paralelo Vivo* Sustainable Innovation Hub have made extensive progress since September 2015, involving

dozens of start-ups and hundreds of active participants and generating a solar-powered electric car-charging station, a community garden and composting centre, solar 'trees', a mapping of renewable resource capacities, a neighbourhood festival and many other achievements.

A major focus of ZISPOA and *Paralelo Vivo* is on fostering start-ups and business growth among young university-educated entrepreneurs, technicians, students and social activists. This rising generation of young adults in their 20s and 30s is a vital resource for achieving a successful urban transformation based on sustainable innovation and inclusive prosperity.⁵

The *Paralelo Vivo* Sustainable Innovation Hub is the first start-up hub, co-working and maker space⁶ and innovation ecosystem in Latin America focused mainly on promoting sustainable entrepreneurship and green businesses, currently with 36 member companies and organisations.⁷

Six key elements

ZISPOA combines six key elements:

- innovation and technology;
- entrepreneurship and start-ups;
- sustainability and resource efficiency;
- creativity and collaboration;
- participatory community management; and
- a business-friendly environment.

Over the past year, working groups were organised around these six key elements, and hundreds of people have collaborated to take action and produce results on a wide variety of initiatives. These include promoting 'solar trees', building a community garden and composting centre (*Espaço Floresta*) at a neighbourhood recycling facility, hosting weekly 'Zistalks' by local entrepreneurs/activists/experts, organising monthly Sustainable Connections seminars with Net Impact, mapping and surveying ZISPOA for renewable energy and resource recycling capacity, participating in an RS State Government Commission supporting the SDGs and much more.⁸

Early recognition and success

In June 2016 both ZISPOA and *Paralelo Vivo* won 'Good Ideas in Sustainability' awards from *Virada Sustentável* and *Fundação Gaia* in a major regional competition among more than 150 contestants. In addition, two ZISPOA start-ups, *Re-ciclo* and *Gênese Social*, also won awards, and four other ZISPOA start-ups were finalists: *Cesta Feira*, *Horteria*, *MVM Technologies* and *weBike* (Zero Hora 2016; *Virada Sustentável* 2016).

In December 2015, ZISPOA was selected by the Government of Sweden, the Swedish Institute and Swedish Incubators and Science Parks to participate in the Smart Living Challenge global network, starting with an international webinar in April 2016 about 'Sharing for Sustainable Mobility', featuring international technical experts mentoring ZISPOA start-ups such as MVM for electric car sharing, weBike for bike sharing, and Easybox for sharing garages for bikes and cars.

MVM recently developed Porto Alegre's first solar-powered charging station (SiVi) for electric car sharing in ZISPOA, with assistance from local firms, start-ups and students from the Federal University of Rio Grande do Sul (UFRGS). In October 2016, as part of Sweden–Brazil Innovation Week, ZISPOA inaugurated the new charging station at a well-attended ceremony with Sweden's Ambassador to Brazil Per-Arne Hjelmhorn, Porto Alegre Mayor José Fortunati, and other Porto Alegre leaders (*O Sul* 2016). ZISPOA also helped organise Sustainable Cities seminars and lectures, in addition to other activities.

Collaborative partnerships

Faculty and students from various programmes at UFRGS and other regional universities, including PUCRS, Unisinos and UniRitter, plus numerous start-ups from university-based technology parks and business incubators such as Hestia and Tecnopuc, along with AIESEC and several UFRGS student junior enterprise groups, are participating in ZISPOA activities. Currently several UFRGS professors are mentoring ZISPOA start-ups. This convening capacity is significant and can help lead to collaborative innovation across organisations and sectors. Currently ZISPOA is engaging in extensive outreach to students and faculty at universities in metropolitan Porto Alegre.⁹

Other examples of collaborative opportunities for sustainable innovation include ZISPOA and local partners such as Porto Alegre Resiliente, *3C Arquiteto e Urbanismo*, UFRGS, *Natureza Digital* and *Casa das Cidades* working with the international GeoSUMR Partnership, including Ecocity Builders, Esri, AAG, GUD and the US State Department, on sustainable urban geoinformation and geodesign with ecocitizen mapping and open data. Also, ZISPOA is developing other international partnerships in Canada, Germany, India, Singapore, Spain, the UK and the USA, and is working with the United Nations Development Programme (UNDP), UN-Habitat and the UN Commission on Science and Technology for Development.



Photo: Betina Carcuchinski/PMPA. Bike sharing is incentivised through ZISPOA, Porto Alegre, Brazil, 2016 <<https://goo.gl/UFpteq>>.

Future goals and activities

Currently ZISPOA is focused on becoming the most sustainable and innovative site in Latin America by December 2020, especially on becoming the: 1) most solar-powered; 2) most energy-efficient; 3) most digitally connected; 4) most renewable technology-friendly; and 5) most bike-friendly.

Sustainable Innovation Hubs and Zones are set to spread to other cities in RS such as Canoas, Caxias do Sul, Pelotas and Santa Maria. Similar Sustainable Innovation Hubs and Zones are expected to begin organising throughout Brazil and Latin America, including São Paulo, Panama City and other major urban centres.

Conclusion

Thus, despite the recent economic and political challenges that Brazil is facing nationally, the localised approach to regional economic development—GUD's Metropolitan Economic Strategy, Sustainable Innovation and Inclusive Prosperity framework (Weiss et al. 2015, 26–52)—currently being applied in Porto Alegre with ZISPOA, and soon to be scaled up with Sustainable Innovation Zones throughout the state of Rio Grande do Sul, may provide new insights about how to generate a specific kind of highly sustainable, innovative and inclusive economic growth that strongly supports achieving the SDGs by 2030. Hopefully this Brazilian experience can positively inform and benefit other cities and regions in emerging economies throughout the world. ●

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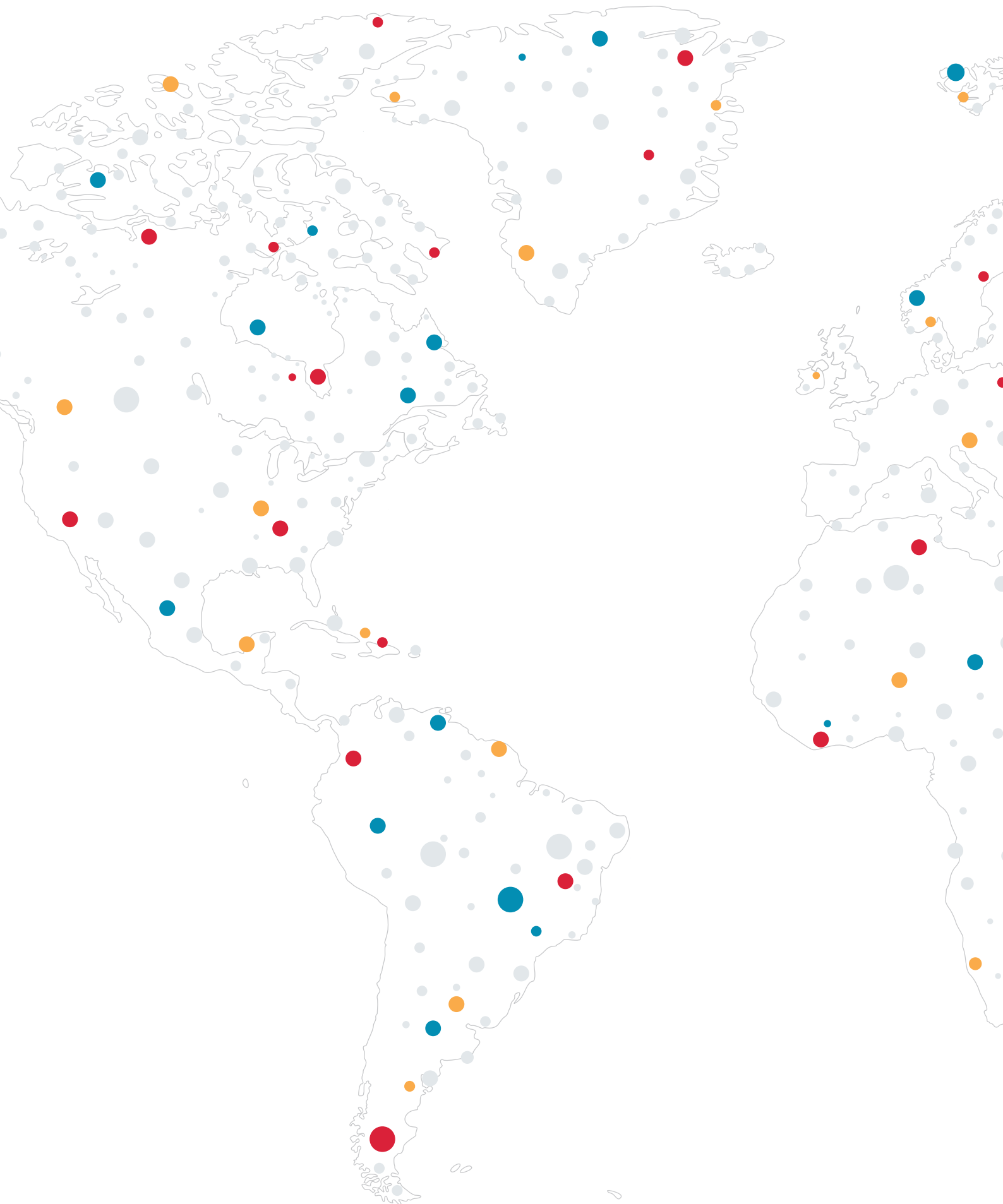
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1. Global Urban Development (GUD).
2. Federal University of Rio Grande do Sul (UFRGS).
3. Part of ZISPOA is located in Porto Alegre's historic 4th District.
4. See also Elstrodt, Manyika, Remes, Ellen, and Martins (2014).
5. Over the past year, GUD has worked with ZISPOA start-up *Pulsar* on the Entrepreneurship Challenge for more than 250 students at the UFRGS Engineering School, and collaborated with Pulsar to teach two ZISPOA strategic action courses at *Paralelo Vivo*, and two ZISPOA Next Citizens courses at *Paralelo Vivo* and other ZISPOA collaborative houses: Casa Cultural Tony Petzhold, CC100, Galpão Makers, Marquise 51 Hub Criativo and Vila Flores. A total of over 100 students participated in these courses. In November–December 2016 GUD is offering a new ZISPOA 2020 Vision and Strategy course.
6. Including Ambientalle, AtraiA, AQP Brasil, BAZ, Biciponto, *Cesta Feira*, *ChuChu*, Construert, *Corpo com Equilíbrio*, *Cria*, *Florescer*, *Gênese Social*, GUD, Green is Great, Hidrocicle, Horteria, IGS, INSPE Legado, ME, Net Impact, NutriZero, Orkestra, *Pulsar*, Plancta, Purus, *Re-ciclo*, *Reserva*, SendaViva, Shieldmaiden, weBike, UPSS, Vila Velô, and Young Energy.
7. 'Maker spaces' are shared facilities, machines and equipment for technical, mechanical and construction work by start-ups and other businesses.
8. Other initiatives include: creating a business-friendly website <www.zispoa.info> and an event-oriented Facebook page <www.facebook.com/zispoa>, hosting monthly 'Green Drinks' networking events for sustainable entrepreneurs, organising monthly ZISPOA stakeholder meetings with Pulsar to support and facilitate strategic action initiatives and group projects, developing the *Miudinho* sustainability blog by UPSS, engaging in visioning with UFRGS students from Professor Julio van der Linden's Design course and creating a TEDx Start-up Marathon with the UFRGS Engineering School.
9. Through a project called ZUNI (ZISPOA nas *Universidades*) that recently won the annual PSJúnior "Pitch Your Business" startup challenge.

“ A major focus of ZISPOA and Paralelo Vivo is on fostering start-ups and business growth among young university-educated entrepreneurs, technicians, students and social activists.





Cities must play a more prominent role in planetary problem-solving.

”

Benjamin Barber

The ingenuity of those surviving on the margins should not be over-romanticised, but nevertheless it speaks of an ability to innovate, adapt and transform.

”

Nancy Odendaal

It is just a matter of time before deeply entrenched and stale political systems will have to reinvent themselves to contend with a new political culture, more demanding citizens and the increased information-driven scrutiny that mark most African countries.

”

Edgar Pieterse

The long-held connection between urbanisation and growth that has shaped the development of the advanced cities and nations of the West has become much more tenuous in today's rapidly urbanising regions.

”

Richard Florida



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