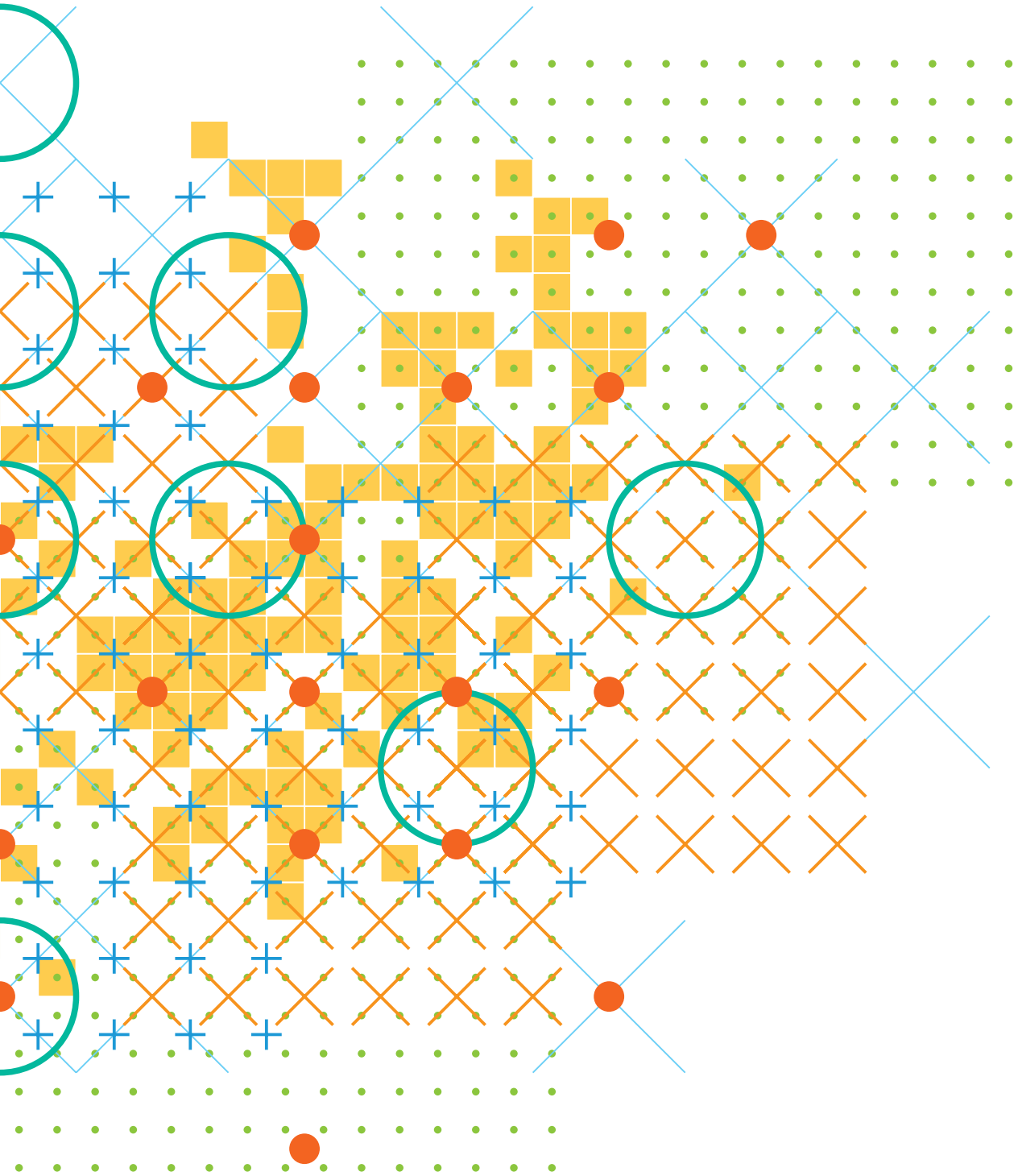
Citystates

How cities are vital to the future of sustainability



Connected
Decisive
Adaptive
Collaborative/
Competitive
Visceral
Personal
Experimental

SustainAbility

GreenBiz group

Ford

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Acknowledgements

Cities are dynamic, but rooted in history. They are places for individual expression, but also collective action. They can be viewed through the complex networking of systems or a simple walk down the street. They are a linchpin for the survival of our people and planet, but also a lever for shared progress and prosperity.

The way we think about cities and the ensuing, inevitable challenges to that thinking is a process that is, if nothing else, collaborative. We could not offer *Citystates* as a starting point to this conversation without the shared interest, inquisitiveness and efforts of a number of contributors.

— **Ford** (and a special thanks to **David Berdish**) for helping spark our thinking on this subject and continuing to support our exploration.

— **Joel Makower**, **Eric Faurot** and the intrepid **GreenBiz** team, who have been engaged and supportive partners throughout this process.

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— And the constant flow of inspiration, advice and effort from our SustainAbility colleagues, particularly **Mark Lee**, **Geoff Kendall**, **Patrin Watanatada**, **Frances Buckingham**, and **Livia Martini**. Finally, we thank **Rupert Bassett** for the report design.

Mohammed Al-Shawaf
Chris Guenther
March 2012

Chris Guenther
Senior Associate, SustainAbility
guenther@sustainability.com

Mohammed Al-Shawaf
Manager, SustainAbility
al-shawaf@sustainability.com

Foreword
GreenBiz

From a business perspective, the question related to cities and sustainability is clear and compelling: Can you have a healthy company in an unhealthy city? Arguably, no. Companies need healthy cities to provide reliable infrastructure, an educated and vital workforce, a vibrant economy, and a safe and secure environment to survive and thrive. As such, the sustainability of cities and business are inextricably linked.

This symbiotic relationship can have a highly salutary effect. Business, as engines of innovation and ingenuity, can play critical roles in engendering sustainability at the local level. Given the right system conditions, a thriving business community can offer a wealth of solutions to provide clean air and water, a robust transportation network, food and energy security, adequate and ample housing, and the environmental, social, and economic success that is at the heart of sustainability.

My colleagues and I at GreenBiz Group, which operates at the nexus of business, innovation, and sustainability, have been exploring how business and cities can support their respective sustainability goals. Our VERGE initiative looks at the convergence of energy, information, building, and transportation technologies, and how they combine to accelerate radical efficiency and enhance lives. But VERGE is about more than technology. It is also about the convergence of players — companies with their customers, suppliers, and competitors; with civic leaders and community groups; and with social entrepreneurs, academics, and others. VERGE is about harnessing technology to bust silos and foster dialogue and collaboration to address our most pressing social and environmental challenges.

And, without doubt, the center of VERGE is in cities, with all of their problems and potential. That is why we are pleased to collaborate with SustainAbility in exploring the notion of *Citystates*. As this paper makes clear, there are enormous opportunities to align the interests of business and cities in pursuing innovative solutions that lead to healthy companies and healthy communities, in every sense of the word.

Joel Makower
Chairman and Executive Editor
GreenBiz Group Inc.

Joel Makower
Chairman and Executive Editor
GreenBiz Group Inc.

Foreword

Ford Motor Company

A business model built on private ownership of automobiles comes with its inherent challenges, all of which are directly influenced by emerging mega-trends. Urbanization is one of these and navigating the myriad risks and opportunities of growing cities will not only determine the future course of the Ford Motor Company, but the kind of global society we want to be a part of.

The scale of this challenge, like many of the sustainable development issues we face today — water scarcity, sustainable economic development, climate change, poverty — is so great that it can almost seem debilitating. When this occurs, it's useful to look at the problem in a different way and through a different lens. We see value in being challenged to think differently and find inspiration from unlikely sources, and that is why we are proud to partner with SustainAbility on *Citystates: How Cities are Vital to the Future of Sustainability*.

Just as our business is being shaped by emerging and established cities — from where we locate our manufacturing base and supply chain to who our future customers are, where they will live and how they will get around — our collective futures are increasingly being shaped by cities. The lessons that form the heart of *Citystates* compel businesses to look to cities, not only as sources of incredible risk and opportunity, but as models of attributes like connectivity, adaptability and experimentation. While these and other characteristics may be placed in the city, they live outside of them too, and are particularly critical to our ambitions to be a global provider of sustainable mobility.

John J. Viera
Director, Sustainability & Vehicle Environmental Matters
Ford Motor Company

John J. Viera
Director, Sustainability &
Vehicle Environmental Matters,
Ford Motor Company

Executive Summary

In the 21st century, cities will increasingly be the frame through which we understand and shape our shared economic, political and cultural circumstances. They will also be ground zero for the collision of economic, environmental and social imperatives that define sustainability. Together, these facts suggest that in proactively addressing the challenge of urban sustainability, business and others may have an opportunity to harness the power and positive characteristics of cities to drive sustainability more widely.

It is in this context that Citystates proposes a pair of related hypotheses: (1) sustainability needs cities as much as cities need sustainability, and (2) business and others should view cities as an increasingly crucial and constructive frame through which to understand and pursue sustainability. Specifically, we see cities as both *linchpins* and *levers* for sustainable development, and a source of potential *lessons* for how to drive the sustainability agenda forward.

— **Linchpins** As cities come to house more and more people, metabolize a greater share of resources, and further shape the broader physical, economic and social landscape we inhabit, their sustainability becomes key to planetary sustainability.

— **Levers** As hotbeds of innovation, cities could effect the speed and efficiency with which we develop new sustainability solutions. Furthermore, because of their growing power and influence, cities may provide a crucial means for replicating and driving successful solutions to scale.

— **Lessons** Many cities are setting the example for how to confront challenging issues head-on. As such, they provide numerous lessons for how to address sustainability challenges more widely.

At its core, *Citystates* posits seven characteristics, or *states* — summarized in the adjoining table — that we see as key to advancing sustainability both within and beyond the city, and asks what business particularly can learn and/or contribute to improve their potential.

For us, this work confirms that cities must become an even greater focal point of sustainable development, and that through nurturing their particular strengths and attributes, we may improve the potential of cities' own sustainability and that of the planet, all while contributing to a more vibrant economic future.

	Challenge	Opportunity	Business Action/Application
The Connected City	Trust, and the collaboration it engenders, is essential scaffolding for solutions that address sustainability.	The combination of technological integration and the intrinsic social ties of cities are leading to latent opportunities with the potential to deepen a sense of community.	— Explore business models that reinforce social connectivity and community, attributes that are key to sparking and spreading innovation and sustainability. — Ensure techno-centric efforts within cities are participatory and not dislocated from the majority of citizens.
The Decisive City	National and global governance is not progressing sustainability issues (e.g. climate change) fast or far enough.	The urgency of sustainability challenges within cities coupled with mayors' domain over a host of sustainability levers (e.g. transport, waste, water), and requisite levels of accountability, engender decisive action.	— Partner with decisive cities that have the willingness and ability to commit to action and follow through on it. — Break corporate governance layers, fit major sustainability levers under CEO. — Tie areas of major sustainability-related risk to CEO pay.
The Adaptive City	Sustainability-related impacts are reshaping our environment and society at a rapid and escalating pace. Adaptation (of institutions, spaces, and ways of operating) is necessary for survival.	Cities are among the most adaptable structures in society, especially when compared to corporations, although their inherent adaptability is far from inevitable.	— Align sustainability objectives/agendas with cities to ensure mutual adaptability. — Mitigate risk and bolster resiliency through localization, decentralization. — Encourage and incubate serendipitous interactions between employees.
The Collaborative/ Competitive City	Competition for sustainability leadership is a primary driver for action, but systemic change, the kind increasingly needed on a variety of issues, requires business to revisit the boundaries of what is proprietary in order to move beyond incremental progress.	The healthy tension between peer-to-peer collaboration and economic and brand competition among cities has potential to drive precompetitive sustainable innovation and rapid diffusion of solutions.	— Define the precompetitive arena through discrete, pilot initiatives that test the boundaries of the previously competitive. — Differentiate on brand, allowing aspects of sustainability performance to be precompetitive, bolstering, but not defining market positioning.

	Challenge	Opportunity	Business Action/Application
The Visceral City	Urgency and corresponding action begins with awareness, and for many critical sustainability issues (e.g. climate change, energy/water use, poverty), impacts can be difficult to identify.	Urban living is shaped by numerous real and potential feedback loops, most acutely in the global South but beyond it as well, spurring greater awareness and urgency.	— Review sustainability prioritization and process for reevaluation/geographic segmentation in light of Southern cities as new locus points for delivering sustainable outcomes. — Support/incubate awareness-raising systems to operate at scale, helping drive behavior change.
The Personal City	The sustainable development imperative can often feel removed from the day-to-day lives, interests and ambitions of most citizens, making collective action (and in some cases, sacrifice) less urgent.	The influence of shared identity and values is a particularly powerful driver of individual and collective action.	— Avoid leveraging superficial identities of cities in order to appeal to urban consumers, favoring "values-driven" engagement instead. — Engage citizen-consumers' core values, and be comfortable pushing them to take action on these values (e.g. focusing on product use phase).
The Experimental City	The scale and scope of sustainability challenges require innovation — in the form of new thinking, different business models and nontraditional alliances.	Cities are ideal laboratories for sustainable development because of the presence of research and development ecosystems, low barriers to entry for nontraditional actors, and the ability to transplant key characteristics of a sustainability experiment in one city to parallel experiments in other cities.	— Employ the city as a sustainable development lab, locating new initiatives at the city level in order to take advantage of efficiencies, responsive feedback systems, and place-based inspiration.

Introduction

The Urban Century

Cities are currently in vogue. There is scarcely a major magazine or newspaper that hasn't run a feature on the growing influence of cities, or their status as beacons of innovation and hope in an uncertain world. Meanwhile, the effort to understand and cope with the anticipated "urban tsunami" in the developing world is capturing ever-greater attention within business, academic and policy circles.

It is tempting to dismiss some of the frothier rhetoric — at one end of the spectrum, exuberance over the technological and economic prowess of modern cities; at the other end, a sense of looming catastrophe as the unbounded growth of megacities crashes into the limits of planetary capacity and traditional models of governance. And yet, it is difficult to argue with the trends that drive this growing obsession.

In the 21st century, cities will increasingly be the frame through which we understand and shape our shared economic, political and cultural circumstances. They will also be ground zero for the collision of economic, environmental and social imperatives that define sustainability. Together, these facts suggest that in proactively addressing the challenge of urban sustainability, there may also be an opportunity to harness the power and positive characteristics of cities to drive sustainability more widely.

Cities + Sustainability + Business

"Our shared future will largely come about through the social, political, economic, and cultural dynamic that is urbanization — the convergence of human activity and aspiration in all cities, regardless of size."
UN-HABITAT
State of the World's Cities Report 2010–2011

As researchers and consultants concerned principally with the role and opportunity for business in sustainable development, we are especially interested in what the nexus between cities and sustainability implies for companies both large and small.

Together with our partners at GreenBiz (which is exploring this powerfully through its VERGE conference series) and Ford Motor Company (which has been exploring innovative products and business models related to urban mobility for many years), we see the sustainability agendas for business and cities intersecting in interesting, meaningful and increasingly vital ways. For cities, businesses bring the skills and technologies needed to address a growing array of sustainability challenges. For companies, cities are critical to operations, increasingly central to the lives of both customers and employees, crucial platforms for innovation and, in turn, potential catalysts for long-term prosperity and sustainability.

Cities Need Sustainability; Sustainability Needs Cities

Citystates began in part as an effort to further explore this essential interplay among cities, sustainability and business. But more than merely underlining the need for greater sustainability of cities, and/or the unique role of business in ensuring it, we sought too to explore and define the potential positive role that the nexus between cities and sustainability could play, particularly at a moment when many agree both the corporate and overall sustainability agendas are still failing to take hold as quickly or as widely as necessary.

"...not only do cities provide examples of how we can best drive sustainability within them, they also offer critical clues and mechanisms for how we might accelerate progress on the sustainability agenda as a whole."

As we dug further into these topics, we began seeing promising examples of how sustainability challenges are being addressed in sometimes new and successful ways in the context of cities. For example, while efforts to establish meaningful national or international-level climate policies are largely stalled (or, in some cases, moving backward), many of the world's most influential cities are charging ahead with ambitious approaches to both mitigation and adaptation. And while many companies are still struggling to integrate business and sustainability imperatives at the macro level, the same isn't really true at the level of the city, where both big companies and a new class of entrepreneurs are developing and testing an array of new technologies and business models that address market needs arising particularly in today's dynamic and challenging urban environments.

We began to think, not only do cities provide examples of how we can best drive sustainability within them, they also offer critical clues and mechanisms for how we might accelerate progress on the sustainability agenda as a whole. This led to a pair of related hypotheses: (1) sustainability needs cities as much as cities need sustainability, and (2) business and others should regard cities as an increasingly crucial and constructive frame through which to understand and pursue sustainability.

Citystates

To explore and test this line of thinking, we drew from a variety of existing literature and commentary on the topic of cities, and interviewed several urban stakeholders and thought leaders from public agencies, academia and business. We combined these perspectives with observations and insights from our own ongoing trend tracking and our work with clients, in order to identify the essential means through which cities may drive their own and society's potential for sustainability.
The results of this work are presented in the following sections:

2 **Rise of the (Sustainable?) City** considers the nature and extent of cities' growing global influence and importance, the growing challenges they face in the decades ahead, and both the inextricable and potentially positive linkages between them and sustainability.

3 **Citystates** defines and explores the seven essential characteristics, or states, we see underpinning the mutually beneficial relationship between cities and sustainability, and considers how business and other urban stakeholders can learn from and/or apply each one to drive sustainability.

4 **Final Remarks** reflects on the key insights and implications of the preceding sections, and outlines further questions.

We welcome feedback and additional insights in response to this paper, and we hope it will foster an ongoing discussion on this critical topic.

Rise of the (Sustainable?) City

Let's begin with a qualification: It is a dangerous thing to attempt to generalize about cities. This was the warning of one of the interviewees for this paper, and it stunned us slightly to hear it. But it's right: Globally, cities are as diverse and dynamic as you could imagine, and no matter how many cities you spend time in, the true nature of any given one only ever gradually reveals itself.

Then again, there are common circumstances and traits, and a confluence of macro trends, which make cities a useful — even if not flawless — frame through which to view the world, not least for many of the companies we work with every day.

As we hurtle toward a more urban future, cities are where many of the greatest risks and opportunities will play out for business. They will be home to the next generation of employees and customers, who will drive demand for and creation of radically new products and services tailored to the growing challenges and benefits of urban life. They will provide essential infrastructure, and host ever-greater flows of information, goods, capital and ideas that are vital to business innovation and success. They will also be hotspots for resource constraints, pervasive poverty, corruption and disruptions due to climate change — challenges that, if ignored, threaten to derail both business and society as a whole.

It is essential then that business, government and civil society increasingly work together, in the context of cities, to achieve system-level change aimed at sustainability.

"As we hurtle toward a more urban future, cities are where many of the greatest risks and opportunities will play out for business."

Return of the City-State

Though cities have always been important, their influence and significance are suddenly resurgent. This is partly a function of demographics, as the separate forces of population growth and rural-to-urban migration are combining to make urban life the norm for a growing number of people around the world. It's now expected that the number of city dwellers, already slightly more than half the world's population, will nearly double to 6.3 billion, or 70% of the total, between now and 2050.[1]

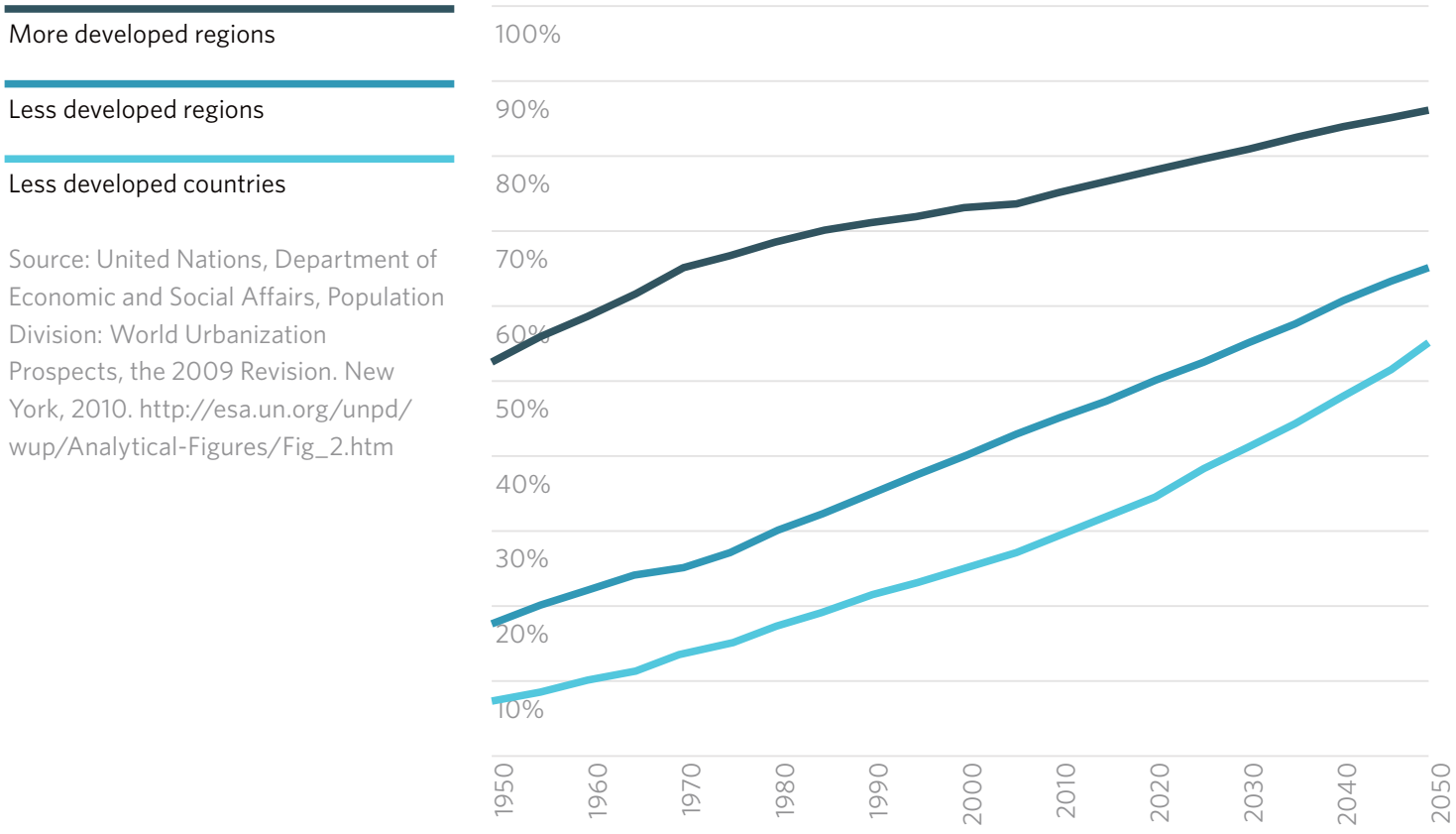
But the resurgence is also driven by economics, which create most of the pull that draws rural populations inward, and which confer ever-greater power and influence on the cities that are most productive. Together, cities currently account for roughly 70% of global GDP and will contribute the majority of economic growth in the decades ahead.[2]

"Today, people think of the world as a network of cities — not a network of countries. We visit London, Paris or Rio de Janeiro, not England, France or Brazil."
192021.org

At the same time, the world is growing more networked — digitally, economically, socially — with cities serving as its primary hubs, increasingly vital to the organization and function of the system as a whole.

All of this is helping to supercharge the influence of cities on a global scale, to the point that a modern form city-state is emerging. While few are literally sovereign entities, in so many other ways, today's most important cities — London, New York, Delhi, Beijing, Johannesburg, Rio de Janeiro, etc. — are evocative of the ancient city-states of Mesopotamia, Athens, Rome and others: regional powerhouses that largely define the economic, political and cultural geography of their surroundings, and well beyond.

Urban population by major development regions
Per cent of total population



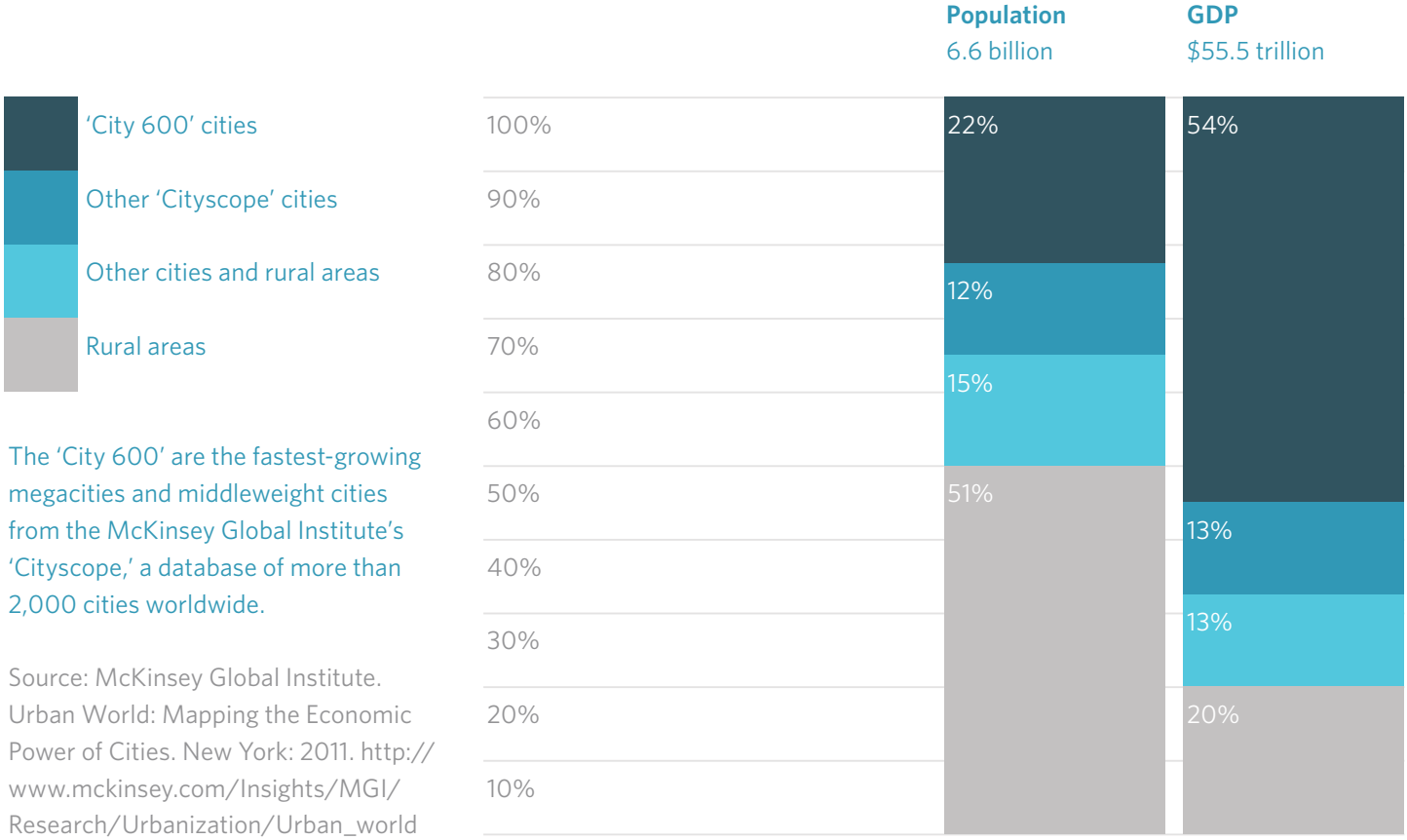
Source: United Nations, Department of Economic and Social Affairs, Population Division: World Urbanization Prospects, the 2009 Revision. New York, 2010. http://esa.un.org/unpd/wup/Analytical-Figures/Fig_2.htm

"City-state, a political system consisting of an independent city having sovereignty over contiguous territory and serving as a centre and leader of political, economic, and cultural life."
Encyclopedia Britannica

But this story isn't just about megacities — defined as cities with populations of 10 million or more. Many medium-sized cities exert a wide influence as well. A 2011 McKinsey study (citing 2007 data) found that while the world's 23 megacities contributed 14% of global GDP, 577 "middleweights" (those with populations of 150,000 to 10 million, such as Chicago, Taipei, Chengdu, etc.) together contributed another 40%, a share that will grow by 2025 and beyond.[3]

Recognizing this urban topology — with its lattice of megacity and middleweight hubs, and the dynamic interactions among them — will be increasingly crucial for how we understand and navigate the world in this century, and how business and others create economic value.

Global Population and GDP 2007



The 'City 600' are the fastest-growing megacities and middleweight cities from the McKinsey Global Institute's 'Cityscope,' a database of more than 2,000 cities worldwide.

Source: McKinsey Global Institute. Urban World: Mapping the Economic Power of Cities. New York: 2011. http://www.mckinsey.com/Insights/MGI/Research/Urbanization/Urban_world

Innovation, Productivity and Promise

The power and importance of cities derives not just from their relative size and economic clout, but from the way they foster innovation and a level of productivity that is greater than the sum of its parts.

Indeed, one of the most familiar (and justifiable) refrains about cities is their capacity for innovation. The Harvard economist and leading urban thinker Edward Glaeser writes that, "The crush of people living in close quarters fosters the kind of collaborative creativity that has produced some of humanity's best ideas, including the industrial revolution and the digital age." [4] Glaeser exalts historic and contemporary innovation clusters, from Mesopotamia and Birmingham to Silicon Valley and Bangalore, arguing that the virtues of proximity have not only survived globalization and the proliferation of technologies, but that they've "become ever more valuable as the cost of connecting across long distances has fallen." [5]

Meanwhile, others point out that as cities grow, they are inherently more productive. The physicist-turned-urban-theorist Geoffrey West, with his Santa Fe Institute colleague Luis Bettencourt and other researchers, has demonstrated how almost as a rule, cities achieve ever-greater economies of scale as they grow. They say that this general multiplier effect, known as "superlinear scaling," results from the way urban agglomeration intensifies social interactions and leads to better-developed infrastructure, which in turn increase the speed and efficiency of the whole system (see *The Adaptable City*, below).

It is no wonder then that we continue to see such promise in cities, and that we recognize the seemingly inextricable link between urbanization and broader human progress.

Sustainability Not Guaranteed

For all the excitement about cities, it's useful to remember that most of them — certainly the sprawling, chaotic megalopolises now emerging in the developing world, but also many of their smaller and more prosperous brethren — face huge challenges in this century. Nearly every significant global issue — from income disparity to food, water and energy security and climate change — is amplified in cities, and the complex interaction among these issues only makes the situation more challenging.

Even a modest summary of statistics serves to illustrate:

— **Resources** Cities, which cover only 2% of the world's surface and house 50% of its citizens, already claim 75% of global resource consumption[6] and two-thirds of its energy consumption.[7] The vast number of urban dwellers seeking increasingly higher standards of living may drive us inexorably toward a catastrophic resource crunch.

— **Infrastructure** The World Economic Forum estimates we "will have to build the same urban capacity (housing, infrastructure and facilities) in the next 40 years that we have built over the past 4,000 years" in order to meet the demand arising from this unprecedented urbanization.[8]

— **Inequality** Nearly one billion people inhabit urban 'slums,' and that number will grow by 500 million by 2020.[9] Meanwhile, increasing urbanization illuminates persistent and prevailing income inequality, setting the stage for potentially dangerous societal conflicts.

— **Climate Change** Human settlements, particularly in coastal cities and urban shantytowns, will be increasingly vulnerable to the effects of climate change, including rising sea levels, more frequent and stronger storms, reduced access to resources and disruption of basic urban services.[10]

— **Food Security** The UN Food and Agriculture Organization has observed that "because the majority of urban dwellers are net food buyers and spend a large part of their disposable income on food," rising urbanization "could further increase [their] vulnerability...to sudden shocks in agricultural markets," and resulting food crises could spawn increasing conflict in cities around the world.[11]

What these growing and seemingly intractable challenges suggest is that despite the apparent primacy of cities today, their continued flourishing is far from assured. With the threat that unbounded growth will collide with limited resources and trigger a chain reaction of economic disruption and social unrest, there is real worry that some cities will become unmanageable and inevitably collapse.
Therefore, as urbanization continues apace, policy-makers and other urban stakeholders recognize that cities must be increasingly designed and managed with sustainability as a key goal.

Sustainability Needs Cities, Too

The link between the potential positive and negative impacts of urbanization and the growing influence of cities — the promise of greater innovation and productivity on one hand, and the threat of unsustainable growth and possible system failure on the other — is what led us to conceive this paper. But more than merely underlining cities' growing need for sustainability (which many others have already capably done), we sought to explore a potentially positive role that the nexus between cities and sustainability could play, and what that could mean for a range of stakeholders, especially business, which faces ever-growing pressure to proactively drive global sustainable development.

This led us to form one of the central ideas for this paper, that sustainability needs cities as much as cities need sustainability. In particular, this view is framed by cities' role as *linchpins* and *levers* for sustainable development, and by the many potential *lessons* they offer for how to drive the sustainability agenda forward.

— **Linchpins** As cities come to house more and more people, metabolize a greater share of resources, and further shape the broader physical, economic and social landscape we inhabit, their sustainability becomes key to planetary sustainability.

— **Levers** As hotbeds of innovation, cities could effect the speed and efficiency with which we develop new sustainability solutions. Furthermore, because of their growing power and influence, cities may provide a crucial means for replicating and driving successful solutions to scale.

— **Lessons** Many cities are setting the example for how to confront challenging issues head-on. As such, they provide numerous lessons for how to address sustainability challenges more widely.

"Sustainability needs cities as much as cities need sustainability."

In the remainder of this paper, we explore and test these ideas through the lens of what we call *citystates* — essential characteristics or advantages that will drive both cities' own sustainability efforts and their potential to contribute to sustainability overall.

Citystates

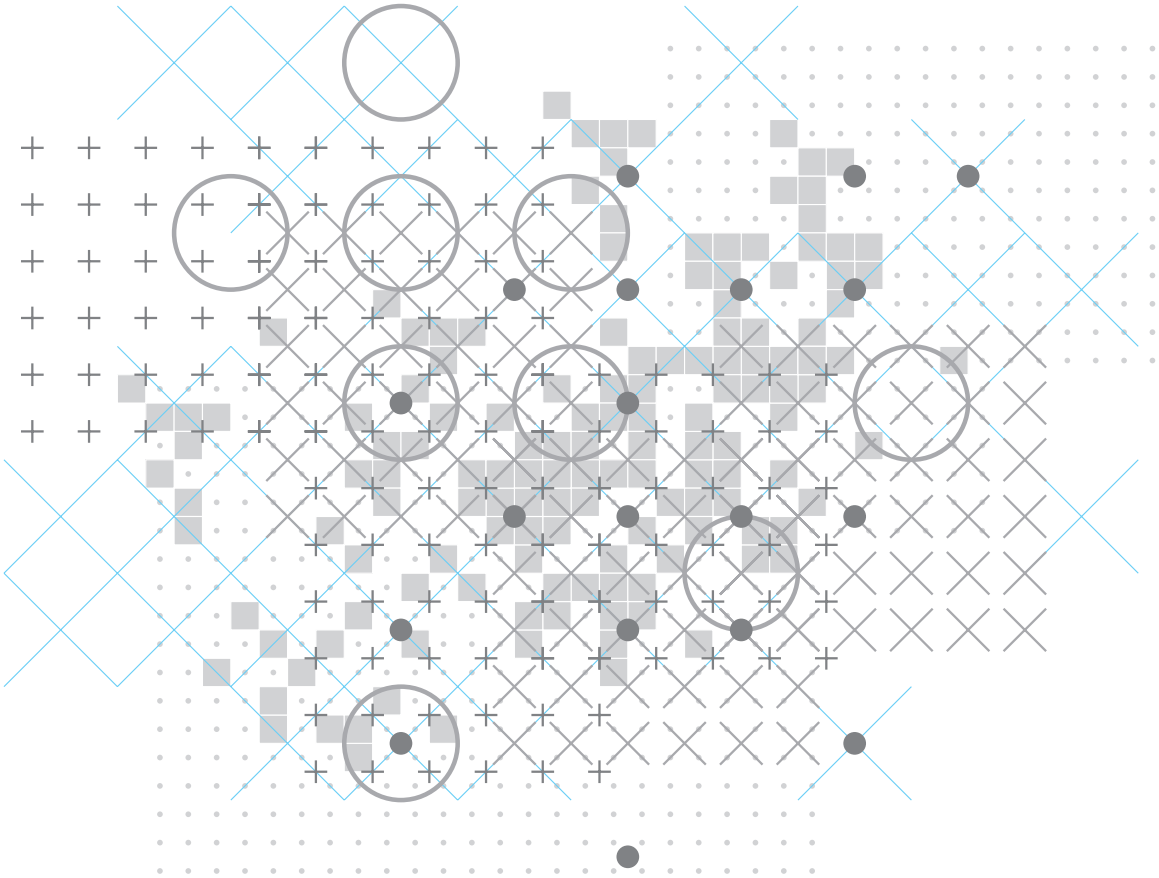
We posit seven characteristics, or states, that underpin the mutually beneficial relationship between cities and sustainability. Within each, we also explore the emerging ways that business can support and leverage the citystate to propel sustainable development both within and beyond urban environs. These are neither exhaustive as attributes needed to spark progress on the sustainability agenda, nor inclusive of all the intrinsic advantages that cities have to spur sustainable development. However, these seven citystates exemplify the promise and potential of the increasingly critical relationship between cities and sustainability.

The Connected City

Urban connectivity has a digital and human face, and the ability of cities and business to hold these together in parallel is essential for spurring new business models that deepen traditional societal bonds like community, trust and collaboration.

These days, a "connected city" is more often defined as a city that has, or is in the process of building, integrated and networked systems, creating the potential for unprecedented efficiency, collaboration and innovation. The more widely used concept of the "smart city" has become ubiquitous with the idea that the integration of information technology — leveraging enormous amounts of data culled from smart meters and smart sensors in everything from waterways to power grids — can enable what Pike Research describes as "a strategic approach to sustainability, citizen well-being, and economic development." ABI Research forecasts that investment in the smart city market, which includes "smart" versions of utilities, transport, buildings and government, will total $39.5 billion in 2016 alone.[12]

One example of how the potential and enthusiasm around this trend is being manifested in both the public and private sectors is VERGE. Launched in 2011 by the sustainability media company GreenBiz Group (a co-sponsor of this paper), VERGE focuses on the convergence of four technologies — energy, information, buildings, and transportation — and explores the emerging opportunities for radical improvements in efficiency, new business models and sustainability in cities.



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Municipalities, thanks in large part to companies like GE, IBM, Cisco and others, are digitally weaving their own connective tissues and building intelligence into city infrastructure. Dan Hill, author of the imaginative essay "The Adaptive City," refers to the urban transformation taking place as a "new kind of lattice-like informational membrane, hovering magically over the physical fabric of the city." [13]

But, for all the techno-centric buzz about what the city is becoming or could be, how much hope should we place in these digitally integrated systems, as opposed to socially integrated communities? Research has shown that the value of the most traditional social interactions, such as face-to-face meetings, have grown more, not less, important for sparking and spreading ideas.[14] In an innovation-obsessed global economy, social linkages — aided by technology but cemented by the greater levels of trust and collaboration borne from urban density — are emerging as a new global currency.

This is not to say that we must talk in either/or dichotomies. We need both, the technological and the social, and the rise of the "sharing economy," also referred to as "collaborative consumption" — everything from Netflix to carsharing and bikesharing — is an example of the power of bringing community and technology together.[15] Lisa Gansky, an entrepreneur and author of *The Mesh: Why the Future of Business is Sharing*, relates the success of these new business models (all of which have digital backbones) to the inherent attributes of place, writing that "density deepens community and creates demand for shared products and services...[which] really favors the sharing economy." [16]

The pleasure and prosperity we derive from these possibilities of *The Connected City* make dampening the mood difficult, but we must ask an increasingly necessary question: in cities that are layering technological connectivity atop social connectivity atop still more digital connections, how do you account for those who have been *disconnected* from the process? David Berdish, Social Sustainability Manager of Ford, echoed this caution when we spoke to him, remarking that in a number of multi-stakeholder meetings he has attended in (primarily developed) cities, the conversation has too often focused on the seamless, integrated system in place of the people it is purporting to serve. "No one ever asked the people 'What do you need?'" said Berdish.

Challenge	Opportunity	Business Action/Application
Trust, and the collaboration it engenders, is essential scaffolding for solutions that address sustainability.	The combination of technological integration and the intrinsic social ties of cities are leading to latent opportunities with the potential to deepen a sense of community.	— Explore business models that reinforce social connectivity and community, attributes that are key to sparking and spreading innovation and sustainability. — Ensure techno-centric efforts within cities are participatory and not dislocated from the majority of citizens.

Striving for urban systems to be sustainable, and designed so that people who live in such cities are at the center of the planning process, is a sentiment Bharat Wakhlu, Resident Director of the Tata Group in Delhi, restated in an interview. "Integrated urban planning is a process, yet it is most effective when it, first and foremost, places the individual and the spectrum of human needs at its heart. If this is not done, and if the hyperbole of 'technology will solve all problems' is prioritized above all else, then there can be a serious problem."

Malcolm Smith, Director of Integrated Urbanism at the global engineering firm Arup, while acknowledging to us that "integrated systems are techno-centric," also posited his belief that they are no more than a baseline for discussion, an "accepted [ambition] that has to be addressed." Aligning with Berdish and Wakhlu's sentiments, Smith said the inclusivity challenge must drive intelligent systems to be "locally relevant" and to connect "culturally" as much as they are designed to connect through infrastructure networks.

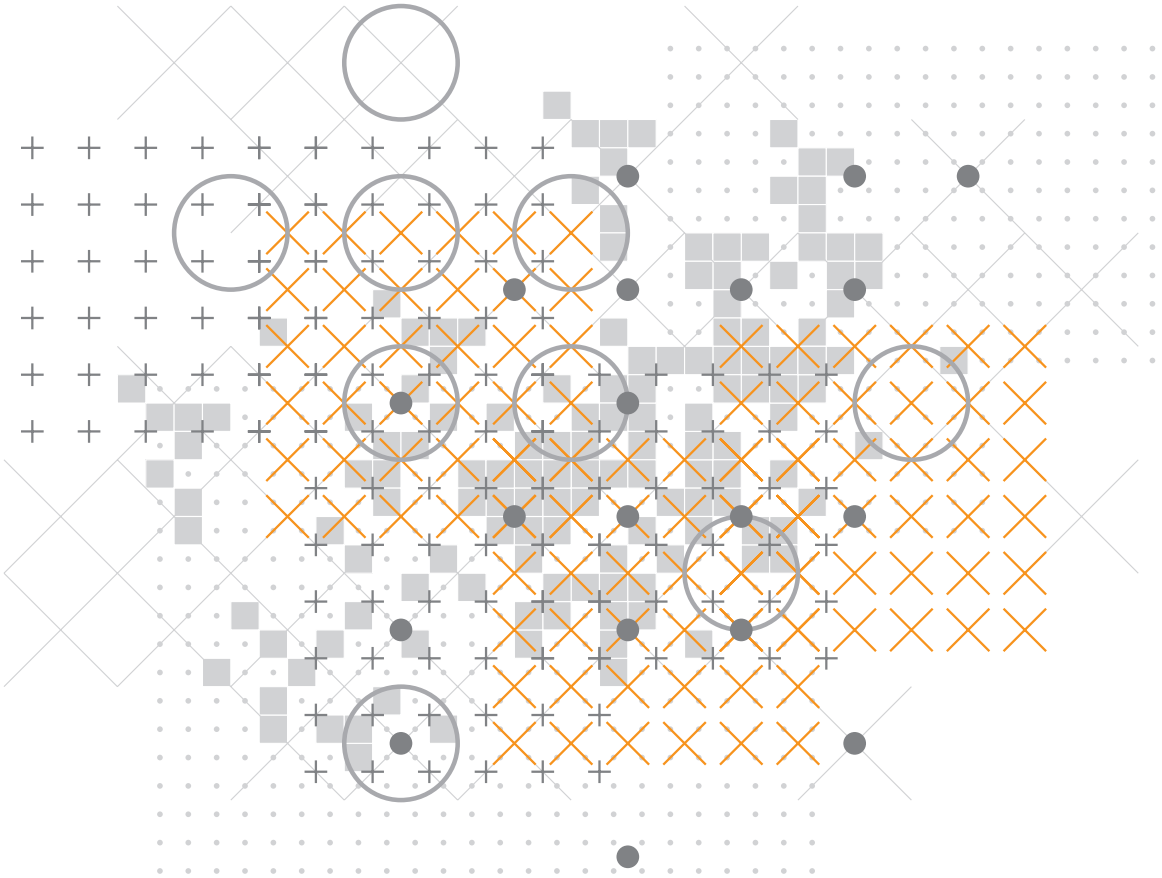
The Connected City is fundamentally about the value of community, trust and collaboration, the ways in which cities enable us to build and apply these advantages at scale, and now, the way that technology is pushing the boundaries even farther. The key for business, then, is to simultaneously strengthen the technological *and* social bonds of the city, revealing more of these latent advantages. Building the capacity of "smart" cities is a start, but that process as it stands is still largely removed from the day-to-day social interactions of citizens. Businesses should strive to make the technological revolution it is ushering in more participatory, creating a forum that enables both wider and tighter social connections, the kinds that have proven themselves so vital to innovation, prosperity and sustainability.

The Decisive City

"As mayors — the great pragmatists of the world's stage and directly responsible for the well-being of the majority of the world's people — we don't have the luxury of simply talking about change but not delivering it." This quote, from New York City Mayor Michael Bloomberg, is emblematic of the assertiveness of many of today's city leaders and speaks to the opportunity for business to partner with decisive cities in order to achieve its sustainability ambitions. That decisive tack can be seen across a number of sustainability issues, but perhaps none as clearly defined as climate change.

A 2011 report co-authored by Arup and C40, a global network of cities committed to climate change initiatives, found that the 58 large cities that comprise the C40 have undertaken 4,734 "actions" over the last five years, a large number that, if nothing else, underscores the ability and desire of cities to act now. These actions span a wide range of sectors and resources — transport, energy, buildings, waste management and water. An important component of this remarkable progress, especially when viewed side-by-side with the US's lack of a comprehensive climate policy or the halting pace of the United Nations' process to broker a global consensus on climate change, is the fact that city mayors have their hands on the major levers of mitigation and adaptation in their cities.

Dr. Rohit Aggarwala, special advisor to Mayor Bloomberg in his role as C40 chair, stresses that, "Mayors control the streets in most of their cities. Half of our mayors control their transit system. Most mayors have either direct control or significant control over planning decisions...[and] at least some influence over the standards to which their buildings are built." He concludes: "At the end of the day, waste, water, energy consumption and buildings and transportation policy — those are the jobs of mayors in cities." [17]



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But decisiveness on an issue like climate change does not stem just from the broad, interconnected purview of a mayor. In absence of the "luxury" that Mayor Bloomberg mentioned, the sense of urgency in cities is more palpable (see *The Visceral City*), and mayors may more acutely feel the pressure to deliver constrained services to swelling populaces, all in the face of escalating resource depletion. For a company looking for an able and willing partner to support its own sustainability ambitions, placing initiatives within *The Decisive City* may remove some of the structural roadblocks often cited by businesses when working on a global or national scale.

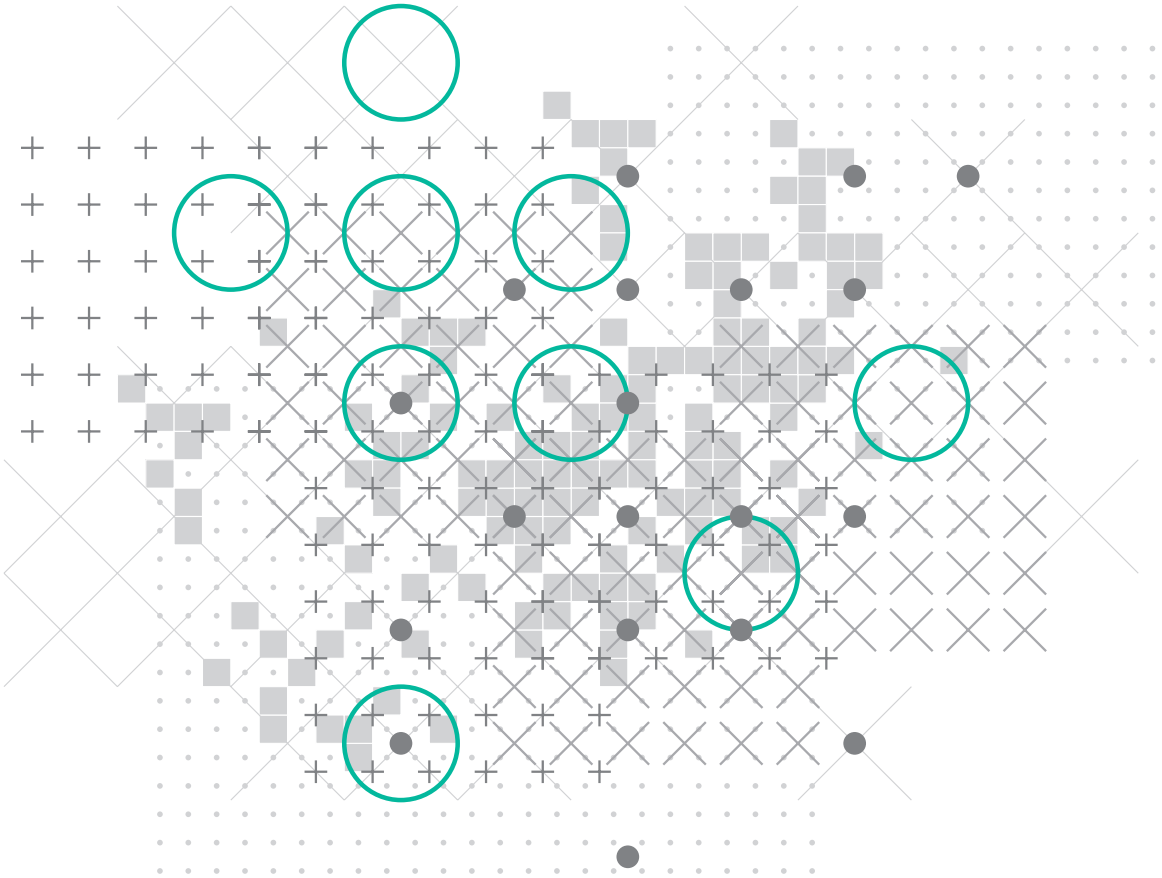
The combination of capability and urgency does not, on its own, make city leaders more accountable for decisive action, but it sure helps. Imagine if chief executives in business shed the multiple, myriad governance and management layers between themselves and their company's sustainability activities. And if those same chief executives, stewards against all significant risks to their enterprises, were held accountable (in the form of performance-based pay) for their ability to mitigate and adapt to these risks. Could we see a *decisive* change in course, not only on climate change, but across all issues embedded in these leaders' domains?

Challenge	Opportunity	Business Action/Application
National and global governance is not progressing sustainability issues (e.g. climate change) fast or far enough.	The urgency of sustainability challenges within cities coupled with mayors' domain over a host of sustainability levers (e.g. transport, waste, water), and requisite levels of accountability, engender decisive action.	— Partner with decisive cities that have the willingness and ability to commit to action and follow through on it. — Break corporate governance layers, fit major sustainability levers under CEO. — Tie areas of major sustainability-related risk to CEO pay.

The Adaptive City

Physicist Geoffrey West can tell you when "Microsoft and Google will eventually die." [18] Based on his (and colleague Luís Bettencourt's) modeling of 23,000 companies, these lions of commerce and culture have an expiration date explained by their sublinear productivity. That is, as corporations' numbers swell, their per-employee profit shrinks. The researchers contrast the sublinear nature of corporations to the "superlinear scaling" of cities, noting that when a city "doubles in size, every measure of economic activity, from construction spending to the amount of bank deposits, increases by approximately 15 percent per capita." [19] As Bettencourt and West aptly sum up in a 2010 article penned for Nature, "Cities are driven by social interactions and this...dynamic allows the growth of cities to be unbounded: continuous adaptation, not equilibrium, is the rule." [20]

West and Bettencourt's findings help confirm a fairly straightforward but profound truth: Cities are an inherently adaptable species, potentially offering lessons to their sublinear corporate counterparts. Take the authors' point about social interactions. West is fond of writing that "cities tolerate crazy people [while] companies don't."[21] In an attempt to shatter that polarity, companies like Google and scores of other (primarily tech) start-ups have made room for "unstructured" work time, yoga classes and regular Bring Your Dog to Work days.[22] Zappos, the online shoe and clothing retailer, goes one step further in emphasizing the inherent connections and culture of the city, by literally embedding the company into the city. CEO Tony Hsieh pledged to invest "$350 million to develop and build a small city" in downtown Las Vegas, Nevada.



Among the key benefits Hsieh anticipates are "the spontaneous 'collisions' between people [that] spark ideas[,]...facilitate relationships [and] lead to stronger ties — and stronger ties lead to more ideas." [23] That is, by putting people in close proximity amid the hubbub of urban life, he anticipates the kind of serendipitous collaboration and innovation innate to *The Connected City* will inure to Hsieh's company.

It is important to note that the *inherent* adaptability of cities is not the same as their *inevitable* adaptability. Also referenced under *The Connected City*, the "smart city" market is skyrocketing precisely because of the existential threats of urbanization and municipalities' strained capacity to deal with them. Of our small sample of interviewees based in Southern megacities around the world, all cautioned of the precarious state of people and planet in a rapidly urbanizing world. John Elkington, Founding Partner and Executive Chairman of Volans (and founder of our firm SustainAbility), sits outside of this subset, but posited a similar uncertainty: "When we look back in 100 years, we may look at [megacities] as failed experiments."

All the more reason to "break down the megacity," said Arup's Malcolm Smith. As more and more elements of the sustainability agenda are aligned with risk mitigation (or in Smith's words, as sustainability is increasingly used "as a tool to synthesize diverse risk parameters"), the imperative grows to distribute that risk and the resources needed to counteract them. "We have the capacity to decentralize and localize and because of risk, we have to," said Smith.

Distributing risk to bolster resiliency should sound familiar to multinational companies. Lean, globalized supply networks have shown themselves to be increasingly vulnerable following the wave of disruptions in 2011 — from disasters in Japan and Thailand to unprecedented upheaval in the Middle East. Will more businesses see the value of "breaking down" their supply chains to become more resilient? Will the "hyperlocalization" of even the largest megacities find a parallel in localized supply chains, with longer, deeper and more decentralized relationships creating valuable hedges in an environment of increased volatility?

Challenge	Opportunity	Business Action/Application
Sustainability-related impacts are reshaping our environment and society at a rapid and escalating pace. Adaptation — of institutions, spaces, and ways of operating — is necessary for survival.	Cities are among the most adaptable structures in society, especially when compared to corporations, although their inherent adaptability is far from inevitable.	— Align sustainability objectives/ agendas with cities to ensure mutual adaptability. — Mitigate risk and bolster resiliency through localization, decentralization. — Encourage and incubate serendipitous interactions between employees.

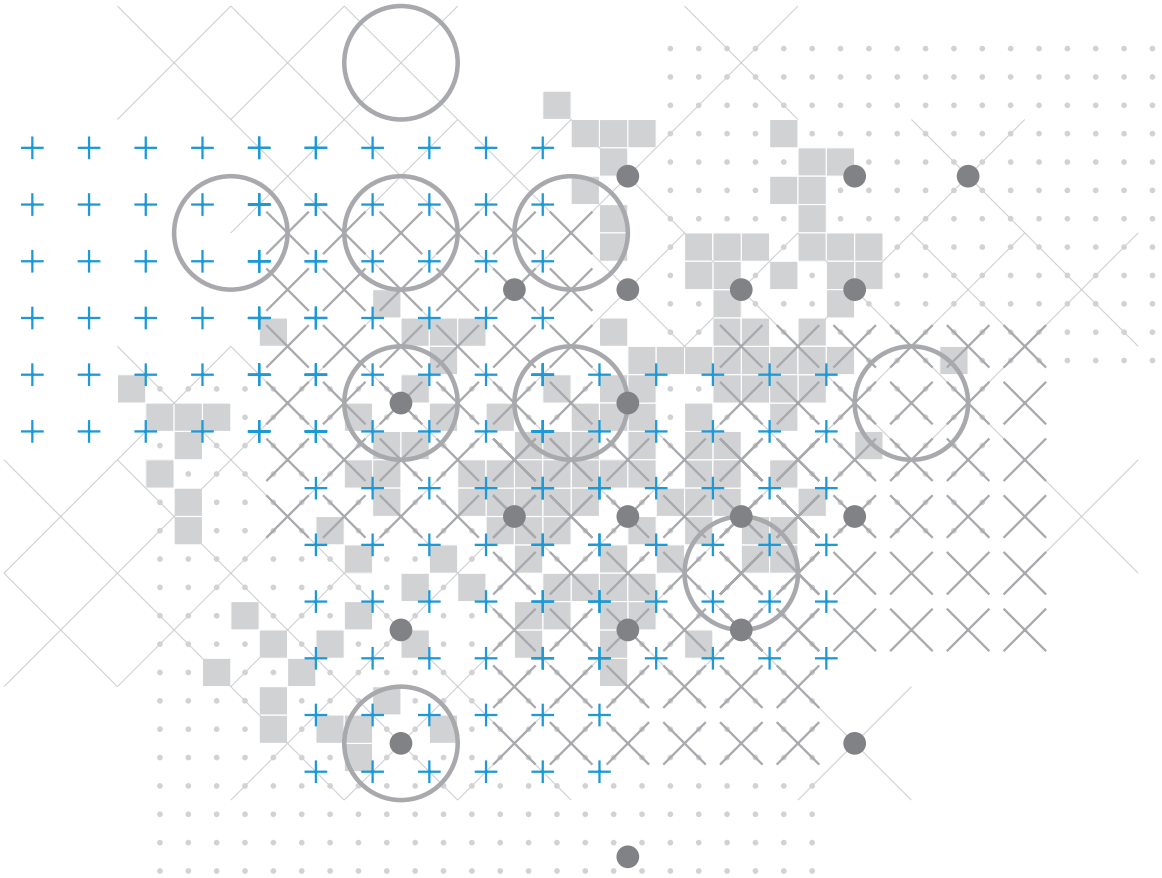
Of course, the jury is still out on both counts. Returning to Geoffrey West, he realizes that the optimism of his "unified theory of urban living" sits atop the equivalent of a high-speed train whose final destination is distressingly uncertain. "'Unbounded, exponential growth requires accelerating cycles of innovation to avoid collapse,' writes West. 'If you want continuous growth, you actually have to have continuous innovation. But there's a catch. The period of time you have to go from one cycle to another gets shorter." In the not-too-distant future, West argues that to avoid collapse, we will need the "equivalent of an information technology revolution or an industrial revolution every year." [24]

So cities, one of our greatest inventions precisely because of their ability to leverage distributed interactions, intelligence and innovation, may be on a similar collision course as the Microsofts and Googles of the world. Meaning, the integration of and collaboration across their agendas is not only necessary for the future of their respective livelihoods, but essential for the future of sustainability.

The Collaborative/ Competitive City

Lists like the "Ten Fastest Growing (And Fastest Declining) Cities in the World," the "Top 7 Intelligent Communities of the Year," the "Top 5 Most Sustainable Cities in the World" [25] and the "Ten Best Cities for the Next Decade" [26] are indicative of a rankings-obsessed media and the public that consumes it. But rankings speak to a broader point about inter-city (especially inter-"global" city) relations in a knowledge-based economy: competition for talent, tourists and businesses has never been higher.

Perhaps counterintuitive to this competition, the number and nature of inter-city alliances is rising. It should be noted that, as the Asia Research Institute writes, "intercity networks of collaboration are not a new phenomenon, having long preceded the modern nation-state in the form of myriad formal and informal networks between imperial city-states." [27] However, what is a more recent phenomenon is the proliferation and power of city-to-city networks for sustainability. Among them are United Cities and Local Governments (UCLG), C40, Metropolis, Local Governments for Sustainability (ICLEI), Cities Alliance ("Cities Without Slums"), and WeGo (World e-Governments Organization of Cities and Local Governments), all of which include in their charters a mission statement to advance and advocate for sustainable development.



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* While a more in-depth study is needed to define the "universe" of global urban alliances for sustainability, chart the differing/overlapping aims of each organization, and evaluate their respective performances, we believe it is useful to define generally what areas cities collaborate on, in order to better illuminate those areas where they compete on.

Based on a cursory scan*, the circumstances in which cities collaborate include (but are not limited to): capacity building, knowledge sharing, advocacy (for the role of cities in local, national and global affairs), and defining/coordinating standards (to benchmark and streamline further sustainability investments). Further, the diversity of and motives behind city-to-city collaboration are evident in contemporary examples, like a C40 partnership involving Rotterdam, Netherlands, New Orleans and Ho Chi Minh City, Vietnam. The collaboration motive for this relationship stems from the participants' commonality as river delta cities facing rising sea levels. Another unlikely pairing, Rio de Janeiro and Philadelphia, are finding that despite their divergence of challenges there are common areas for collaboration (in their case, water management and the sustainable execution of major sporting events).[28]

As these examples demonstrate, and particularly as they relate to capacity building and knowledge sharing, collaboration between developed and developing cities is very much bi-directional. A quintessential case of this is Bus Rapid Transit (BRT) systems. First introduced in Curitiba, Brazil in 1974 as a low-cost substitute for a rail-based system, BRT systems quickly spread across Latin America. This highly popular and cost-effective form of public transport has started to appear in a number of American cities including Boston and Denver, challenging assumptions that non-auto transport can be fast, reliable and convenient, and in the process, reinforcing that no one region or city has a monopoly on good ideas.

The concept of "precompetitive sustainability," which WWF's Jason Clay writes is both effective and "essential to market transformation," is illustrative of finding common areas for collaboration to take advantage of the varied perspectives and assets of different actors.[29] The idea is that within a competitive market system, there are strategic or operational motives for companies to pool their resources to reach a sustainable solution more quickly and with more potential impact. Recent partnerships within the auto industry illuminate this still-nascent trend, where even hardened competitors like Ford and Toyota recognize the value in collaborating in some areas and competing ferociously in others. The motive? Rising fuel prices, coupled with more-stringent fuel economy standards, requiring autos to unearth all the potential avenues to rapid innovation. In effect, an acknowledgment of the real, pronounced risk to the sustainability of each company, making the previously inconceivable necessary.

Challenge	Opportunity	Business Action/Application
Competition for sustainability leadership is a primary driver for action, but systemic change, the kind increasingly needed on a variety of issues, requires business to revisit the boundaries of what is proprietary in order to move beyond incremental progress.	The healthy tension between peer-to-peer collaboration and economic and brand competition among cities has potential to drive precompetitive sustainable innovation and rapid diffusion of solutions.	— Define the precompetitive arena through discrete, pilot initiatives that test the boundaries of the previously competitive. — Differentiate on brand, allowing aspects of sustainability performance to be precompetitive, bolstering, but not defining market positioning.

Can we learn anything from cities to make once competitive areas, especially as they relate to driving sustainable development, *precompetitive*? Better defining the precompetitive arena is a start. Existing business networks and alliances are logical forums for not only sharing best practices, but testing the boundaries of precompetitive areas and with concerted effort, seeding specific interventions that can happen both across industries and within them.

While defining existing limits to precompetition is useful, it may be even more instructive to show how clearly competitive arenas — for example, brand — can coexist with shared progress on sustainability.

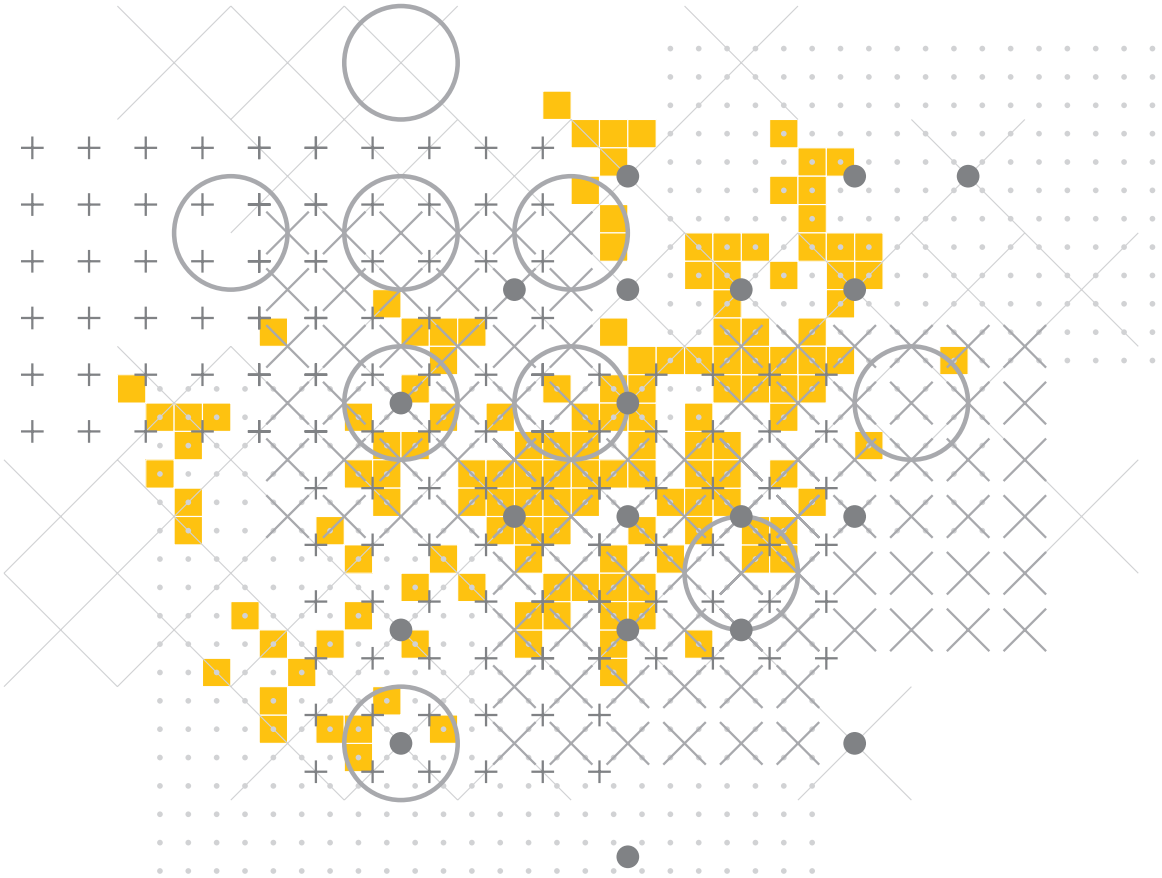
In introducing a 2010 European study on City Attractiveness and Brand Management, the Deputy Mayor of Lyon, Jean-Michel Daclin, explained that the "urban emphasis on marketing and branding…is a natural development given the global era in which cities now have to compete internationally for talent, investors, events and tourists." [30] Clarissa Lins, Executive Director of Rio-based FBDS, explained to us the intersection of city branding with sustainability, remarking that Rio's sustainability initiatives (like Bus Rapid Transit, bikesharing, and creating economic livelihoods around Rio's "wastekeepers") are specific, deliberate interventions to deliver on the city's brand promise of "natural beauty," a positioning that has propelled it to successful World Cup and Olympics bids. If the diversity of where and how global cities collaborate is any indication, the success of their actual sustainability initiatives are precompetitive — that is, necessary as a risk mitigation tool (see *The Adaptive City*), but complementary to how they communicate their progressiveness to their target audiences. If business operated with a similar mindset, would we see an expansion of the precompetitive arena, and in turn, another avenue to rapidly scale sustainability initiatives?

The Visceral City

Jane Jacobs, a pioneer in urban thinking, described cities as "complex systems whose infrastructural, economic and social components are strongly interrelated and therefore difficult to understand in isolation." [31] If anything, the balancing act needed to manage those intersecting and overlapping systems has grown more challenging since Jacobs wrote her seminal work, *The Death and Life of Great American Cities*, in 1961. Anyone who's worked on advancing sustainability at an organizational level will likely find truth in Jacobs' words.

But while the complex-system descriptions of cities and sustainability are unabashedly apt, they are not, on the face of it, very prescriptive. In fact, the enormity and interconnectedness of the challenges can be a bulwark to significant progress, especially if the complexity cloaks their visible effects. It is here where the visceral impacts of urbanization — extreme poverty, street congestion, lack of adequate housing, air pollution — can be useful, insofar as they powerfully illuminate systemic problems and inspire action that would not otherwise be possible.

Take for example, Beijing's "Blue Sky Days" metric for air pollution. Feeling dislocated from the 286 Blue Sky days declared by the city government in 2011 — amidst the omnipresence of smog and the persistence of premature deaths due to indoor and outdoor air pollution — some Beijing residents last May "bought their own $4000 air-quality monitor and posted its daily readings on the Internet." [32] Demonstrating the commonality of these impacts on air quality and health, and of the government's resistance to adequately resolving it, Shanghai, Guangzhou and Wenzhou all replicated the act. The government eventually responded, agreeing to track air particulates 2.5 microns in diameter or less (PM 2.5), while also promising to set new health standards to better spot and treat air pollution-related illnesses.



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Making the invisible visible is a powerful idea that can lead to previously inconceivable action. It is potentially even more important because it can come in many forms and from a diverse set of urban stakeholders.[33] While a small group of Chinese urbanites banded together to buy an air monitor as a way to spur action, a more professional visualization project called "In the Air," starting in Madrid and now in Budapest and Santiago, has a similar objective. Aiming "to make visible the microscopic and invisible agents" of cities through a web-based tool, In the Air is not only an example of how an open and participatory sustainability project in one city can be replicated in others (see *The Experimental City*, below), but also what making the invisible visible can inspire. In the Air creator Nerea Calvillo says that the project's ultimate goal is to "generate awareness...and, finally, to enhance personal engagement of citizens that would end up in decision making and political action."[34] Harry West, CEO of global innovation and design firm Continuum, builds on this idea from the perspective of the design discipline, writing that "people don't act until they can see and designers help people see." [35]

When the invisible is made visible, citizens, businesses and policymakers begin confronting the same reality. Transparency and the resulting sense of urgency are critical to action on the sustainability agenda (see *The Decisive City*), but from the perspective of multinational companies, how do you begin to prioritize an ever-increasing crop of social and environmental issues? How do you square the *visceral* with the *material*?

Engaging on the municipal level — which includes disproportionately more small and varied stakeholders — will become an even greater component of a company's license to operate in *The Visceral City*. And while specific, local engagement will aid companies in deciphering visible and newly-visible issues, it is also useful for business to consider how their current prioritization (and investments around) sustainability issues jibes with the shifting balance of power among global cities.

Challenge	Opportunity	Business Action/Application
Urgency and corresponding action begins with awareness, and for many critical sustainability issues (e.g. climate change, energy/water use, poverty), impacts can be difficult to identify.	Urban living is shaped by numerous real and potential feedback loops, most acutely in the global South but beyond it as well, spurring greater awareness and urgency.	— Review sustainability prioritization and process for reevaluation/ geographic segmentation in light of Southern cities as new locus points for delivering sustainable outcomes. — Support/incubate awareness-raising systems to operate at scale, helping drive behavior change.

Many who live and work in cities of the global South can attest to the difference of sustainable development priorities there as opposed to in the North. Ina Pozon, Founder of the Asia Water Project, affirmed this view in an interview, telling us that the "visceral quality" she sees in Southern cities is borne out of corruption that "can only be diluted through transparency, inclusivity, accountability and [ultimately] governance." In a 2011 GlobeScan/SustainAbility Survey, global sustainability experts concluded that the two greatest barriers to companies addressing the challenges of urbanization and megacities were poor city management and corruption — both symptoms of a lack of transparency and both resulting in a misuse of power.[36]

The governance process, especially in today and tomorrow's megacities, is much more intertwined with delivering social outcomes — such as poverty alleviation, housing and land-use issues and human rights — than issues one might encounter at a corporate stakeholder engagement meeting in the US or Europe. As Ford's David Berdish put it, "We primarily work with human rights and quality-of-life activists South of the Equator, as opposed to environmentalists, [so cities there] value our social sustainability record more than North of the Equator."

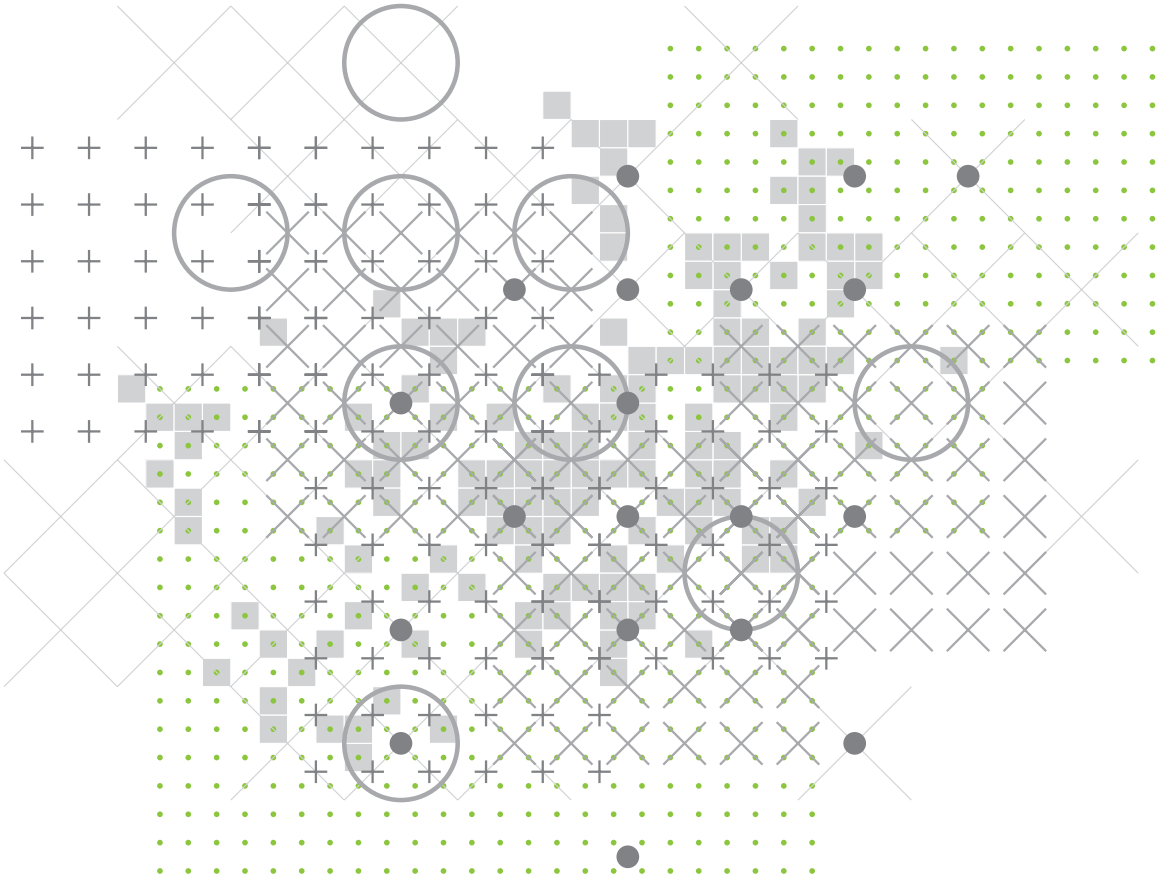
How does business remain credible within cities undergoing increasingly visible growing pains? First, take a close look at how sustainability priorities are being valued at the corporate headquarters level and whether there is (or needs to be) a process for reevaluation and/or segmentation by geography. As Southern cities become the new locus points for delivering sustainability outcomes, their growing pains will necessarily become businesses' growing pains. Using its sustainability priorities as a guide, look for opportunities to support awareness-raising initiatives not yet operating at the scale needed to drive behavior change. Further, incubate efforts (alone or in partnership with companies that have overlapping priorities) where critical sustainability impacts are still largely invisible. By illuminating these impacts and demonstrating a willingness to address them, the private sector can help jumpstart *The Visceral City*'s intrinsic advantage to driving sustainability: natural feedback loops.

The Personal City

How does the city shape us and in turn, how do we shape the city? This symbiotic relationship between people and cities can be seen through the influence of urban identity and values. Politicians and businesses have long recognized the power of identity to catalyze a movement or set of actions. But identity-based relationships in an urban context, useful as they may be in rallying disparate groups, will be limited if they are not equally able to access and leverage shared values. The combination of the two lays the groundwork for *The Personal City*, and it carries the potential for both citizens and consumers (or what we will call "citizen-consumers") to co-create new energy and solutions around sustainability.

Where is this combination of shared identity and values taking place? Skewing young, educated, culturally tolerant and empowered (in large part because of their actual or perceived economic value), this group represent a small but growing slice of most large, global cities. While this group has been labeled "values-driven," that notion blurs across and bleeds into their respective roles as citizens and consumers. This new breed of citizen-consumer calls the city, both the inspiration behind and purveyor of these values, its home. They look to renovate the city in their image, and their growing numbers, combined with the ability to leverage more, varied and tighter connections online, have shown a capacity to do just that.

Boulder, Colorado and its recent vote to break away from its local (corporate) electricity grid operator Xcel is a quintessential — albeit, still niche — city-scale example of this potential. Believing that Xcel did not adequately reflect the values of its citizens, Boulder voted in favor of "mov[ing] toward a home-ruled, municipally owned [utility] that would be environmentally greener and locally accountable," proving what can happen when like-minded communities *find* each other and rally around a common purpose. [37]



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Michael Kimmelman, architecture critic of The New York Times, described how this manifested itself in the Occupy Wall Street protests of 2011, writing that protesters "discover[ed] their own numbers — people with similar, if not identical, concerns. Imagine Zuccotti Park, one protester told me, as a Venn diagram of characters representing disparate political and economic disenchantments. The park is where their grievances overlap. It's literally common ground." [38]

Wherever grievances — or values for that matter — overlap is the key. For Occupy protests in cities around the world, it was the all-consuming influence of money in politics and governance. For a majority of Boulder's citizenry, a reliance on coal-powered electricity was anathema to their shared ethos. Malcolm Smith pointed out to us that every city he has worked in has its own "entry point for sustainability… and the challenge is in extracting that prioritization." How can business support and ultimately leverage the way these sustainable development priorities are manifested in the city, rather than unwittingly becoming a target of them? By getting comfortable in not only engaging citizen-consumers' core values, but pushing them to take action on those values.

This does not mean simply leveraging the superficial identities of cities — whether a New York-branded line of perfumes or Chrysler's "Imported from Detroit" campaign — as a point of entry into citizen-consumer values.[39] Surely the inherent economic opportunities of urban areas are on the radars of every marketing department and the coming cacophony of efforts like these will only serve to drown each other out. Instead, businesses can look to lessons and inspiration within the city, specifically a discipline that meets their audience where they are and where they are going.

User-centered design, de rigueur for architects aiming to sustainably develop the built environment, is based around expectations of how tenants will use the space. But even more important than building (or product) specifications is how tenants actually use the space. While this has not always been a focal point of building design, it is now seen as a critical lever to the sustainability of these spaces. Consequently, there has been a greater emphasis on post-occupancy engagement with the aim of working with tenants to get the most out of the design with the least impact.[40]

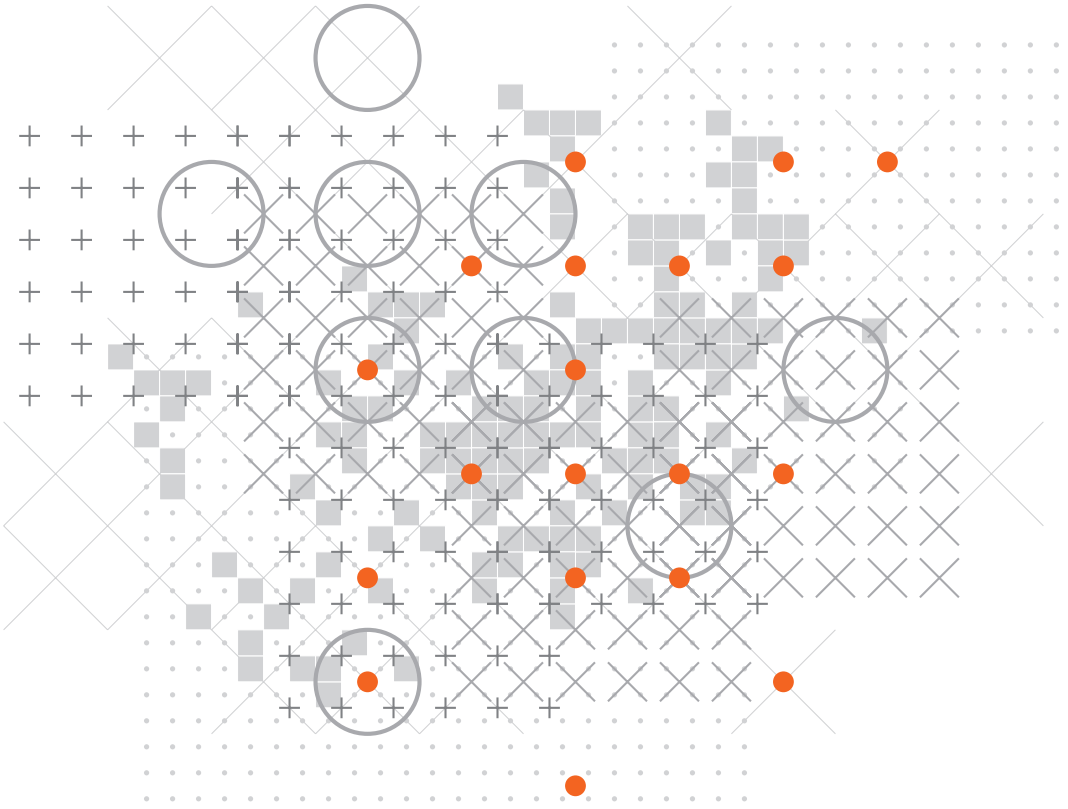
Challenge	Opportunity	Business Action/Application
The sustainable development imperative can often feel removed from the day-to-day lives, interests and ambitions of most citizens, making collective action (and in some cases, sacrifice) less urgent.	The influence of shared identity and values is a particularly powerful driver of individual and collective action.	— Avoid leveraging superficial identities of cities in order to appeal to urban consumers, favoring "values-driven" engagement instead. — Engage citizen-consumers' core values, and be comfortable pushing them to take action on these values (e.g. focusing on product use phase).

How can this apply to the way business leverages the sustainable development opportunities within a city? Product design, manufacturing and operations are essential to reducing the social and environmental impacts of products, and corporate efforts have never been greater in these pursuits. But whether it is a building or a green product, the greatest impacts are in the use phase and require companies to engage consumers where they are and show them where they can be. It is in this way that business can lead with its own values and appeal to the citizen-consumer at a more meaningful level, becoming a part of *The Personal City* in the process.

The Experimental City

In commenting on the role some Latin American cities have played over the last few decades as "local developmental states," especially in an environment when national governments are either unwilling or unable to play a similar hands-on role, Duncan Green, Head of Research for Oxfam GB, optimistically writes that "cities offer natural laboratories, ideal for testing a range of new approaches to sift out what works from what doesn't." [41] Ina Pozon, a resident of Hong Kong, one of the best-known urban "laboratories," sees the inevitability of this characteristic, too, referring to cities as "petri dishes." Cities often possess innate advantages for experimentation: the presence of research and development ecosystems, low barriers to entry for nontraditional actors, and the ability to transplant key characteristics of a pilot in one city to parallel pilots in others. How can business embrace the growing democratization of innovation and leverage cities as laboratories to test and scale sustainability solutions?

From an economic perspective, an urban environment's assets have long been championed for firm-level experimentation. In a 2001 study, researchers Giles Duranton and Diego Puga described these characteristics within the umbrella term "nursery cities." Nursery cities, they argue, offer a firm in its learning stages "urban diversity," which essentially means the ability to rapidly prototype one of the many "types of processes already used locally." With this advantage, a company can quickly discover the ideal way(s) to make its product, avoiding further investment of resources if it's neither ready for primetime nor capable of being scaled. [42]



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Related to the diverse set of complementary service providers is the idea that small actors traditionally unable to participate on a global or even national level are present in the city. Oxfam's Green writes that cities operate at "a scale where it is much easier for relatively small organizations to engage..." A recent research paper entitled "Civil Society and Sustainable Cities" solidifies this argument, adding that "what is characteristic about cities...is that they have a low barrier to entry for interest groups," who are empowered by greater access to local policymakers. The influence and ideas of nontraditional sustainability partnerships has been a promising recent development and an important model of how to reinvigorate solutions to the shared challenges of sustainability. As we wrote in a blog at the end of 2011, "Systemic change, the kind increasingly called for on a wide range of issues, requires strength in numbers and friends in unlikely places." [43] Urban environments operate at an ideal scale and are uniquely advantaged to instigate these alliances further.

To be clear, participatory does not necessarily mean experimental. "Widening the tent," especially in cities in the developing world, may also mean sacrificing the decisive nature of cities. Clarissa Lins warned that a downside of cities bringing more and varied voices to the table is that actors operate at different levels of both formal and issue-specific education, creating implications for traditional stakeholder engagement and the new ideas, collaborations and experiments that are often a result of it.

While these characteristics and many of the other citystates we have identified make urban ecosystems ideal hubs for locating sustainability interventions, cities — and sustainability more broadly — require both speed and scale in order to keep the myriad tipping points at bay. In celebrating their experimental nature, should we also question whether R&D on a city-by-city pace is the most efficient way to drive sustainable outcomes?

The reality is, we need both rapid prototyping within cities and replication across them. One of the most successful anti-poverty programs provides an example of how designing and executing a solution for a targeted audience in a specific city can tap into a need, want or value that allows for much wider transformation.

Challenge	Opportunity	Business Action/Application
Urgency and corresponding action begins with awareness, and for many critical sustainability issues (e.g. climate change, energy/water use, poverty), impacts can be difficult to identify.	Urban living is shaped by numerous real and potential feedback loops, most acutely in the global South but beyond it as well, spurring greater awareness and urgency.	— Review sustainability prioritization and process for re-evaluation/ geographic segmentation in light of Southern cities as new locus points for delivering sustainable outcomes. — Support/incubate awareness-raising systems to operate at scale, helping drive behavior change.

Launched in the Brazilian capital of Brasilia, Bolsa Familia (originally called Bolsa Escola) represented a radical departure from other anti-poverty measures, giving cash to poor families on the condition that children in the family were enrolled in school, family members regularly visited the doctor, or recipients undertook any number of other worthy and proven methods for breaking the poverty cycle. The incredible success of the initial program in Brasilia caught the eye of Brazilian president Lula, who soon made conditional cash transfer programs a central part of Brazil's larger social agenda. Variations of Brasilia's experiment can now be found in 14 Latin American countries and 26 others around the world, according to the World Bank, which is part of a multilateral network to scale these programs further.[44]

A more contemporary example of "city as sustainable development lab" is the recent ascent of bike-sharing schemes. Paris' Velib program, launched by Mayor Bernard Delanoe in 2007 in attempt to reduce vehicle congestion and air pollution, achieved immediate popularity among riders despite early setbacks like vandalism and uneven availability.[45] At the end of 2011, there were estimated to be 300 to 400 similar schemes globally.[46] What's more, the emerging ubiquity of bike-sharing programs has not been restricted to the West. Hanghzhou, China, boasts the world's largest bike-share program, with a network of 50,000 bikes and plans to expand to 175,000 over the next ten years,[47] while India's Ministry of Urban Development has proposed an ambitious 10-city public bike scheme as part of its "Mission for Sustainable Habitat." [48]

The inherent advantages of experimenting within cities and the ability to replicate experiments across them create clear incentives for companies to locate the lion's share of their sustainability efforts at the city-level. Whether they are sustainability leaders or laggards, the challenges each will face are complex, interconnected and take a long time to get right. For purposes of efficiency alone, employing the city as a sustainable development lab makes sense. But that is certainly not the only reason. Place-based innovation draws inspiration from its surroundings, and the urban dynamics we have looked to characterize in this paper all serve as responsive feedback systems and distinct, fascinating muses.

Final Remarks

When we started this project, we weren't certain what it would ultimately say, but we had a strong sense of both the problematic and progressive roles cities could play in sustainability, and a belief that many companies (including many that we work with directly on sustainability strategy) should increase their focus on them. Ultimately, we chose the notion of 'citystates,' both to reflect the growing power and influence of cities in today's world, and to describe the many different conditions and attributes, or states, that cities could bring to bear on the challenge of sustainability.

The seven states we've presented — *Connected, Decisive, Adaptive, Collaborative/ Competitive, Visceral, Personal* and *Experimental* — outline our view of both the means through which we can improve the sustainability potential of any given city, and the essential levers and lessons cities provide for anyone — but particularly for global companies — seeking to drive progress on the sustainability agenda.
We stress that these seven states do not comprise all of the potential advantages that cities have to offer for sustainable development. Nor do we suggest that their existence provides any guarantee that cities will be sustainable over the long term. Rather, we offer these as exemplary of the potentially beneficial relationship between cities and sustainability, and to encourage further collaboration and innovation to increase their impact.

Overall, we conclude that cities must become an even greater focal point of sustainable development, in order to ensure the sustainability of civilization more broadly, but also to help accelerate and scale sustainability more quickly than would otherwise be possible.

From here, we seek to engage and facilitate ongoing dialogue — starting at a series of VERGE conferences being held around the world in 2012 — in order to further test and build these ideas, and to provide insight into some key questions. Among them:

— **North vs. South** What value is there in discussing developing megacities (primarily in the South) and developed large cities (primarily in the North) side-by-side? Are the differences and corresponding challenges too great to explore similarities and universal applications? Can we acknowledge the differences while seeking common ground for discussion?

— **The continuing role of nation states** What is the role and influence of national governments in relation to how cities drive sustainability interventions within their borders? How will national policy leverage progress in its urban areas more broadly, and is there a danger in certain citystate characteristics becoming diluted or co-opted by greater, more deliberate national government involvement?

— **The death and rebirth of cities** What lessons can we learn from the "death" (and in some cases, the rebirth) of cities in order to reinvigorate the sustainability agenda?

— **Strategies for business engagement** What are the most effective strategies for business to engage with local governments and their citizens to advance sustainability in cities? Who should initiate, and what are the relative advantages of open, multi-stakeholder forums versus more targeted, bilateral partnerships?

— **The value of city-to-city alliances** What have the increasing number of city-to-city sustainability alliances accomplished in their relatively short histories? How have they leveraged their growing linkages to make progress on sustainable development that would not have been possible without the network(s)?

— **Rural + urban** What aspects of rural life serve sustainable development better, and can these lessons be drawn into cities also?

— **"Nameless, faceless" cities and their implications** A lot of (primarily Southern) cities are growing in terms of demographic and economic power, but, as one interviewee noted, remain largely "nameless and faceless" to the majority of observers outside of their regions and countries. If a city's brand is an important element to the way it prioritizes and makes decisions around sustainability, how will the "covert" nature of these cities influence their sustainable development? And what is the role of businesses in influencing that sustainability prioritization in covert cities as opposed to well-recognized large cities?

— **The role of purpose-built sustainable cities** What will be the impact of urban sustainability laboratories (such as Masdar) to prototype sustainability interventions within existing cities? Do these purpose-built cities hold lessons for urban sustainability and, in turn, for sustainability overall?

We welcome any feedback — insights, comments or questions. We are also seeking sponsors and research partners to help shape and support further work on these topics. To share feedback, or to inquire into partnership or sponsorship, please contact Mohammed Al-Shawaf (al-shawaf@sustainability.com) or Chris Guenther (guenther@sustainability.com).

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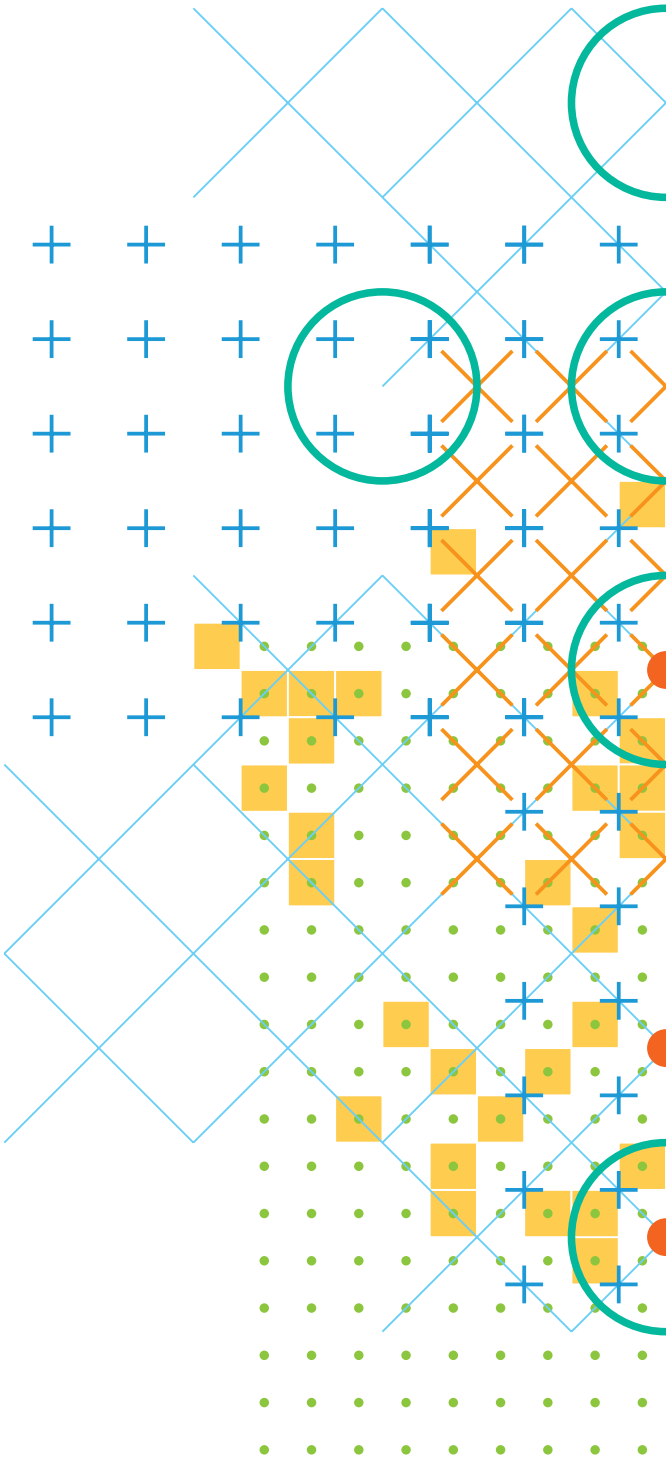
SustainAbility Ltd
3rd Floor 20–22 Bedford Row
London WC1R 4EB
+44 20 7269 6900 telephone
+44 20 7269 6901 fax

SustainAbility Inc
1638 R Street, NW, Suite 301
Washington, DC 20009
+1 202 315 4150 telephone
+1 202 315 4178 fax



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