Shaping Cities
TRANSFORMING NATIONS
The Chandler Institute of Governance is an international non-profit organization based in Singapore. We build government capacity through training programs, research and advisory work, and resources. We focus on enhancing public leaders’ capabilities to take up the mantle of public leadership, succeed as policymakers, and better serve their citizens.
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The role of cities in nation building

“Our cities’ gleaming spires point to the greatness that mankind can achieve, but also to our hubris.”

Edward Glaeser
Professor of Economics
at Harvard University

Founded in 1624, New York is the largest city in the United States.
Cities have long stood as powerful centers of innovation, economic strength, social development, and cultural influence. Today, more people live in cities than at any other time in human history.

Cities are prosperity accelerators
There can be no question of the importance of cities today. Cities produce the people, economic resources, businesses, art, universities, political policies, research and development, and culture that shape and define our modern society.

Our world’s economic wealth, technological innovation, and cultural development hinge on the proper development of cities. The growing importance of cities coincides with the unprecedented expansion of the global middle class. And the middle class is the key to national prosperity.

Cities from the beginning
Ancient texts like the Bible record the growth of cities. Within a generation of leaving the Garden of Eden, humankind started building cities. The Bible’s first reference to a city was a city built by Cain the fugitive. The very act of building this city was the result of Cain’s search for security in the world. Today cities are places of great diversity where people from many nations, tribes, and languages gather.

Four waves of development
Cities are places where humans pool their creative potential. For thousands of years, people have joined together in community to develop resources for the common good. The forms and functions cities have taken on have evolved in waves throughout history, whether to defend against attack, pool resources and knowledge, or pursue new opportunities. If we look back in history, we observe four distinct waves of city development.

The First Wave: The Rise of Imperial Cities
The first wave of urbanization began with the rise of imperial cities that functioned as capital cities for larger states and empires. Babylon would be the first of these cities to ascend to legendary status. Alexander the Great’s imperial vision led to the development of Seleucia, Antioch, and the first universal city – the supreme Hellenistic melting pot,

The Hanging Gardens of Babylon, one of the Seven Wonders of the Ancient World.
Florence’s Duomo was the largest architectural dome in Europe when completed in 1436.

Alexandria. The greatest achievement of this initial wave of urbanization was the city of Rome. The capital city of the Roman Empire played a crucial role in world history. It would continue to be the dominant city until the end of the 5th century AD, when the fall of Rome left Constantinople as the only remaining imperial city.

Even as Rome rose and fell, other cities grew throughout the Eastern world in places such as India, Egypt and China. In the Western world, there was the Dark Ages, when war and famine decimated many formerly thriving towns and cities. It is no coincidence that the darkest period of Western history coincides with the relative decline of urban life.

The Second Wave: The Rise of Renaissance Cities

The second wave of urbanization occurred with the cultural, scientific and artistic flourishing of cities. This was made possible by the concentrations of skilled talents, cosmopolitan diversity, and wealthy patrons and financiers.

Europe from the 15th century was the heart of a renaissance that still influences our art, architecture, writing and cultural life today. Population, commerce, culture and education were on the rise in cities such as Florence, Paris, Amsterdam and Milan.

It was at the height of this wave that the Protestant Reformation occurred. With the invention of the printing press, bibles and books spread throughout densely populated cities and towns. This phase of city-led intellectual and cultural renaissance took place at different times in other cultures: in India, during the 4th to 6th century Gupta Empire and the 16th to 17th century Mughal Empire; and in China, during the Late Tang and early Song dynasties, from the 7th to 10th centuries.

The Third Wave: The Rise of Industrial Cities

The third wave of urbanization was propelled by the Industrial Revolution’s advancements in machinery, transport and production methods. Inventions such as the steam engine, electric lighting, telegraph and cotton gin
transformed the networks of production and distribution, as well as the way people lived and interacted. Population and the wealth of cities exploded. Modern-day urban giants such as London and New York had their major booms during this period. Entrepôt city-states Hong Kong and Singapore also became cities of industry and manufacturing, producing everything from garments and textiles to artificial flowers, plastics, and toys.

By the early 20th century, industrial cities had spread across the globe, resulting in the growth of cities such as Tokyo, Berlin, and St. Petersburg. This phase was marked not just by huge wealth but also by distinctly modern urban challenges – overcrowding, slums and pollution.

*The Fourth Wave: The Rise of Megacities*

We presently find ourselves in the fourth and greatest wave of urbanization. This is the era of the megacity and the global city. Today, cities are larger, more diverse, more powerful, more innovative and more global than ever. From Shanghai to Mumbai, from Seoul to São Paulo, the world has never been more urban.

The rate of people migrating to urban areas over the last century was also unprecedented:

- In 1900, only 14% of the world’s population lived in urban areas;
- In 1950, 30% of the world’s population lived in urban areas;
- In 2010, this figure grew to 51%; and
- By 2016, the world became predominantly urban.

![Percent of World Population in Urban Areas](chart)

In the 1720s, Tokyo became the first city in Asia to have more than 1 million residents. It is now home to more than 37 million people.
We have long considered nations to be the fundamental economic units of the world. However, that distinction no longer holds true. Today, the natural units and engines of the global economy are megaregions and megacities.

**The Dominance of Megaregions and Megacities**

The world economy is organized around a few dozen megaregions today. These are areas such as the Boston–New York–Washington corridor, or the Shanghai–Nanjing–Hangzhou triangle, or the span stretching from London through Leeds, Manchester, Liverpool, and into Birmingham. These megaregions account for the bulk of the globe’s economic activity and innovation.

Consider enormous megacities such as Tokyo with over 37 million residents, and Delhi with over 25 million. Smaller megacities Mexico City, Mumbai, São Paulo, Osaka, Beijing, New York and Cairo each total over 10 million residents. While megacities are the most visible poster child of urbanization, the trend is much broader:

- According to the United Nations, nearly 5.5 million people around the world move into cities each month; this is akin to a new San Francisco Bay Area being created every 30 days.
- It is estimated that 50% of Africa’s population will be urban by 2050. Today, this figure stands at around 40%.
- In the next 20 years, it is estimated that urban cities in China will add an additional 350 million people to their current population. This is more than the entire population of the United States.

According to current demographic projections, the 21st century will continue this story of the city, and the fate and well-being of billions of people worldwide hinge upon how well we plan, build, manage and grow our cities.

**Strong Cities Are Growth Multipliers**

Cities are characterized by their concentrations of capital, ideas, talent and infrastructure – all of which position them to be engines of economic growth. The top 100 cities in the world account for about 25% of its GDP, and the top 600 cities for 60%. Most of the top research institutes, universities and laboratories in the world are situated within the boundaries of urban areas. Urban financial markets channel investment capital to deserving businesses and projects, through intermediaries such as banks and stock exchanges. Better physical and digital infrastructure enables faster connectivity, boosting communication, as well as the production and distribution of goods and services.
The fascinating map below shows how the economic output of major nations is driven by a few cities within its borders. The significance of Jakarta’s economy to Indonesia’s, London to the UK’s and Tokyo-Osaka to Japan’s are disproportionate.

The scale and density of cities make a greater range of commercial activities viable, and provide a testbed for new innovations, goods and services. Talent is also attracted to the higher rewards and opportunities presented by the universities, R&D institutes and boardrooms of a nation’s major cities. They are also hotbeds of creativity, due to the cosmopolitan diversity of their residents compared to the national average.

**STRONG CITIES GROOM FUTURE LEADERS**

In the course of city administration, aspiring political leaders gain experience in working on municipal and public issues, develop their political acumen and maturity, and hone their leadership skills for higher office. Successful city leaders gain the attention of voters, the media, and senior leaders within their parties and nations.

City elections in large countries such as India and Indonesia are so important precisely because they are a pathway to higher political office. Indonesian President Joko Widodo rode on his successful term as Governor of Jakarta to boost his bid for the Presidency, while early signs indicate that the recently elected Governor Anies Baswedan has similar ambitions. In India, Prime Minister Narendra Modi’s support base in Gujarat and his reputation as a successful economic reformer stem from his term as Chief Minister of Gujarat. Chinese President Xi Jinping likewise rode on successful regional government terms in Fujian, Zhejiang and Shanghai, where he established a reputation as an economic reformer and for being tough on corruption.

*Megacity clusters dominate the world economy.*
STRONG CITIES ARE WELLSPRINGS OF DEVELOPMENT

Urban areas are also critical in the development and progress of human values, “social technologies” and innovations such as community policing, volunteerism, civic organization and public forums. It is no coincidence that the great 18th to 20th century debates around the sanctity of property rights, the abolition of slavery, political enfranchisement of women and civil rights for African-Americans were introduced and fought in the legislative chambers, courtrooms, town halls, salons and streets of cities such as London, Antwerp, Paris, Chicago and Washington, D.C. In line with these, most great architects of social change such as Mahatma Gandhi, Nelson Mandela and Martin Luther King Jr. grew their movements in large urban areas, where their ideas and exhortations could take seed in fertile ground and spread quickly, and where they could raise funds and support for their goals.

STRONG CITIES ACCELERATE THE GROWTH OF THE MIDDLE CLASS

Historically, the rise of the middle class began with the shift from serfdom to landholding farmers. However, the middle class emerged as a significant force in Europe only with the growth of merchant trade, as well as the manufacturing industry in cities. The middle class formed merchant and artisan guilds to advocate for their interests and bargain for concessions, while supporting and helping new members. In the 17th and 18th centuries, more people left low-paying agrarian jobs in the countryside to work – often under dismal conditions – in the industrial cities of Europe. Those who were fortunate saved money, sent their children to school, bought assets and land, and, later on, agitated for social and political reforms to give them a louder voice in national decision making.

The density and scale of cities allows for the differentiation and specialization of economic activity, resulting in the growth of higher skilled and specialized jobs, and supporting schools and training institutes that prepare workers to take up these jobs. In successful cities, mass public education, and paying jobs create a foundation of opportunities and options for residents, migrants and their children.

PATTERNS OF URBANIZATION MAY VARY

While major megacities will shape the global economic landscape, they are not an inevitable consequence of urbanization. Urban patterns featuring mostly smaller and medium cities will also emerge.

For instance, estimates by the United Nations Population Fund show that the African continent will experience the highest rate of urban population growth from now until 2050. Africa’s pattern of urban development is not expected to be concentrated in huge cities such as Lagos, but rather in medium-sized cities of a few hundred thousand people each.

This pattern presents both opportunities and challenges. Smaller cities have some advantages, such as being administratively simpler to manage, and having more practical scope for local autonomy and citizen participation in governance and policymaking.

However, these can be outweighed by the drawbacks of smaller cities. They often lack sufficient density and population size to support the range of quality services such as subway systems, public libraries and universities that boost the quality of life in successful cities. Smaller cities also tend to be less energy and carbon efficient, again due to the lack of scale.
Joko Widodo
Mayor of Surakarta; Governor of Jakarta; President of the Republic of Indonesia

Joko Widodo, or “Jokowi”, as he is widely known, is a prime example of how local leaders hone their skills and acumen while serving as city mayors. His challenges and achievements prepared him well for the bigger challenges of national leadership.

Humble Beginnings
Jokowi's childhood was spent in a slum in the city of Surakarta, also known as Solo, in Central Java. The eldest child of four, he helped his father – a struggling carpenter – gather scrap wood. His family lived in flimsy rented shacks on the flood-prone banks of a river. Nevertheless, his family assisted him through school and he eventually graduated with a degree in forestry from Gadjah Mada University in Jogjakarta, in 1986. He learnt the furniture trade from his uncle, and soon established a thriving furniture business.

Recognizing his talent for leadership, he was nominated to head a furniture manufacturers’ association in 2002, and thereafter, to run for mayor of Surakarta in 2005. He won that election under the banner of Megawati Sukarnoputri’s Indonesian Democratic Party of Struggle (PDI-P).

For and With the People
As mayor of Surakarta, Jokowi honed his trademark leadership style, of working “for and with the people”. People in Surakarta praised him for walking the ground, making surprise visits, asking about people’s problems and solving them. Instead of deploying police forces to clear out street traders who caused traffic congestion, he engaged them in lengthy discussions, and later created safe and accessible markets for them. He kickstarted platforms for city officials to meet with voters. During mider projo, or village visits, Jokowi and his subordinates visited random communities on bicycle every Friday.

Jokowi rebranded Surakarta as a cultural and progressive city by rationalizing land uses, rejuvenating local parks, and hosting conventions and festivals. He encouraged civil service training and learnt from others’ successes, sending staff members to Singapore, South Korea, Spain and Germany to study city management. Amidst competing demands, he kept his sights on people and domestic policy – introducing health and education reforms and starting a new bus rapid-transit network, all while prohibiting his family members from bidding for city projects. This endeared him to people weary of unresponsive and corrupt leaders. He won a second mayoral term in 2010 with an astonishing 90-plus percent of the vote, and was later ranked the third-best mayor in the world by the international City Mayors Foundation.

Jokowi’s political fortunes continued to rise. In 2012, he was nominated by the PDI-P to run for Governor of Jakarta. He accepted this challenge and won the election, but went to great lengths to explain his tough decision to the people of Surakarta and to take steps to ensure that progress would continue.

Onward to Jakarta
Taking a leaf from his popular programs in Surakarta, Jokowi continued his informal visits to urban slums and local neighborhoods; introduced better access to healthcare; launched a Smart Jakarta Card to help poorer students pay for books and uniforms; pushed for the stalled Mass Rapid Transit subway system to be constructed; and improved tax collection and government spending. As with Surakarta, he persuaded street vendors to relocate and organize, while building new subsidized markets for them.

As a reformist and former businessman, Jokowi has a visceral hatred for corruption and excessive bureaucracy, and reinforced a culture of integrity. In 2012, Joko Anwar, a Jakarta-based filmmaker, was quoted saying that “just months after he became governor we could no longer bribe government officials because they were scared they would get ‘Jokowi-ed’”. He pushed for clean governance by publicizing
his monthly salary and the provincial budget, introducing online tax collection and procurement, and uploading videos of many of their meetings to YouTube to prove that they had not received any bribes. In 2013, he began hiring civil servants based on merit and qualifications, using standardized testing and transparent scoring of candidates.

The Path to the Presidency
Just a year later, Jokowi was nominated to run for the Presidency of Indonesia, building on his successes and experience as a city leader. As before, he displayed his brand of politics so unique to Indonesia – meeting people from all walks of life, staunchly opposing entrenched corruption, and promising an era of reform in government.

During the Presidential campaign, Jokowi’s commanding lead in early popularity polls took a beating when his main rival, Suharto-era general Prabowo Subianto, launched a smear campaign accusing him of being a Chinese Christian. Jokowi refused to rise to the bait by rebutting the rumors (he is Javanese Muslim) or engage in similarly unsavory tactics. This cost him a widely expected landslide win – he ultimately garnered just 53% of the vote – but showed him to be a man of principles.

Jokowi is the only President in Indonesian history to take office with prior experience in running a government. He is also the first not to have emerged from the country’s political or military elite. Observers were swift to note his humble origins. The New York Times wrote, “a child of the slum rises as President of Indonesia”.

Leading Indonesia – a country of 260 million people, over 17,000 islands and anywhere from 300 to over 1,000 ethnic groups (depending on how groups are defined) – is no simple task. Jokowi’s track record as President has been marked by both successes and setbacks. But his successful terms as a reformist and pro-people leader in Surakarta and Jakarta have given him a unique advantage.
WEAK CITIES
IMPOVERISH
NATIONS

An icon of social inequality in São Paulo, Brazil’s biggest city. The Paraisópolis favela lies next door to luxury high-rise buildings.
CHARACTERISTICS THAT PUT CITIES AT RISK

Several characteristics of cities in developing countries limit their potential to achieve a positive impact on prosperity and development:

Poor and Unskilled Migrants
The inflow of poor and low-skilled rural residents into cities has created hubs of urban poverty. About one-third of the urban population in developing countries resides in slum conditions. These, in turn, contribute to high urban income inequality and low social mobility, as their children are also locked into cycles of poverty.

Poorly Regulated Labor Markets
The labor markets in developing countries’ cities tend to be poorly regulated and include a large informal sector in the “gray economy”. This makes wage and labor safety regulations difficult to enforce, and reduces the tax and revenue base of municipal governments.

Land Use Issues
Informal land ownership and use, poor land use planning and the haphazard administration and allocation of property rights – these are issues that complicate any efforts to build amenities, housing and infrastructure such as roads and subway networks.

Problems with Utilities
Low investment in utilities can turn density into a curse rather than a benefit. High volumes of solid waste are generated by developing cities, many of which do not have the funds or political will to introduce long-term disposal solutions and push for far-sighted objectives such as encouraging recycling and re-use. While urban electrification rates in developing cities have improved vastly over the last 20 years, electricity access in informal housing areas and urban slums is often sporadic and subject to high tariffs and capture by local monopolies and gang rackets.

Crime
Significant crime rates in many (but not all) developing cities deter investment and talent from overseas, raise business costs and create a negative social environment for families and raising children.

WEAK CITIES BREED POLITICAL INSTABILITY

When cities are poorly run and managed, or marginalize large parts of their populations, the groundswell of anger and opposition among its poor and discontented – as well as the density and concentration of urban squalor – can also easily spark off greater currents of instability. The outbursts of armed protest during the Arab Spring of 2011 united those with common cause across the massive
urban slums of Cairo, and the young and underemployed urban poor of Bahrain, Syria, Iraq, Pakistan, Tripoli and Algiers. Earlier episodes of violence broke out even in major cities such as London, Paris and Berlin, largely fueled by economically disadvantaged and poorly integrated migrant populations.

These trends are worrying because urbanization, particularly in some (but not all) African and Latin American countries, has failed to bring about inclusive growth over the last five decades. This, in turn, has resulted in the emergence of large slums, urban poverty and rising inequality. Inequality in African cities remains the one of the highest in the world. These conditions are dry tinder for social unrest to break out.

Because of these factors, we cannot take for granted that the developing world’s growing cities will make a positive contribution to national development and prosperity. Effective public and private leadership, long-term planning, a conducive business climate, sound fiscal management and innovative policies will be needed more than ever.
Sergio Fajardo

Financing the Transformation of the World’s Deadliest City

The city of Medellín in Colombia is well known for its transformation from a notoriously crime-filled city to one that is a model for urban innovation. The city’s renewal, across two decades, saw many changes in leadership and the mayor that was at the forefront of the city’s revitalization was Sergio Fajardo Valderrama (2004 to 2007). His vision, drive for change and notably the management of the city’s finances has created today’s Medellín – an open, inclusive and innovative city.

Tapping into an Alternative Source of Revenue

Mayors in most local governments have to work with tight and inflexible budgets given by the national government. This limits the extensive plans the leadership might have for the city. Despite having limited resources, Medellín developed an alternative means of generating funds – the Empresas Publicas de Medellín (EPM), a publicly-owned utilities company that supplies water, gas, sanitation, telecommunications and electricity. It channels about 30% of its annual profits to social investment projects such as building new schools, public plazas, the metro and parks. This provides additional funds for the city to achieve its urban transformation goal. Today, the EPM has expanded its network and currently provides power not only to Colombia but to other countries as well. In 2013, it generated nearly COP 869m in profits on revenues of COP 6.9 billion – 73% of which ended up in the city’s coffers. In the past ten years EPM has sent COP 3.2 billion to city hall, around 25% of the municipal budget. With a stable flow of income, Fajardo together with the Empresa de Desarrollo Urbano (Urban Development Company) was able to finance creative urban solutions, including the world’s first cable-car mass transport system, library parks that double as social nodes and urban escalators that greatly improved mobility in hilly neighborhoods.

Guiding Resource Flows

An instance of Fajardo’s foresight and leadership was seen in the nature of his partnership with EPM. During the first year of Fajardo’s office, which coincided with EPM’s 50th anniversary, EPM’s managers wanted to run games and activities in public parks as a gift to the city. Fajardo disagreed, pointing out the city’s needs in education. His determination led to the construction of ten new schools throughout Medellín.

Medellín may be blessed with a stable source of funding from the EPM, but its culture of collective involvement of both the private and public sectors and its citizens is what optimizes the funding it receives. Medellín is a good example of the growth that cities can achieve through strong leadership and efficient management of resources.
Credit: Medellín Municipality

Medellín’s Metrocable was championed by Sergio Fajardo. It connects the informal settlements located on steep hills to the rest of the city’s mass transit system.
BUILDING PROSPEROUS AND HEALTHY CITIES

Prague has become more livable because of improvements in infrastructure. In 2016, it was ranked the 59th most livable city in the world by the Economist Intelligence Unit.
How can city leaders effectively unlock the creative potential of their cities? We explore three stories of changemakers and champions – city mayors who have revitalized and inspired positive change.

Auckland, Mexico City and Barcelona differ in many ways, from their income levels to their culture, history, geographic region, and the key urban challenges they face. Despite these differences, the ingredients for success were similar: enabling effective decision making by city administrators; making and enforcing sound land-use plans; fostering a dynamic business ecosystem and a vibrant cultural and civil society; pursuing social inclusion; improving transport and civil infrastructure; and nurturing a clean, low-crime environment.

The significant changes that Marcelo Ebrard made to Mexico City’s environment, that Len Brown made to Auckland’s governance, and that Xavier Trias made to Barcelona’s infrastructure, show that breakthroughs begin with visionary leadership.

LEN BROWN: BUILDING ON A NEW GOVERNANCE STRUCTURE IN AUCKLAND

The City of Auckland overcame its dysfunctional and fragmented governance system to grow as one of the most livable cities in the world today. Under the leadership of Mayor Len Brown, the city embarked on a new vision – “One Mayor, One Council, One Plan”.

An open space at Britomart, downtown Auckland.
Creation of the “Super Council”

Before 2010, Auckland was governed by seven city authorities and one regional council. This uncoordinated structure stifled decision making, delayed city planning and led to inefficiency and deficits in infrastructure. The New Zealand national government eventually decided a big shake-up was necessary for Auckland’s future as a global city. The seven authorities were unified into one “Super Council” and when Brown was elected mayor, he received unprecedented executive power over all of Auckland. Brown seized this huge opportunity to bring about more rapid urban transformation.

Developing a Plan for Auckland’s Future

With the integrated council in place, Brown could work on his vision for Auckland to become the ‘most livable city in the world’ by 2040. He worked with council members to produce the Auckland Plan, which detailed an overarching 30-year strategy for a more livable and sustainable Auckland. It addressed the city’s key future challenges in population growth, creation of 21st century jobs, upgrading of city infrastructure, safeguarding the environment and integration of the Māori. Brown then also oversaw the largest planning exercise ever in New Zealand during the making of the Unitary Plan. This plan focused on how Auckland would become a more densely populated city, tackling the hot-button issues of housing density and affordability head-on.

Putting Plans into Action

Through political power and effective planning, Brown successfully rolled out major projects that rejuvenated Auckland’s infrastructure, urban environment, and cultural heart.

He championed the City Rail Link project, which, when completed by 2023, will loop under the CBD, providing faster transit around the city center at double the current capacity. The project was once dismissed by the national government, but Brown persisted. By 2012, the national government had agreed to co-fund the project. He also managed to secure an agreement with the national government over long-term funding for future transport projects, a key win for the city.

Besides transport, Brown invested in Auckland’s urban renewal. Old waterfront attractions such as Victoria Wharf and Wynyard Quarters were redeveloped into residential and commercial areas with vibrant public spaces, and refurbishment works were completed on the Auckland Art Gallery, Britomart, and Shared Spaces in the city center. He also prioritized multiculturalism and Māori well-being in the city, opening cultural facilities such as the award-winning Te Oro Arts and Music Center, where young people from the surrounding disadvantaged area could learn about and celebrate their culture.

A More Livable City

Despite the controversy over Mayor Brown’s personal life, his vision for Auckland can be seen throughout the city today. In 2011, the Economist Intelligence Unit ranked Auckland the tenth most livable city in the world. By the end of his two terms in 2016, it had jumped to eighth. The city’s transformation provides a promising model for how governance can be innovative and leaders can unlock a city’s full creative potential.
MARCELO EBRARD: GROWING A “GREENER” MEXICO CITY

Upon becoming mayor of Mexico City, Marcelo Ebrard inherited the uphill task of cleaning up one of the largest, most polluted and congested cities in the world. Although towering challenges lay in front of him, Ebrard believed his city could be a model to the developing world of how cities can become healthy, environmentally friendly, and livable for all residents, rich or poor. From 2006 to 2012, he swung the city’s agenda towards environmental sustainability, in the face of skepticism and doubts.

Developing the “Green Plan”

When Ebrard took office, Mexico City was one of the most polluted places on earth. Levels of carbon monoxide in the air were so high that its citizens were essentially smoking 40 cigarettes a day. Birds would fall, dead, out of the sky. Population growth and sprawl were affecting water supply. To tackle these immense challenges, he needed on-the-ground support and the people’s mandate. His administration solicited opinions from one million residents through referendums, phone calls, and the internet. By communicating with city residents, Ebrard seeded the dream that their infamously polluted home could become a clean and green one.

Because mayors in Mexico cannot run for consecutive re-election, Ebrard and his team knew that they only had six years to get results, and needed to move quickly. The “Green Plan” they developed would invest US$ 1 billion a year to overhaul many aspects of Mexico City’s environment.

Addressing Transport and Climate Change

Ebrard knew that sustainable transport systems would yield a cleaner, healthier, and more connected city. This involved not only upgrading existing systems, but creating new modes of transportation. Under his leadership, a new subway line was added to the metro system, and the Metrobús system was expanded by 350%, financed through public-private partnerships. The new bus lines, which had dedicated lanes, well-designed bus stops, and hybrid buses in the city center, took many more old buses off the streets, clearing up congestion and improving air quality. To promote cycling as an alternative mode of transport, he created 300 kilometers of bike routes and introduced the Ecobici bike-sharing program. This inspired other large cities, such as São Paulo, New York, Bangkok, Chicago, Toronto, and Tel Aviv, to start their own public bicycle programs.

The Green Plan also addressed climate change. The US$ 5.4 billion Climate Action Program looked to other Latin American cities such as Curitiba and Bogotá for their successful innovations, and reduced carbon emissions through energy efficiency provisions and solar water-heating installation in public buildings.
Making Good Progress

By the end of Ebrard’s tenure, air quality had met internationally accepted standards for the first time in years, pulling Mexico City off the critical list of the world’s most polluted cities. Mexico City eventually reduced greenhouse gas emissions by 7.7 million metric tons – 12% – in four years.

The Green Plan was successful for several reasons. First, instead of letting the Green Plan be a “silo” policy within one department, Ebrard established a cabinet-level office that included all of the city government’s department heads and made them responsible for targeting environmental sustainability. To encourage continuity beyond his term, the plan covered a 15-year timeline and seven fundamental dimensions. The citywide communication of the Green Plan also forced city officials to collaborate, which spilled over into other important projects. Most importantly, the change experienced by citizens transformed how they interacted in public spaces. It boosted civic pride, livability, and helped reduce crime.

“The place is unrecognizable. There is a big, middle-class community now, and that is great for business.”

Gino Pecorelli, restaurant owner

Connecting Mobility and the Environment for Public Good

Ebrard’s approach was effective because he, like several other forward-looking Latin American mayors, linked social issues such as mobility, public health, and public space to local environmental issues and the global issue of climate change. This focus recognized that poor citizens were likely to be disproportionately vulnerable to the impacts of pollution and climate change, and leaders could step up to restrict pollution by wealthier households. For example, up to 30% of traffic in Mexico City during peak hours was due to upper- and middle-class schoolchildren being ferried to and from school in private cars. Ebrard mandated that students in many of the city’s private schools take buses to school. Although difficult to implement, the program led to a 30% drop in the number of private cars used to transport students and a 60% drop in carbon dioxide emissions on the roads near these schools.

Ebrard’s success demonstrates that visionary leaders can cause residents to change their behavior for the public good, and that environmentally friendly policies can enhance, rather than inhibit, living standards. “The city is much more habitable than it used to be,” said Sergio Martín, chief Mexico economist for HSBC in Mexico City. “It has gone from being one of the worst places to live in Mexico to one of the best.”

A Model of Sustainability

Ebrard believed firmly in the power and responsibility of cities to act on important issues. In 2010, the city hosted the World Mayors Summit on Climate Change, which resulted in more than 250 cities across 57 countries pledging to reduce greenhouse gas emissions and set up strategies for climate change. He showed that cities can take the lead on serious global challenges, by agreeing on common regulations, norms, and technology. He once said: “If I wait until the federal government makes a decision on this, I’ll see you in ten years. When are they going to resolve this? Who knows? I for one can’t wait.”

Many of Ebrard’s reforms are being continued under his successor, Miguel Mancera, who won mostly on a promise to keep up Ebrard’s good work. Ebrard has acknowledged that Mexico City is far from becoming an entirely “green” city, but believes showing other cities what is possible has been his proudest achievement.
XAVIER TRIAS: TRANSFORMING BARCELONA THROUGH TECHNOLOGY

As Mayor of Barcelona from 2011 to 2015, Xavier Trias championed Barcelona’s transformation into one of the world’s leading “smart cities”. He believed Barcelona could be a world leader in redefining how modern cities are managed and planned. During his tenure, Trias unleashed the power of integrated urban technology to tackle Barcelona’s delivery of services, economic recovery, and quality of life.

A Frustrated, Poorly Coordinated City

When Trias was running for office in 2011, Barcelona’s economic future was uncertain. Spain was in the worst recession in decades and hundreds of thousands of angry and frustrated protesters frequently flooded the streets of Barcelona and Madrid. At the time, Barcelona’s services were poorly coordinated and often wasteful. Vincente Guillart, the city’s chief architect, said: “The city was organized like silos. Lighting didn’t talk to traffic didn’t talk to water. Each had its own budget with its own data.” Under the city ran multiple, separately managed fiber-optic cables, each being utilized at about 5% of its capacity. Part of Trias’s platform was that Barcelona’s future livability would depend on the digitalization of public services. He also believed building a new strategic economic sector out of smart urban planning could help jumpstart the economy.

Building a Layered “Smart City” Strategy

After his election, the city government quickly started building a coordinated “Smart City” strategy. The Smart City projects were organized in three technological “layers”.

The first layer consisted of sensors placed throughout the city, to enable projects such as smart water, smart lighting, and smart energy. Lampposts outfitted with fiber-optic cables and Wi-Fi routers could measure how noisy or crowded an area was, what the weather or pollution levels were like, how much traffic there was – even the number of tweets and selfies being posted. Sensors could also send notifications when trash containers became full or when parking spaces became empty.

The second layer was the City OS, an operating system that aggregated and analyzed collected data within one interface. This produced a daily tsunami of data; city administrators could tell things such as where each tourist was from, where they were shopping and when. This helped unlock powerful insights for better decision making in public service delivery and where to invest tourism dollars.

The third layer was the “urban platform” that would share data and analytics from the City OS with government departments and external users. This would allow new services-enhancing applications to be built by both the city government and private companies.

Different city departments had to negotiate rigorous public-private partnerships with technology companies. Their contracts had to ensure system architecture would not be linked to proprietary technology. These companies would not be relying on collecting money for software upgrades, but instead could build a successful platform to sell to other cities.

Barcelona used new data to reorganize its bus routes into a more efficient grid, boosting ridership by 30% over four years.
**Better Information and Resource Flows**

By 2014, Trias’ Smart City strategy was helping the city save US$ 95m a year through its improved water and street-lighting systems, while bringing in US$ 50m from its new parking system. These programs helped create 47,000 new jobs. Better surveillance has also contributed to safer streets. Theft, which made up more than half of all crimes in 2014, fell 30% in one year.

The Open Government program also greatly improved how information flowed between city officials and citizens. This helped build public support for projects in a tough fiscal atmosphere, and open the door for even newer developments.

**Trias’s Political Leadership**

Trias’s political leadership was essential to the success of this endeavor, but so was the strength of his leadership structure. His top-level support helped to cut through red tape and give city bureaucrats new vision for a more coordinated, collaborative government. The Smart City Strategy team he established within the mayor’s office coordinated strategy and implementation throughout the city administration.

Trias was also savvy in how he used the resources at his disposal. He leveraged his city’s existing infrastructure by integrating the under-utilized fiber-optic cable services and bringing in a company to run the network and sell spare capacity. This generated extra revenue for the city. Because Barcelona was one of the first mature cities to welcome smart city solutions, it was able to develop new smart infrastructure and services at lower cost, as companies were eager to build and test in Barcelona. In 2012, the tender to build the City OS was won by a consortium for US$ 1.6m – a steal for the city.

Trias helped Barcelona carve a high-profile role in the emerging smart city landscape. He launched the City Protocol Society, a global alliance that defines standards for smart cities, and had Barcelona host the Smart City Expo World Congress every year. Eager to view what their cities could become, city officials have flown in from everywhere from New York to Buenos Aires, Qatar to Kazakhstan; about 200 delegations visited in 2014. Being a leader in the field brought in many IT industry connections that later became funding and implementation partners.

**Leaving Behind a Prototype**

As political sentiments shifted, Trias was voted out in 2015 and replaced by Ada Colau, a social activist and a young, fiery contrast to business-friendly Trias. She has since shifted Barcelona’s smart city strategy to focus more on improving government transparency and citizen engagement, and using technology to tackle big urban problems such as immigration and housing.

Despite his short tenure, Trias’ Smart City vision helped the city become more efficient, clean, and coordinated in its services, at lower cost. He succeeded in building a live example of what is possible for the 21st century city, in an age when cities house most of the world.