

FROM SMART CITIES TO SMART GOVERNANCE

Lyngby-Taarbæk Vidensby - City of Knowledge & Urban Development

Prof. Pascual Berrone
October 2018

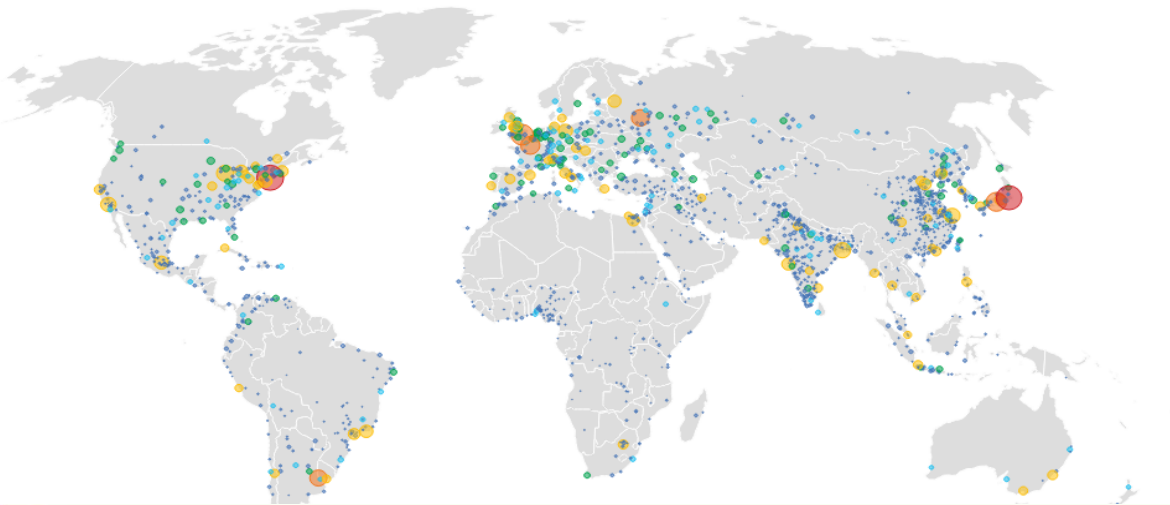
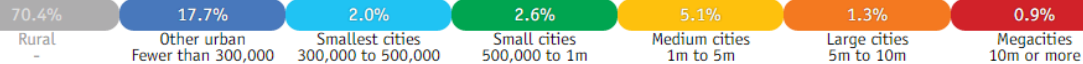
A photograph of a very crowded city street at night. The street is filled with a dense crowd of people, many of whom are wearing winter clothing like hats and scarves. The street is lined with buildings that have various signs and lights. On the left, there's a large green 'S' sign. In the center, there's a large, illuminated, circular decorative structure. On the right, there's a sign that says 'pimkie'. The overall atmosphere is festive and busy.

Today, 50% of the world live
in **cities**...

75% of the **population** in
2050

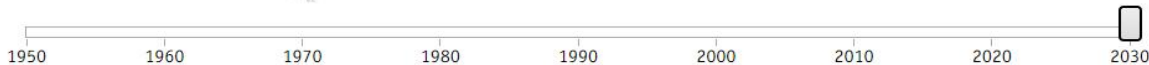
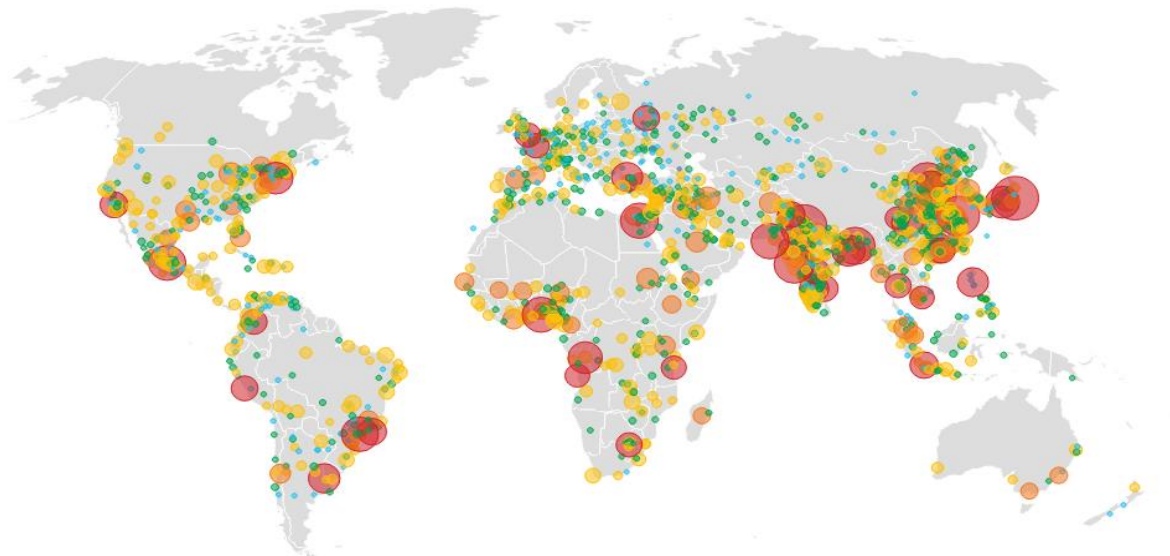
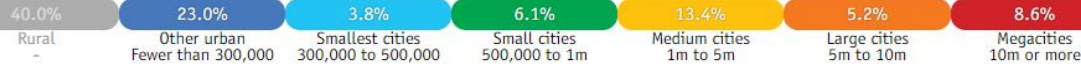
Urbanisation, 1950

GLOBAL CITY POPULATIONS*



Urbanisation, 2030

GLOBAL CITY POPULATIONS*

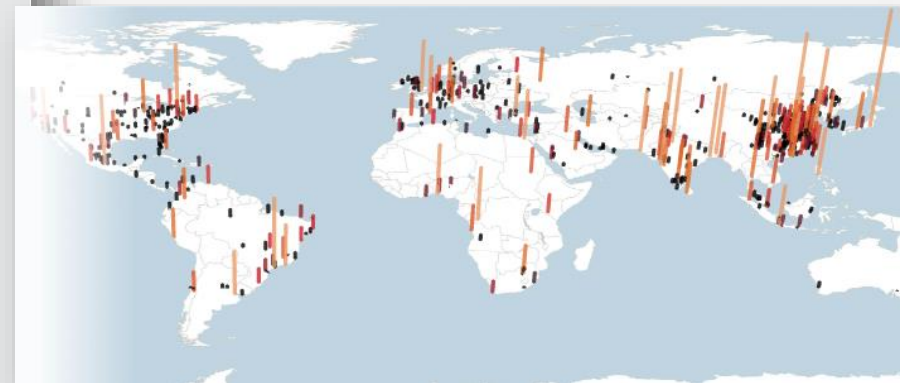


We live in an **Urban**
World

Figure 1: The World's Top 100 Economies, 2014

Revenue/GDP (\$ billion)				Revenue/GDP (\$ billion)			
Rank	Entity	Category	Revenue/GDP (\$ billion)	Rank	Entity	Category	Revenue/GDP (\$ billion)
1	China	Country	17,188.7	51	Switzerland	Country	452.6
2	United States	Country	16,490.2	52	Royal Dutch Shell	Corporation	429.1
3	India	Country	6,983.8	53	Sweden	Country	426.4
4	Japan	Country	4,524.3	54	China Petroleum & Chem.	Corporation	423.3
5	Russian Federation	Country	3,633.8	55	Kazakhstan	Country	422.2
6	Germany	Country	3,523.0	56	Washington, DC	Metro area	420.4
7	Brazil	Country	3,124.6	57	São Paulo	Metro area	409.3
8	Indonesia	Country	2,552.5	58	Hong Kong	Metro area	395.5
9	France	Country	2,463.9	59	Dallas	Metro area	392.3
10	United Kingdom	Country	2,460.8	60	Chile	Country	389.4
11	Mexico	Country	2,044.0	61	Mexico City	Metro area	383.7
12	Italy	Country	2,026.8	62	Romania	Country	380.9
13	Korea, Rep.	Country	1,696.2	63	Austria	Country	374.7
14	Tokyo	Metro area	1,536.9	64	Exxon Mobil	Corporation	374.6
15	Saudi Arabia	Country	1,532.6	65	Guangzhou	Metro area	361.5
16	Canada	Country	1,521.3	66	British Petroleum	Corporation	360.5
17	Spain	Country	1,475.8	67	Peru	Country	354.7
18	Turkey	Country	1,434.2	68	Ukraine	Country	354.3
19	New York City	Metro area	1,334.2	69	Tianjin	Metro area	353.5
20	Iran, Islamic Rep.	Country	1,290.0	70	Singapore	Metro area	347.8
21	Australia	Country	1,015.2	71	Nagoya	Metro area	345.8
22	Thailand	Country	1,014.3	72	Shenzhen	Metro area	345.3
23	Nigeria	Country	1,000.9	73	Boston	Metro area	342.3
24	Poland	Country	910.5	74	Istanbul	Metro area	331.5
25	Egypt, Arab Rep.	Country	900.1	75	Norway	Country	329.6
26	Pakistan	Country	849.4	76	Philadelphia	Metro area	329.4
27	Los Angeles	Metro area	818.0	77	Suzhou	Metro area	322.3
28	Seoul-Incheon	Metro area	804.2	78	San Francisco	Metro area	314.7
29	London	Metro area	794.4	79	PetroChina	Corporation	312.3
30	Netherlands	Country	770.1	80	Taipei	Metro area	311.1
31	Malaysia	Country	731.4	81	Jakarta	Metro area	305.4
32	Paris	Metro area	679.8	82	Rotterdam-Amsterdam	Metro area	304.8
33	South Africa	Country	672.3	83	Czech Republic	Country	301.8
34	Philippines	Country	659.1	84	Buenos Aires	Metro area	300.3
35	Osaka-Kōbe	Metro area	638.2	85	Chongqing	Metro area	300.0
36	Colombia	Country	607.7	86	Milan	Metro area	296.7
37	United Arab Emirates	Country	586.6	87	Qatar	Country	292.0
38	Shanghai	Metro area	564.7	88	Bangkok	Metro area	291.7
39	Chicago	Metro area	535.4	89	Busan-Ulsan	Metro area	281.9
40	Algeria	Country	527.7	90	Atlanta	Metro area	279.9
41	Moscow	Metro area	526.0	91	Delhi	Metro area	279.1
42	Venezuela	Country	514.7	92	Portugal	Country	272.2
43	Iraq	Country	500.1	93	Greece	Country	267.1
44	Vietnam	Country	487.2	94	Toronto	Metro area	262.7
45	Beijing	Metro area	481.1	95	Kuwait	Country	262.3
46	Bangladesh	Country	473.9	96	Israel	Country	259.0
47	Köln-Düsseldorf	Metro area	461.3	97	Seattle	Metro area	254.2
48	Houston	Metro area	459.4	98	Miami	Metro area	249.7
49	Belgium	Country	458.0	99	Madrid	Metro area	249.4
50	Wal-Mart Stores	Corporation	453.0	100	Volkswagen Group	Corporation	248.6

Wealth creation



Large cities account for
75% of global GDP

Source: World Bank World Development Indicator Series, Brookings Institution Global Metro Monitor 2014, Forbes Global 2000 List 2014. Note: This study presents national and metropolitan GDP figures at purchasing power parity rates (PPP), as opposed to market exchange rates. PPP rates present economic output figures based on the relative purchasing power of local currency in the national context, rather than absolute economic output. This accounts for the "outperformance" of certain economies over others, for example, the United States ranking below China, despite the lower-ranked economy being greater on more familiar market exchange terms.

Information technology
(IoT, mobility, social, big
data, cloud,...)





Chongqing, China



75% of CO_2 emissions



Beijing (Feb. 2013)



Smog Chokes Delhi, Leaving Residents 'Cowering by Our Air Purifiers'

Levels of the most dangerous particles soared over the weekend in some places to more than 16 times the limit India's government considers safe.

By ELLEN BARRY NOV. 7, 2016

Delih (Nov. 2016)

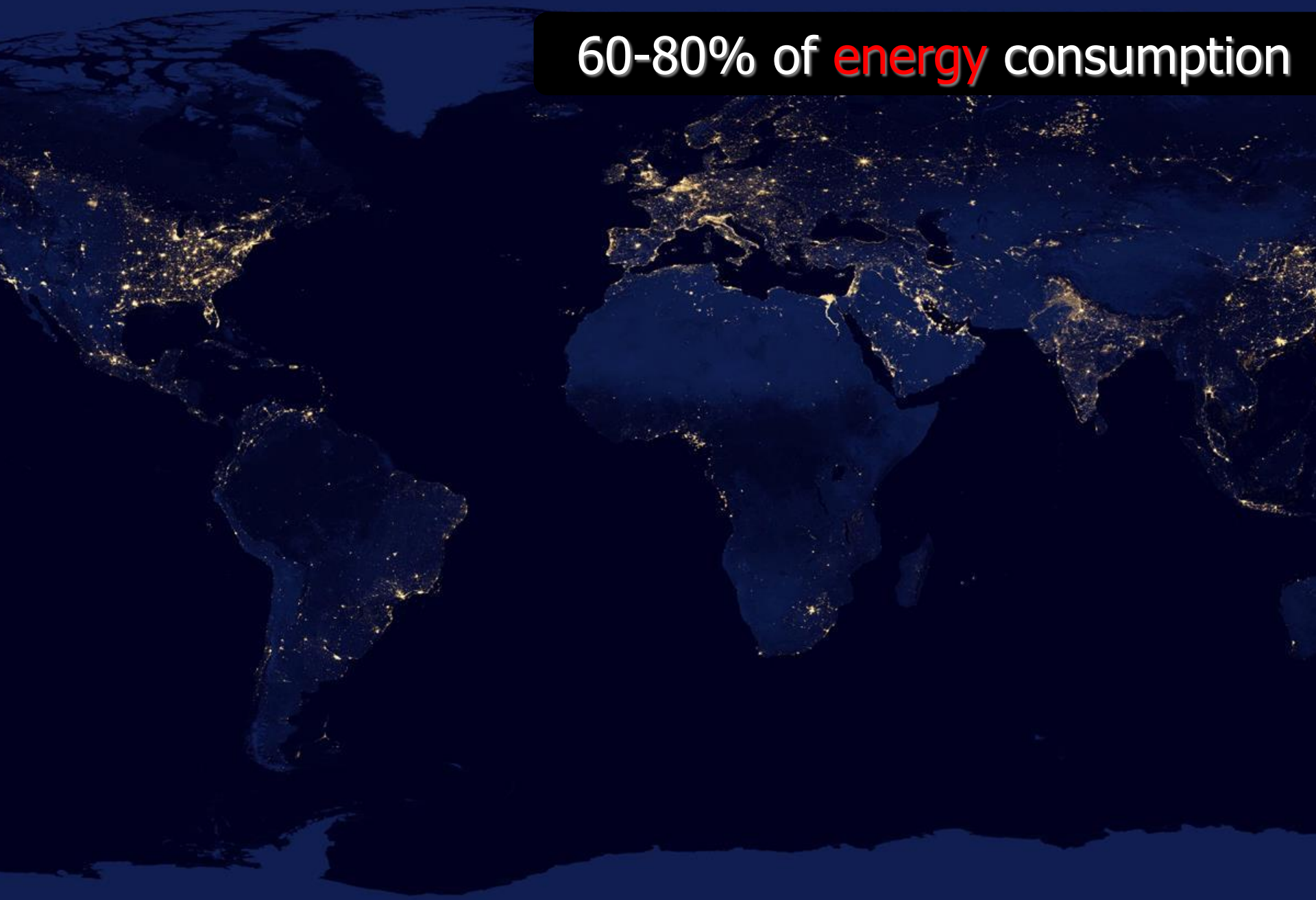


A wide-angle, high-angle photograph of Paris, France, taken from an elevated position. The Eiffel Tower is the central focus, standing tall and slightly hazy against a pale, overcast sky. The city's dense urban landscape, with its characteristic grey rooftops and buildings, fills the foreground and middle ground. The overall atmosphere is one of smog or heavy fog, which softens the details of the city and the tower. In the top right corner, there is a black rectangular box containing the text "Paris (March. 2014)".

Paris (March. 2014)

From the City of **Light** to City of **Smog**

60-80% of **energy** consumption



Active (and vocal) citizens



Increasing inequality, poverty, lack of social cohesion



How **Cities** respond to the urbanization will define the World will be living in



Cities respond to these changes...



Dubai - 1990



SHANGHAI, 2010



Dubai - 2017



Cities respond to these changes...

Rio de Janeiro, 1993



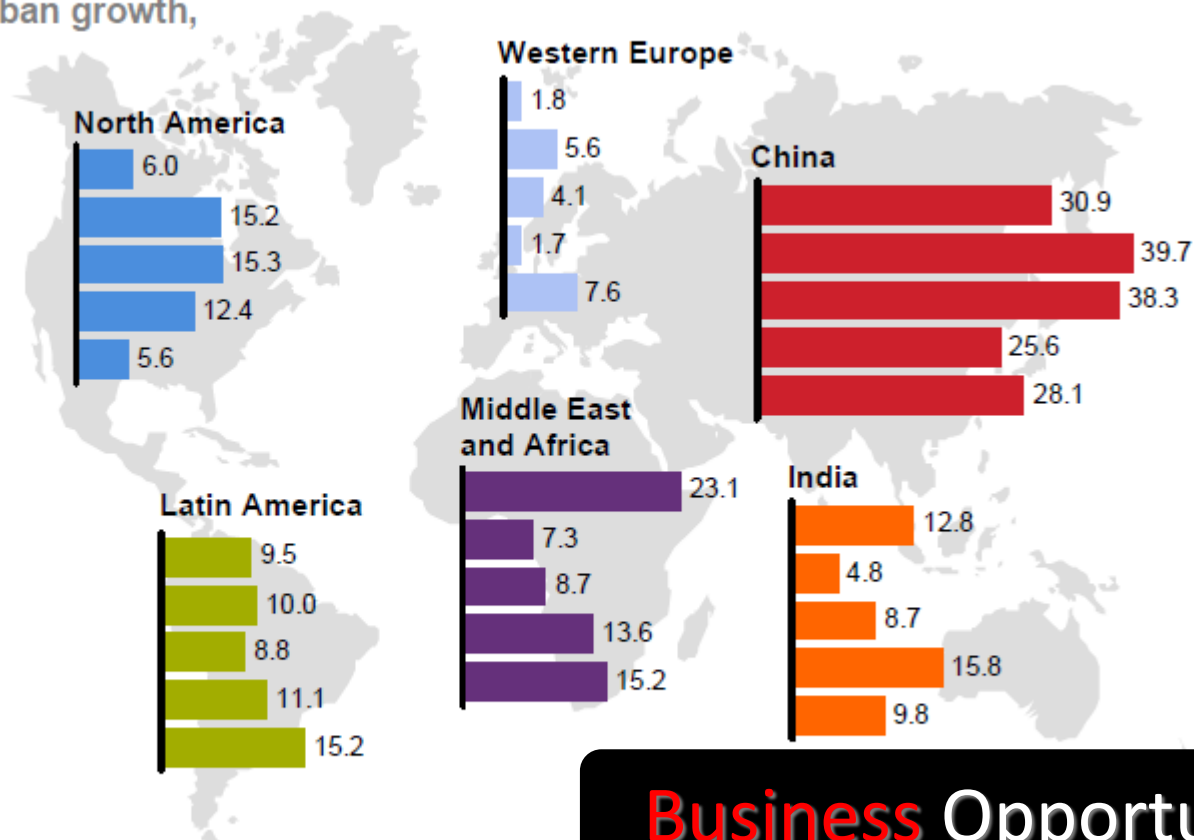
Skill, Scale, Speed

Deep impact for consumption of (Cities') services

All regions contribute to growth in urban demand, but China's share is highest in key categories

Contribution to urban growth,
2010–25
%

Population
GDP ¹
Floor space
Municipal water
Containers



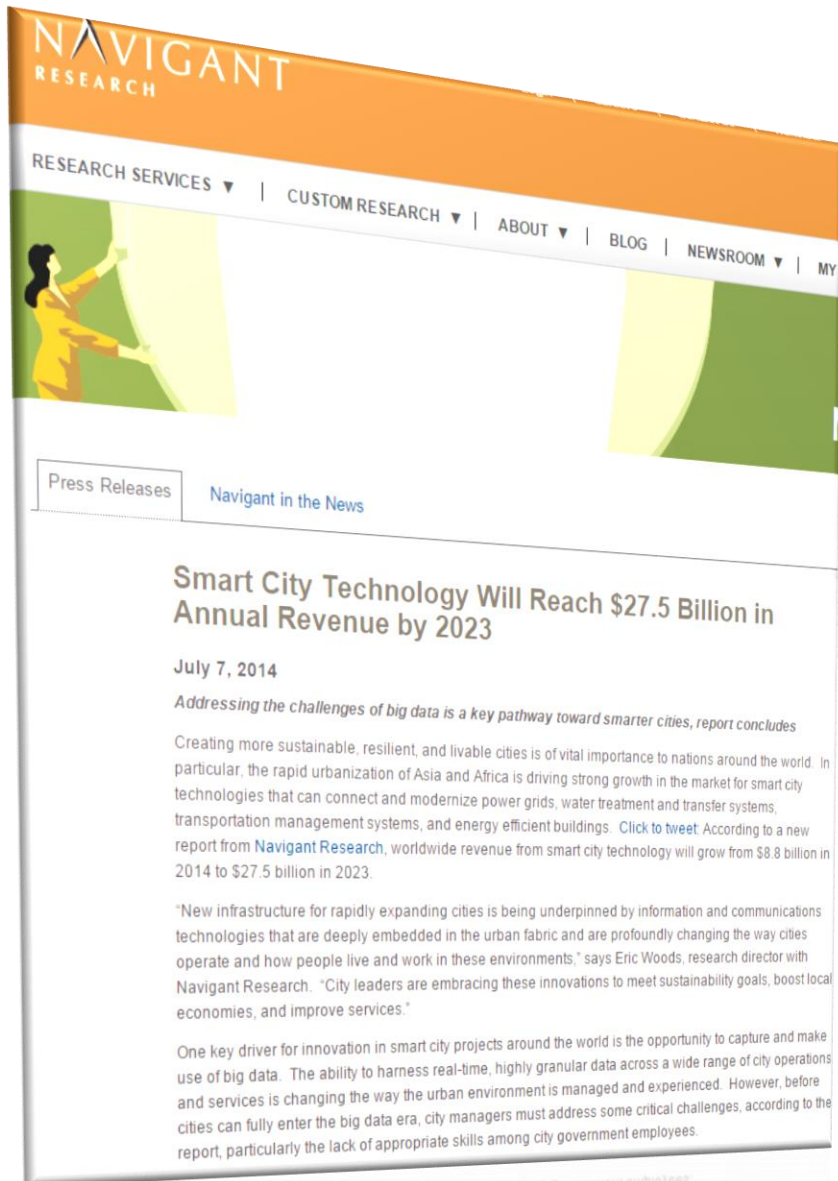
¹ GDP measured at expected real exchange rate.

NOTE: Other developed and emerging regions account for 16.0, 17.4, 16.0, 19.8, and 18.6 percent of growth in population, GDP, floor space, municipal water, and container-demand growth, respectively; floor space growth includes replacement.

SOURCE: McKinsey Global Institute Cityscope 2.0

Business Opportunity...

Business Opportunity for IT and Tech firms



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Press Releases [Navigant in the News](#)

Smart City Technology Will Reach \$27.5 Billion in Annual Revenue by 2023

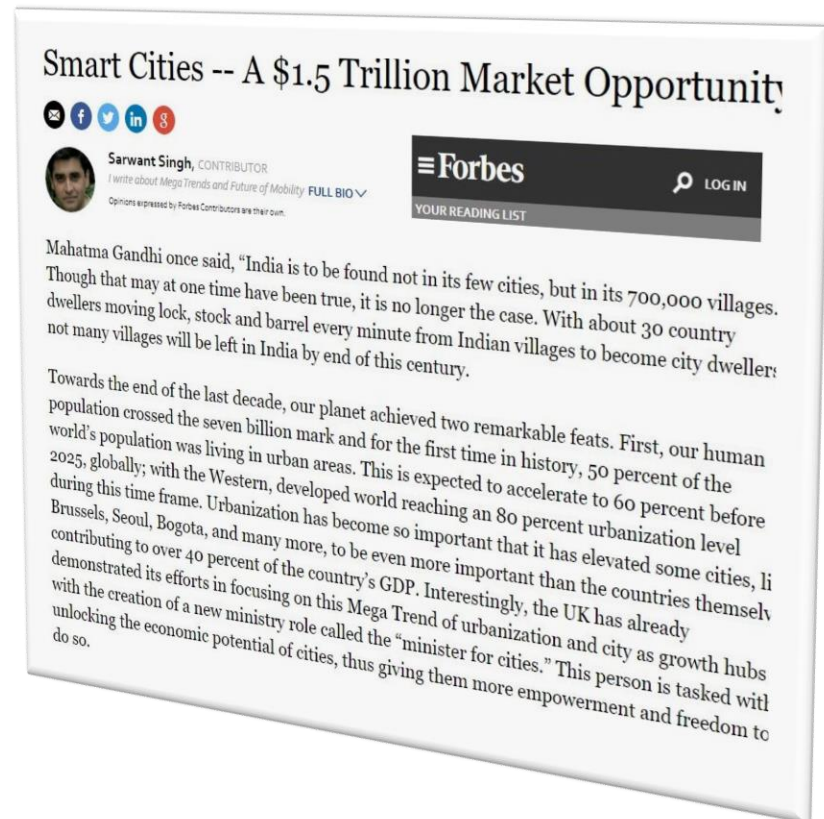
July 7, 2014

Addressing the challenges of big data is a key pathway toward smarter cities, report concludes


Creating more sustainable, resilient, and livable cities is of vital importance to nations around the world. In particular, the rapid urbanization of Asia and Africa is driving strong growth in the market for smart city technologies that can connect and modernize power grids, water treatment and transfer systems, transportation management systems, and energy efficient buildings. [Click to tweet](#) According to a new report from [Navigant Research](#), worldwide revenue from smart city technology will grow from \$8.8 billion in 2014 to \$27.5 billion in 2023.

"New infrastructure for rapidly expanding cities is being underpinned by information and communications technologies that are deeply embedded in the urban fabric and are profoundly changing the way cities operate and how people live and work in these environments," says Eric Woods, research director with Navigant Research. "City leaders are embracing these innovations to meet sustainability goals, boost local economies, and improve services."

One key driver for innovation in smart city projects around the world is the opportunity to capture and make use of big data. The ability to harness real-time, highly granular data across a wide range of city operations and services is changing the way the urban environment is managed and experienced. However, before cities can fully enter the big data era, city managers must address some critical challenges, according to the report, particularly the lack of appropriate skills among city government employees.



Smart Cities -- A \$1.5 Trillion Market Opportunity

 **Sarwant Singh**, CONTRIBUTOR
I write about Mega Trends and Future of Mobility [FULL BIO](#) ▾
Opinions expressed by Forbes Contributors are their own.

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Mahatma Gandhi once said, "India is to be found not in its few cities, but in its 700,000 villages. Though that may at one time have been true, it is no longer the case. With about 30 country dwellers moving lock, stock and barrel every minute from Indian villages to become city dwellers, not many villages will be left in India by end of this century.

Towards the end of the last decade, our planet achieved two remarkable feats. First, our human population crossed the seven billion mark and for the first time in history, 50 percent of the world's population was living in urban areas. This is expected to accelerate to 60 percent before 2025, globally; with the Western, developed world reaching an 80 percent urbanization level during this time frame. Urbanization has become so important that it has elevated some cities, like Brussels, Seoul, Bogota, and many more, to be even more important than the countries themselves contributing to over 40 percent of the country's GDP. Interestingly, the UK has already demonstrated its efforts in focusing on this Mega Trend of urbanization and city as growth hubs with the creation of a new ministry role called the "minister for cities." This person is tasked with unlocking the economic potential of cities, thus giving them more empowerment and freedom to do so.

Some **cities** are becoming *smarter*...but

What
is a
Smart
City?



Traditional definition

“Being a Smart City means using all available technology and resources in an intelligent and coordinated manner to develop urban centers that are at once integrated, habitable and sustainable”



Singapore - Smart Nation



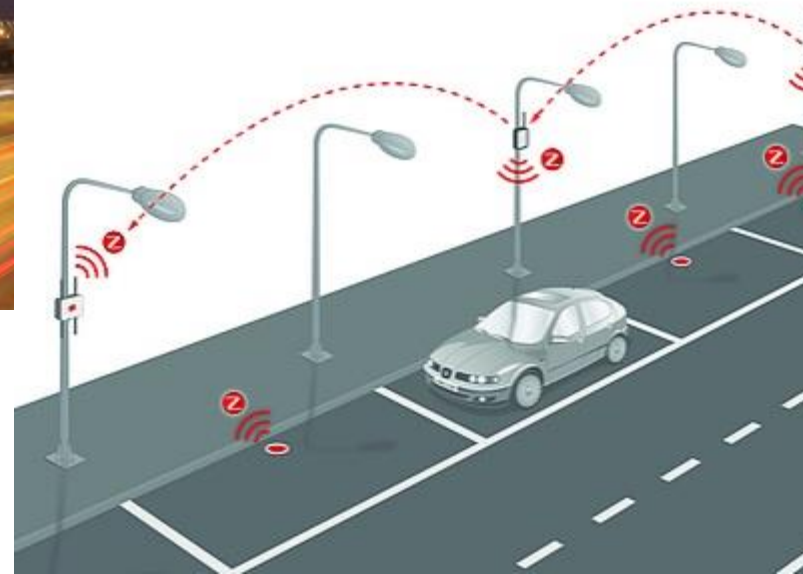
22 Gov. Entities
involved so far

Smart **Dubai** Government

11 Categories
of smart services



Barcelona Smart City



International

Mining the urban data

Cities will become smarter, but in different ways than many people expected

Nov 21st 2012 | From The World in 2013 print edition

Timekeeper Like 175 Tweet 81



Jargon aside, one of the more useful concepts in any effort to understand the evolution of technology markets is the "hype cycle". It was thought up by Gartner, a market-research firm. In a first phase, a new idea creates inflated expectations; they are followed by a "trough of disillusionment", which in turn gives way to the "slope of enlightenment", meaning that the technology is starting to show its true potential.

And so it goes with "smart cities", the idea that information technology and digital data will make cities far more efficient. After much hype in 2010 and growing disappointment in the following two years, 2013 will be the year in which it becomes apparent that cities can indeed become smarter—albeit in different ways than some visionaries imagined.

Originally, "smart cities" was mainly a label for ambitious projects to build a shiny new metropolis on green fields—or in the desert. The best-known effort is Masdar in Abu Dhabi, a city that will eventually become home to 40,000 people and is built on a huge podium. Below sits the smart infrastructure, including water pipes larded with sensors and a network of magnetic paths for self-driving pod-cars. Above it is to be a showcase for all kinds of green technology, such as energy-efficient buildings.

Business Opportunity ?

Are cities becoming **smarter** really?



HORIZONS SMART CITIES October 31, 2017

Most cities are already 'smart' – just, not for the people who live in them

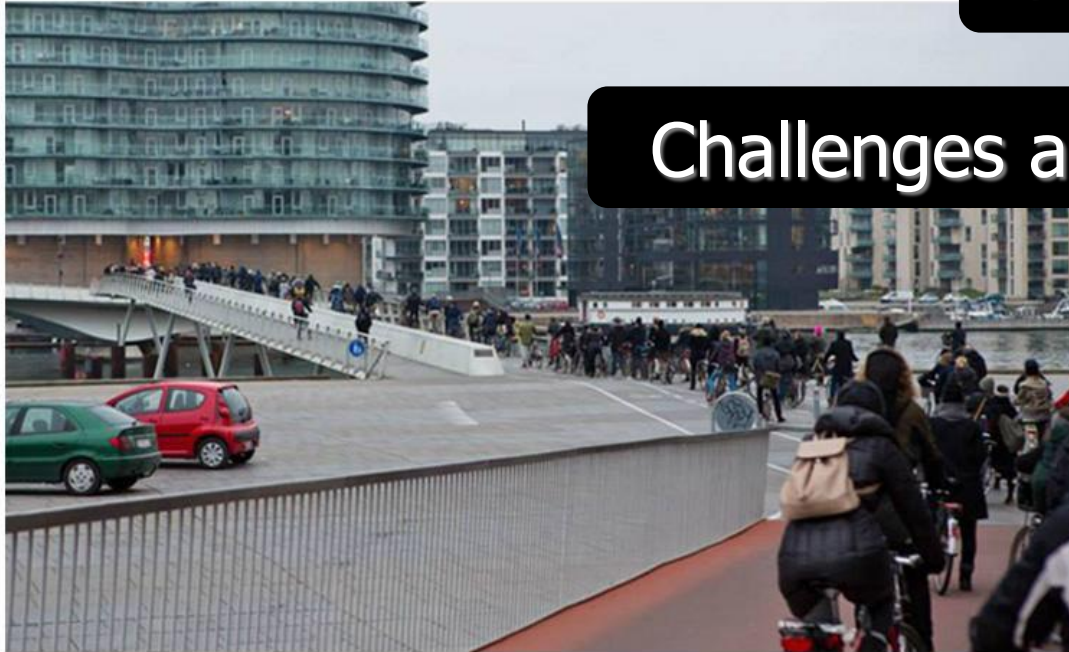
By [Eva Blum-Dumontet](#)



Most **ICT companies** offering solutions for cities have **not** met their revenues target from 2010 to 2014

Problem 1

Challenges are **global**...



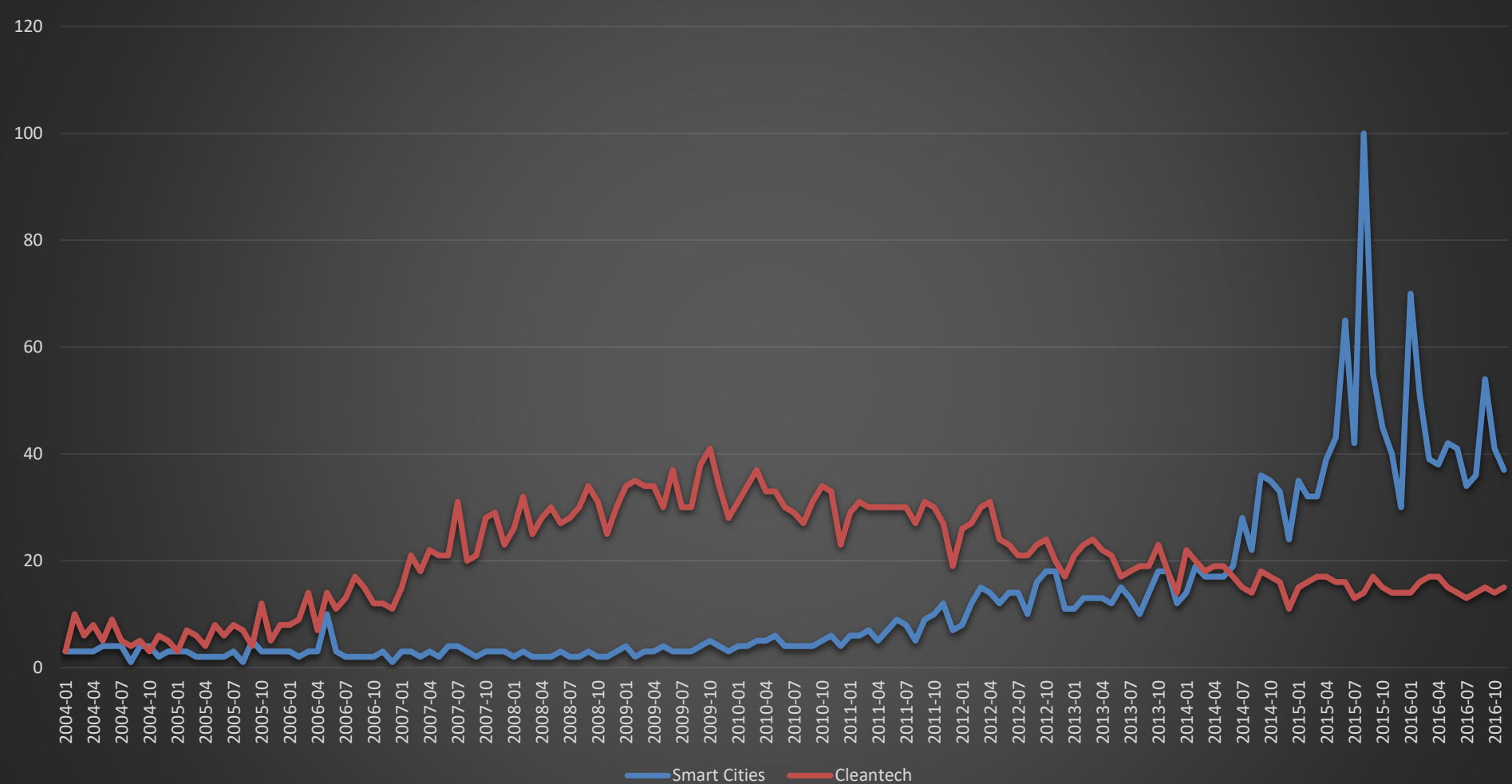
...but they act **locally**

Problem 2



Becoming a **buzzword**?

Google Search Volume



Problem 3



What makes a city **smart?**

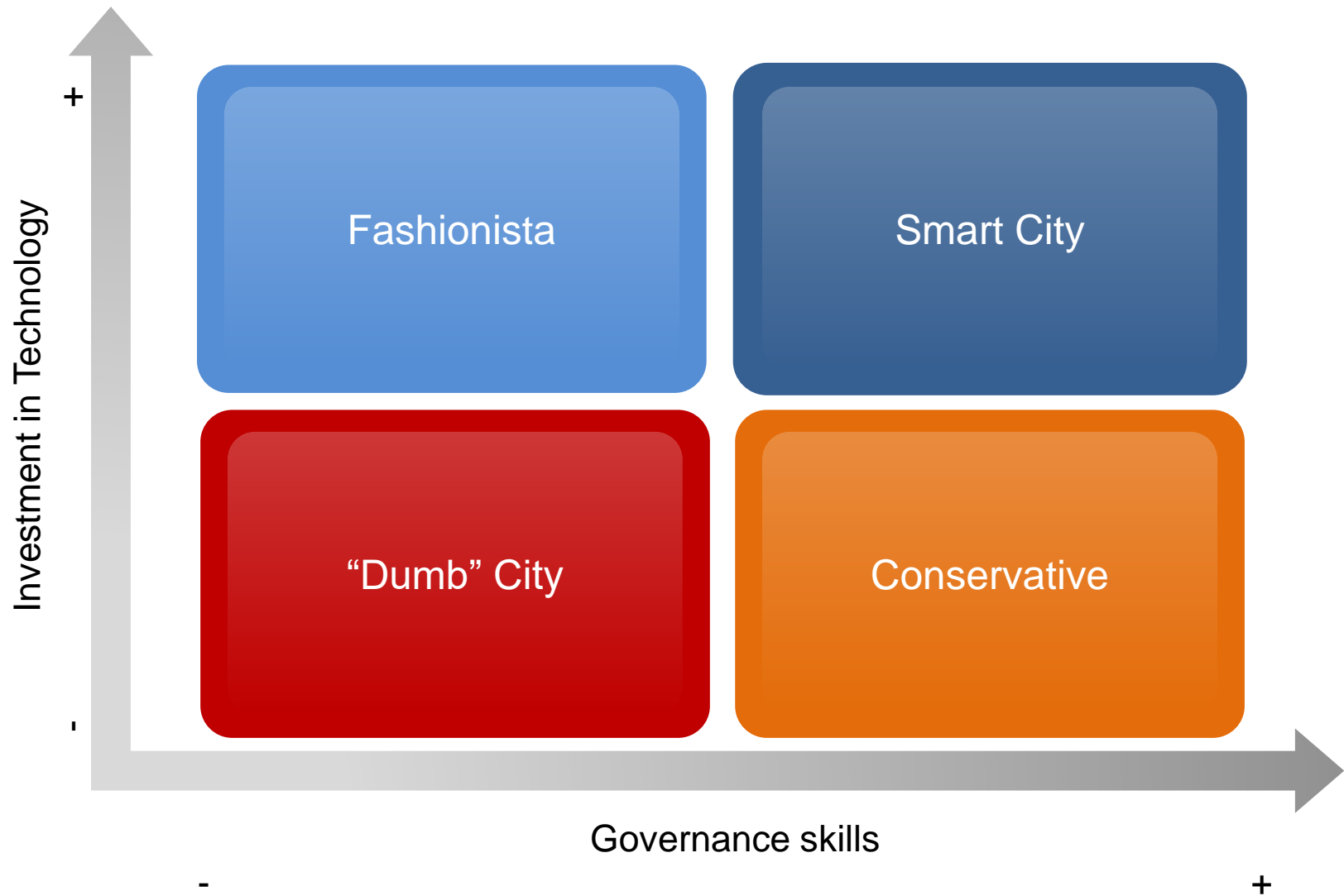
How do we **decide what city we want?**

How is a city **transformed and what's the
role of companies?**

How can a city secure **progress?**

Cities need Smart Governance

What type of **city** is your **city**?



What do we need to have a “smart governance**”?**



1. THINK STRATEGICALLY

Vision - Policy First; Then Technology

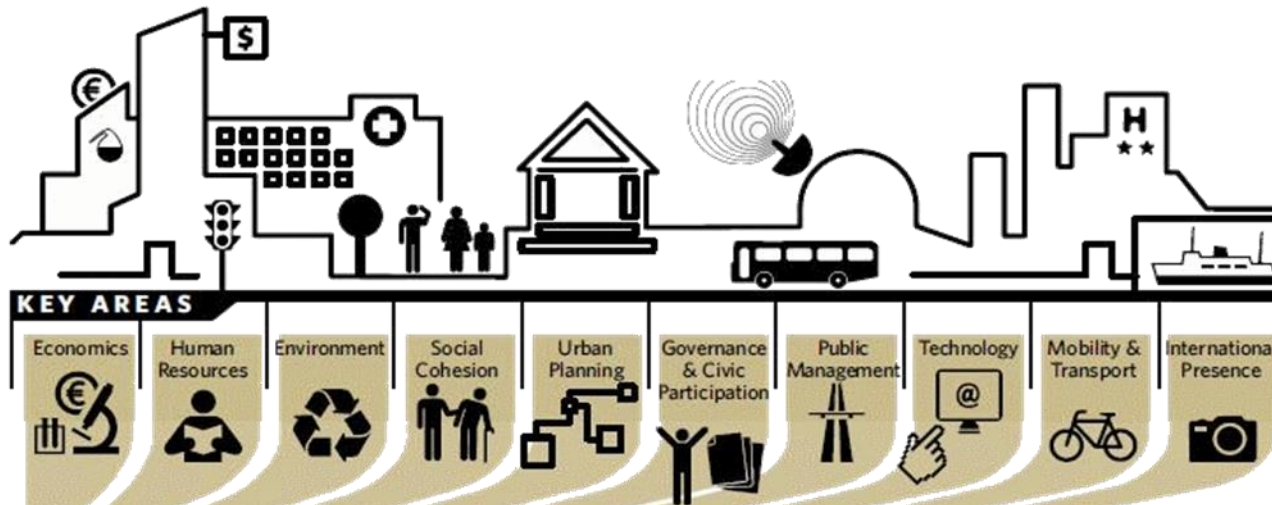
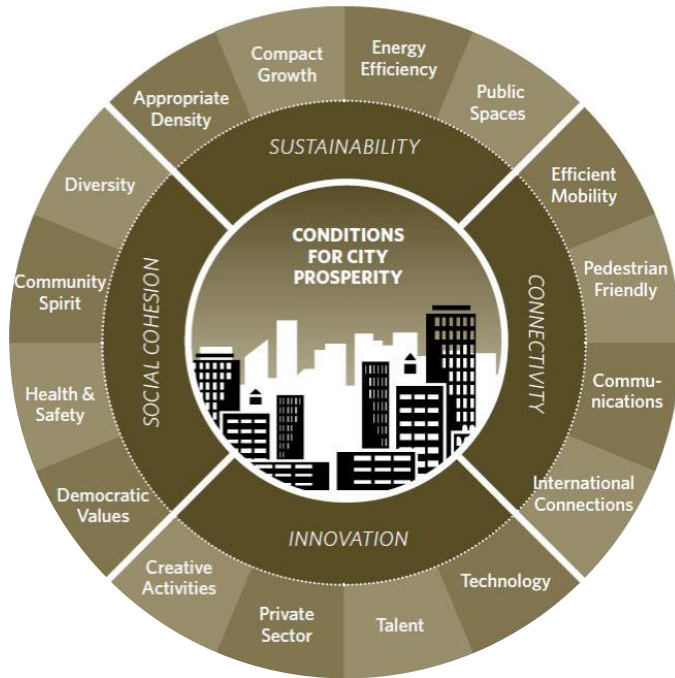
After signing a major contract with CISCO, mayor of Amsterdam stated: “One of the things we have to find out in the next six months: What are the unique Amsterdam problems?”

[Cities] rush off and implement some cool project for streetlights or transportation or smart policing. All of which is great, but it's without that planning that would locate the synergies that really makes it cost efficient.

Smart Cities Council Chairman Jesse Berst

IESE CITIES IN MOTION

Urban development model



Cities in Motion INDEX 2018

This index measures key global cities' sustainability and the quality of life for inhabitants.

165 cities
80 countries
74 capitals

TOP-50 CITIES THAT HAVE ADVANCED THE MOST SINCE 2015

	Places gained	Principal strength
22nd Helsinki	+9	
26th Barcelona	+8	
45th Milan	+13	

Europe, with 12 cities ranking among the top 25 in the world, continues to be the best positioned geographical area

The size of the city matters, but it is not an essential condition to achieve good results

Top 50 Ranking





IESE
Cities in
Motion

CITIES IN MOTION
INDEX 2017



SELECCIONA CIUDAD

RANKING

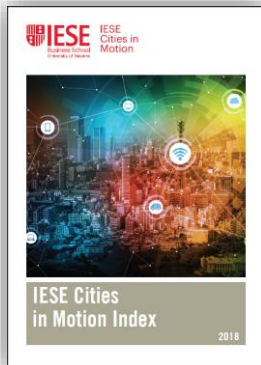
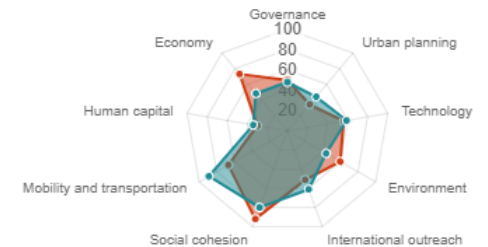
13

● Copenhagen (Denmark)

RANKING

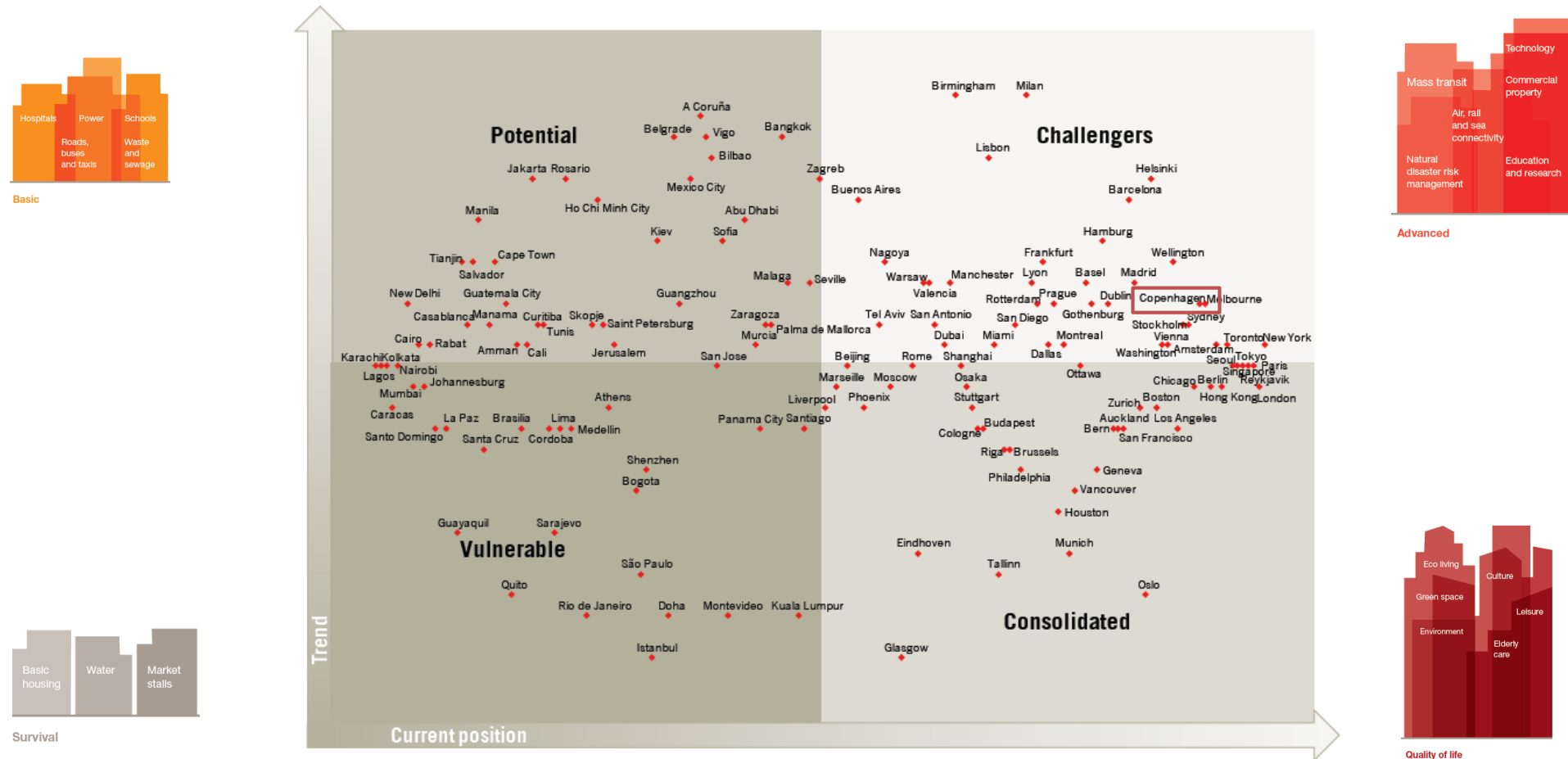
26

● Barcelona (Spain)



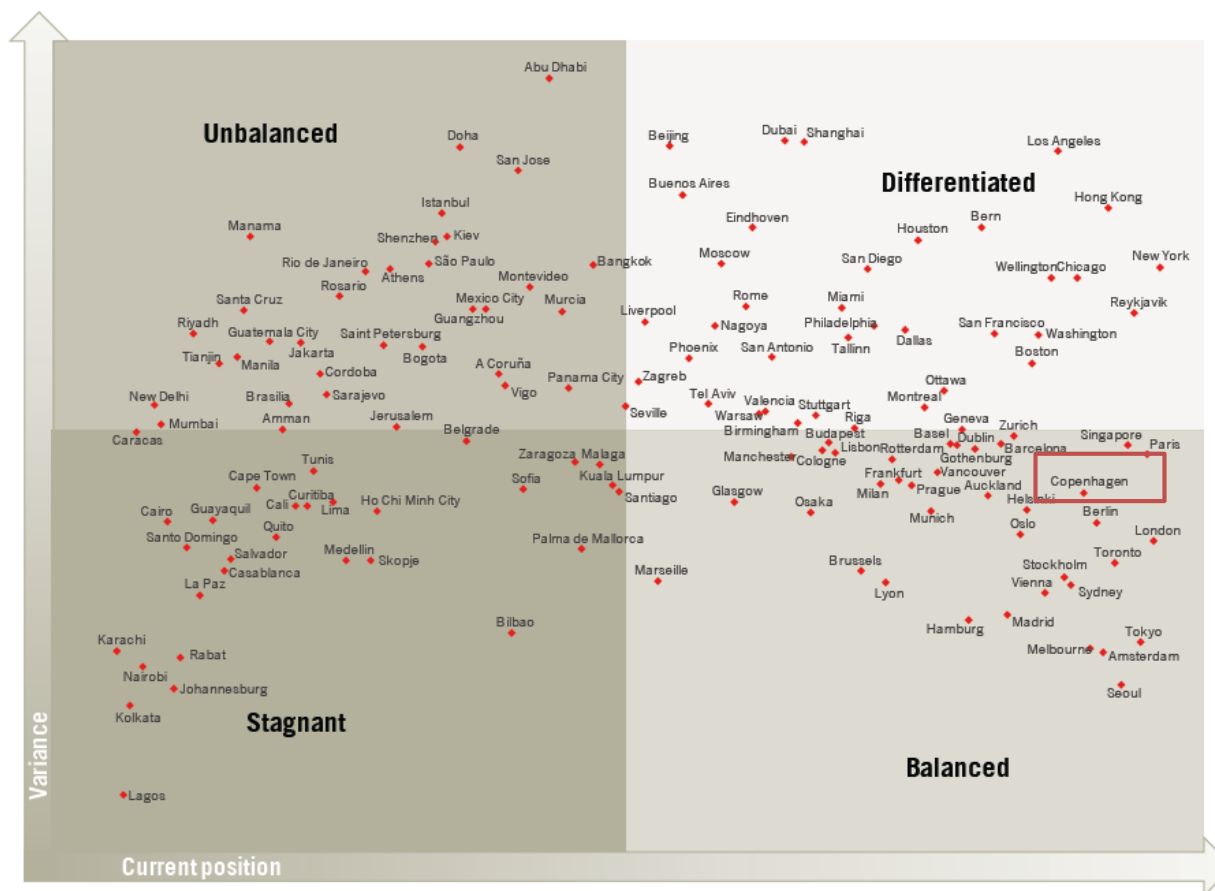
Dynamic analysis: Trend

Establishing strategic priorities



Dynamic analysis: Variance

Establishing strategic priorities



Analysis of Dimensions in Pairs 1: Economy vs Social Cohesion

Define the growth model

To understand relationships, interactions and trade-offs



Analysis of Dimensions in Pairs 3: Mobility vs Environment

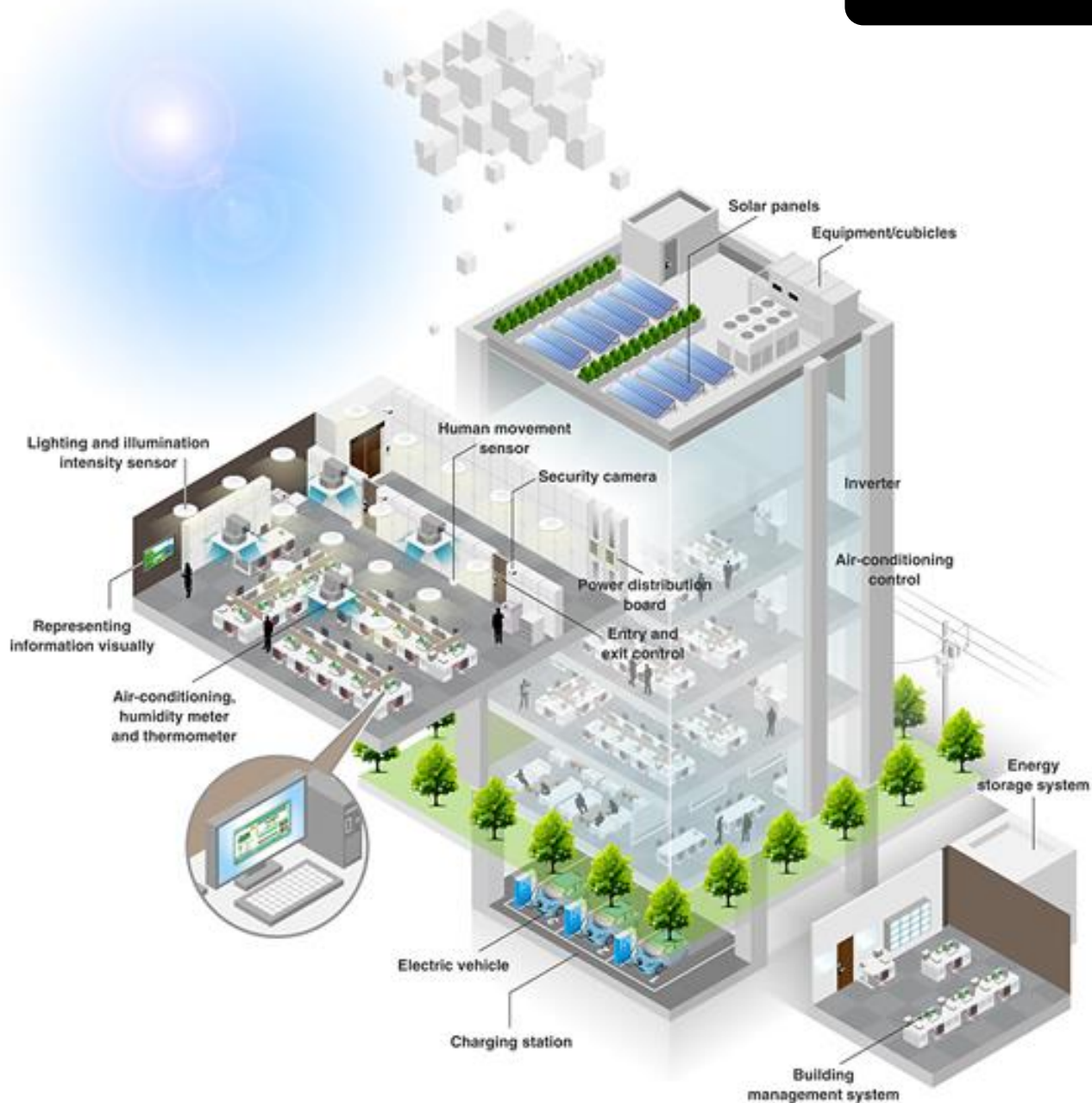
Define the growth model

To understand relationships, interactions and trade-offs



2. THINK BEYOND TECHNOLOGY

Smart Building



Smart Building – Chicago City Hall

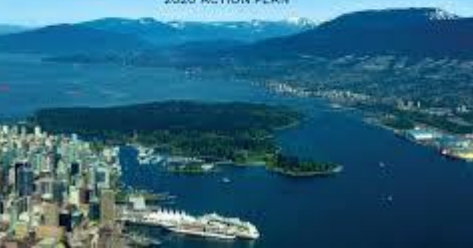


Green spaces Vancouver



GREENEST CITY

2020 ACTION PLAN





Co.EXIST



If You Live Near A Park, You're More Likely To Be Happy

Green space puts people in a better mental state, with "significant and sizable" effects. Better get gardening.

3. DIFFERENT MINDSET



Transport in cities

Many European cities are rapidly transforming urban transport. However, while cycling and efficient public transport are becoming the norm in some urban areas, Europe's transport sector is still a major contributor to excessive levels of greenhouse gases, air pollution and noise.



Share of all kilometres travelled by: **WALKING + CYCLING + PUBLIC TRANSPORT**

Paris	87 %	Vienna	71 %
Barcelona	83 %	Valencia	67 %
Amsterdam	79 %	Berlin	60 %
Helsinki	75 %	Seville	60 %
Stockholm	75 %	Turin	59 %
Madrid	74 %	Stuttgart	49 %
Copenhagen	72 %		



Share of all kilometres travelled by: **WALKING + CYCLING**

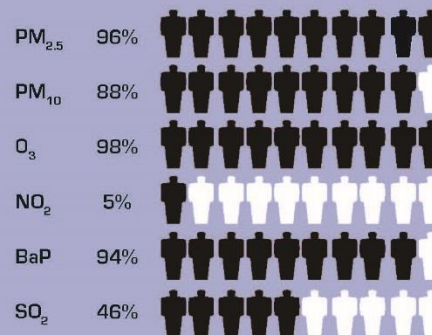
Amsterdam	68 %	Helsinki	41 %
Paris	55 %	Seville	41 %
Barcelona	55 %	Berlin	39 %
Valencia	47 %	Vienna	34 %
Stockholm	45 %	Madrid	34 %
Copenhagen	42 %	Turin	33 %
		Stuttgart	23 %

Exposure to night-time traffic noise



More than a quarter of the inhabitants in Sofia, Luxembourg, Paris and Tallinn are exposed to night-time traffic noise above WHO limits, according to a survey of 17 European capitals.

Exposure to air pollution



Around 90 % of Europeans living in cities are exposed to levels of air pollutants deemed damaging to health by the World Health Organization's guidelines.

Commuting time spent in transport



Commuters in London and Budapest are most likely to travel more than an hour to work (23 % and 32 % respectively), according to a survey of 75 cities in the EU and Turkey.



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Press Release from Umeå University

Long-distance commuters get divorced more often

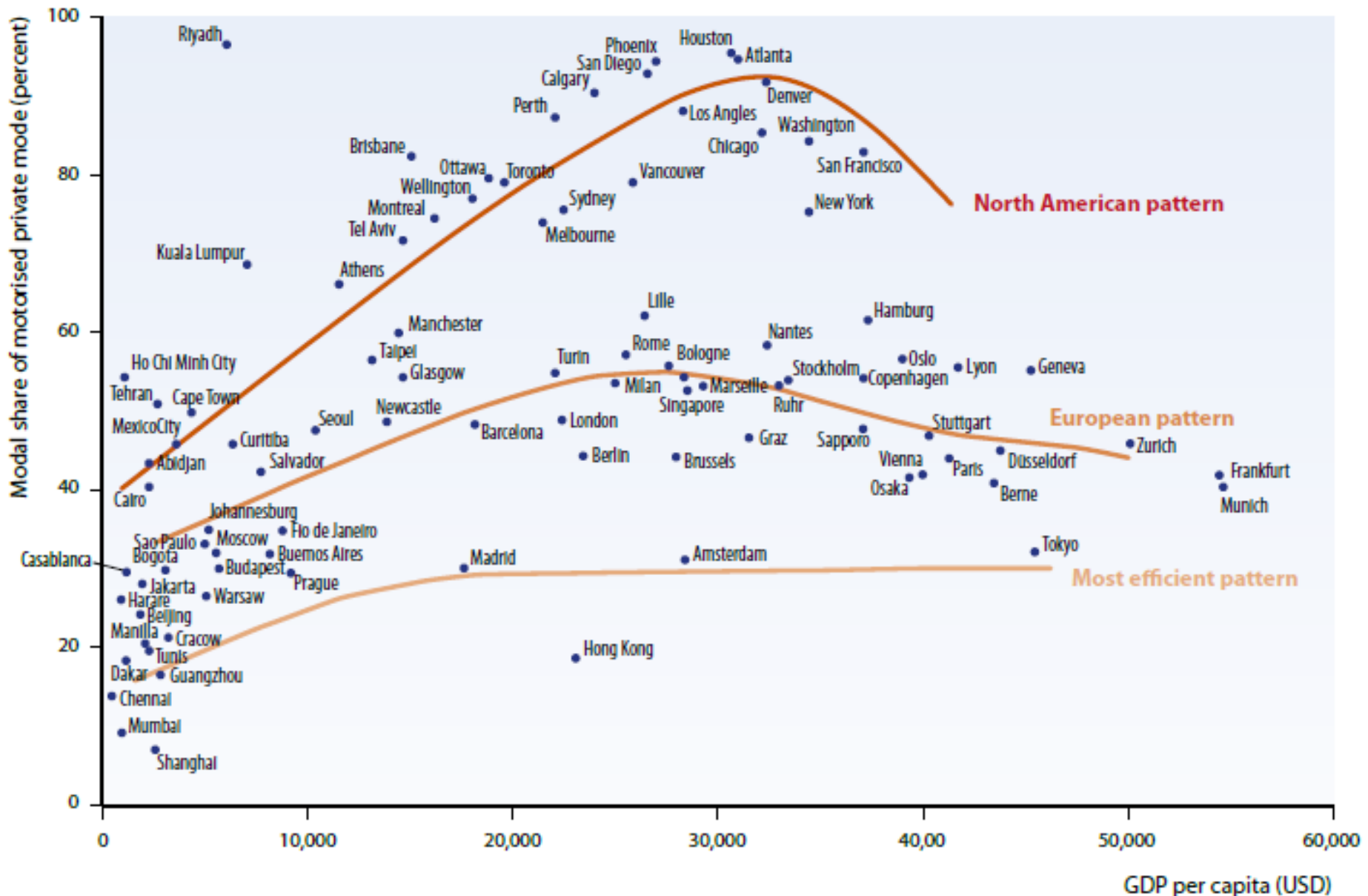
[2011-05-24] Commuting to work can be advantageous in terms of income and career opportunities, and it presents a good alternative to moving. But long commuting times also entail less time for family and friends and can lead to stress and health problems. Pair relationships are also jeopardized, and according to a new dissertation from Umeå University, the risk of separation is 40 percent higher among long-distance commuters than among other people.



Expanding job market regions are prompting more and more people to commute long distances to work, and for 11 percent of Swedes it takes at least 45 minutes to get to work. Many of them are parents of small children and live with their partner, and most of them are men.

In her dissertation, social geographer Erika Sandow at Umeå University has mapped long-distance commuting in Sweden and examined its impacts on income

Transportation patterns around the world



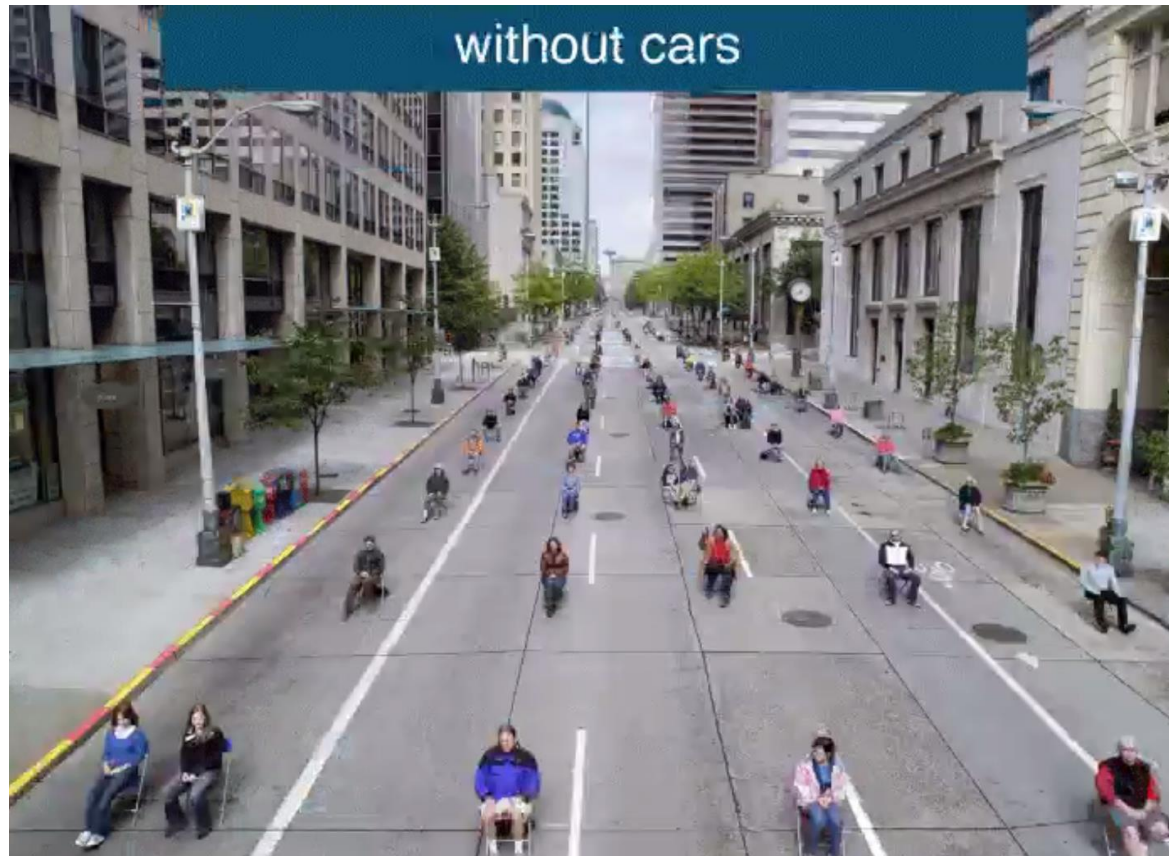
"An advanced city is not one where even the poor use cars,
but one where even the rich use public transport."

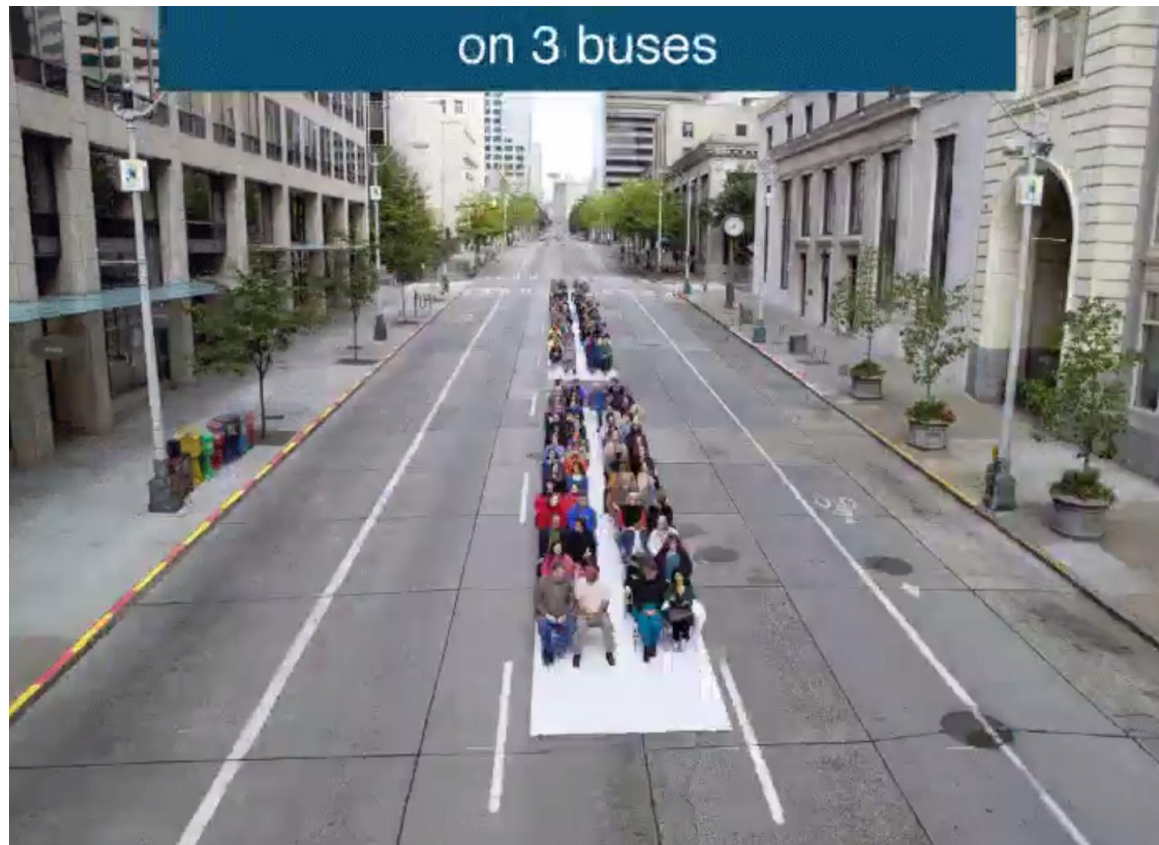
Mr. Peñalosa --former mayor of Bogotá



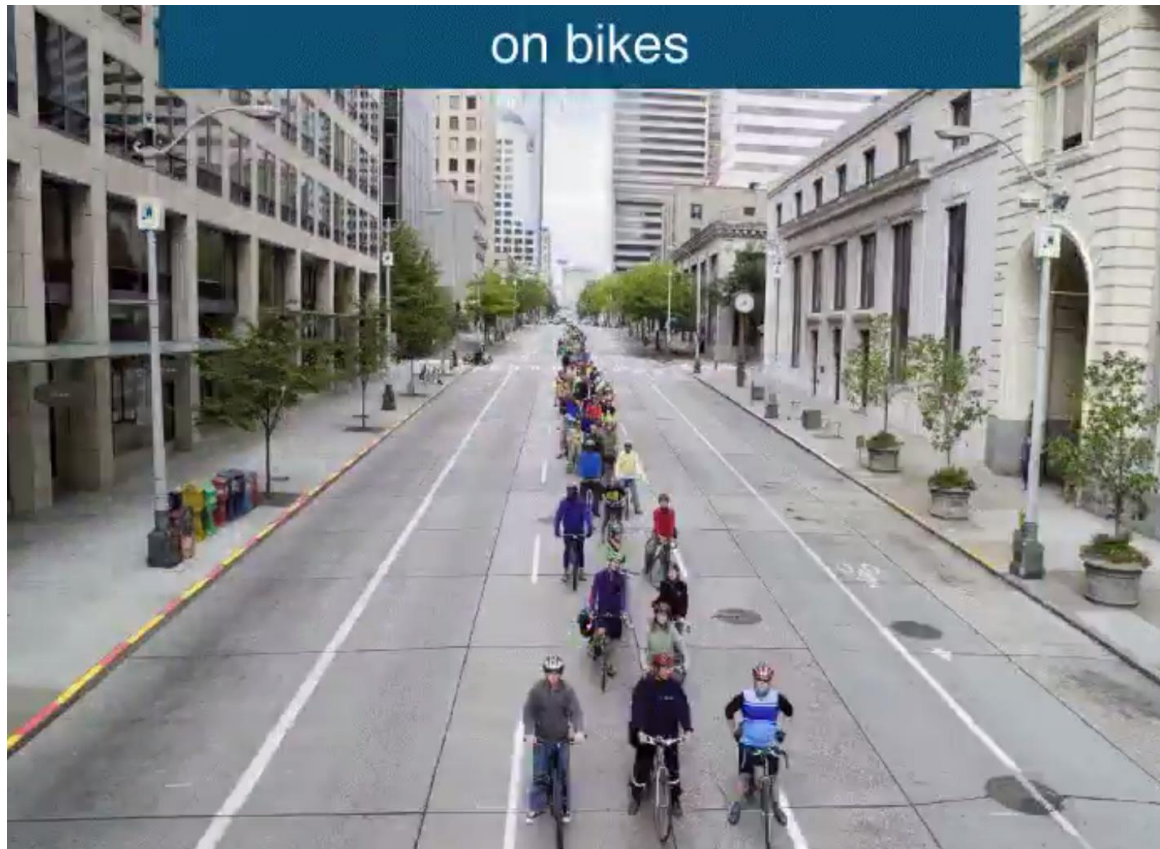
Here are 200 people in 177 cars











Weather is no **excuse!!**



CitiBike Stations: The **water coolers** of 21st century



Healthy city



Jan Gehl – The **sitting** syndrome

Nursing Home - Oslo

Smart Procurement



4. COLLABORATION

Public-Private Partnership



PPP for
CITIES

Specialist Centre
on PPP in Smart
and Sustainable Cities



IESE
Business School
University of Navarra

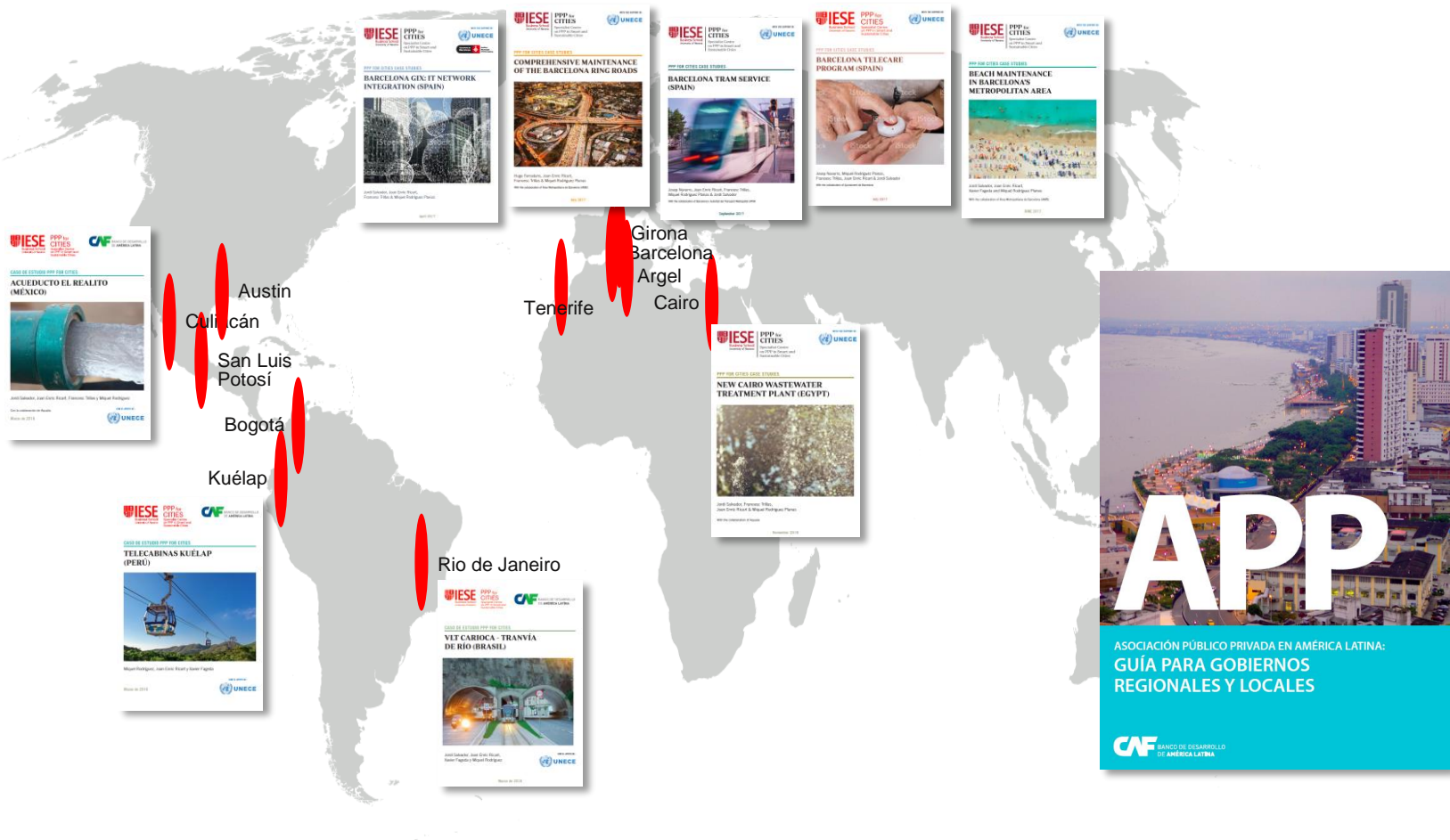
Public-Private Sector
Research Center

Main Partner
 **Ajuntament
de Barcelona**

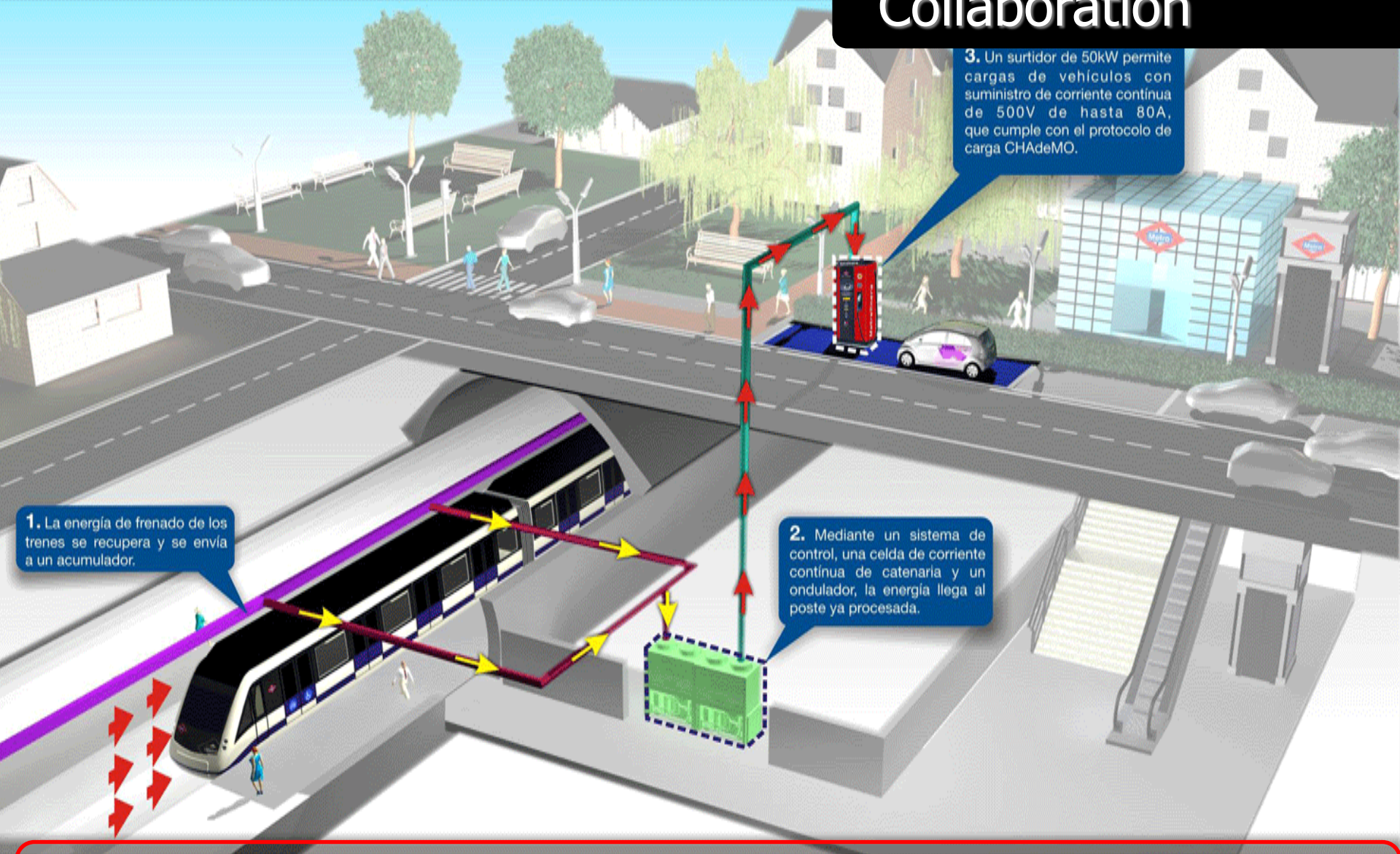


BARCELONA
INSTITUTE OF
TECHNOLOGY

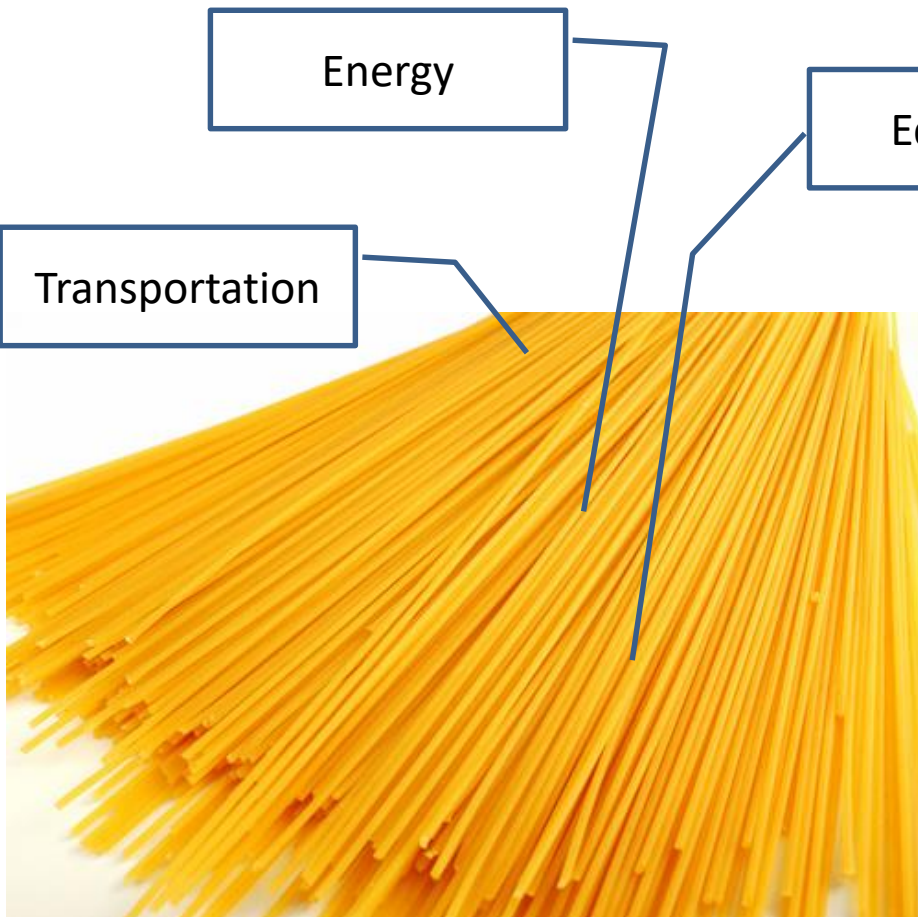
Case Studies PPP for Cities



Collaboration



Breaking **silos**



Cities need to think like **women**




5. PUTTING THE CITIZEN AT THE CENTER

Stupid mayors are putting the wrong things at the heart of smart cities

From San Francisco's energy maps to Helsinki's apps, truly smart cities need to give their residents the right tools





User experience

Design

Bringing the **citizen** to the center





Bringing the **citizen** to the center



The **power** might be in our hands...literally!



FOTOGRAFÍAS ENVIADAS POR LOS CIUDADANOS



Otros

Ruidos nocturnos. Máquinas limpiadoras no dejan dormir



Otros

hace falta cortar el cespez



Otros

Circulo por la calle Miguel de Unamuno y me obligan a realizar un stop para facilitar la

movistar 18:25

Volver Nuevo evento Enviar

AGUAS

Corte de suministro

Jun 19, 2013 06:25:09 PM

Jun 21, 2013 06:25:09 PM

Incidente

Añade una fotografía...

Universidad de Cantabria

Aviso legal

movistar 18:25

Volver Nuevo evento Enviar

Elige un tipo...

Elige una Subcategoría...

Elige una fecha de inicio...

Elige una fecha de fin...

Añade un comentario...

Elige un tipo... OK

AGUAS

CLIMATOLOGIA

CULTURA

www.findtoilet.dk



Buscar



Aplicaciones

Categorías ▾

Inicio

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FindToilet

Tine Müller - 29 de marzo de 2014
Sociedad

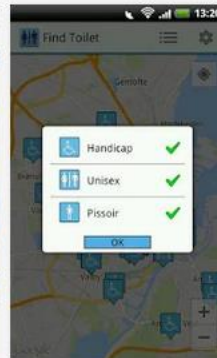
Instalar

Añadir a la lista de deseos

Esta aplicación es compatible con tu dispositivo.

★★★★★ (7)

+3 Recomendar esto en Google



Offer something of **value** to the citizen

6. INNOVATION TO TACKLE GRAND CHALLENGES

Albina Ruiz and "Healthy City"



CIUDAD SALUDABLE

[NOTICIAS](#) | [MAPA DE SITIO](#)

Buscar...



[NOSOTROS](#) ▼

[PROGRAMAS](#) ▼

[TU CONTRIBUCIÓN](#) ▼

[GABINETE DE COMUNICACIÓN](#) ▼

[DÓNDE ACTUAMOS](#)

[CONVOCATORIAS](#)

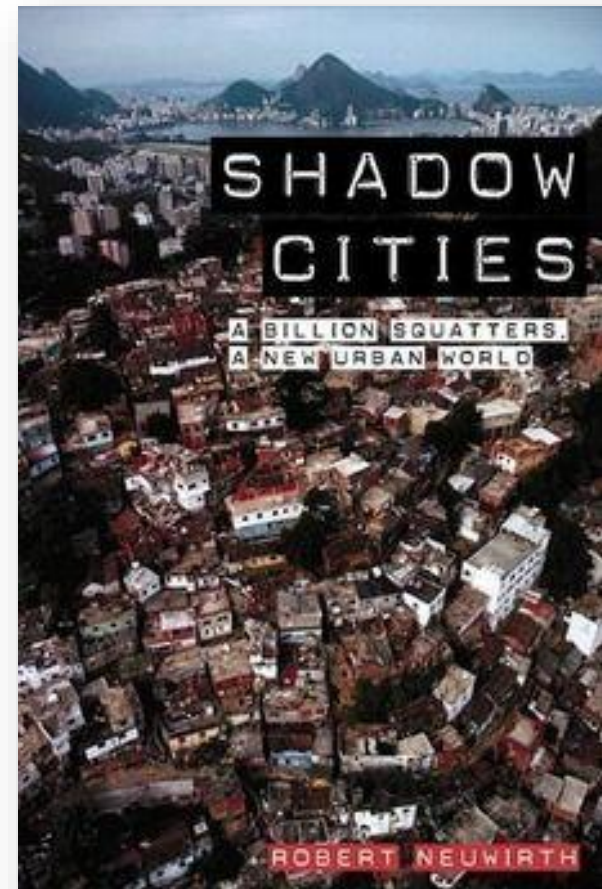
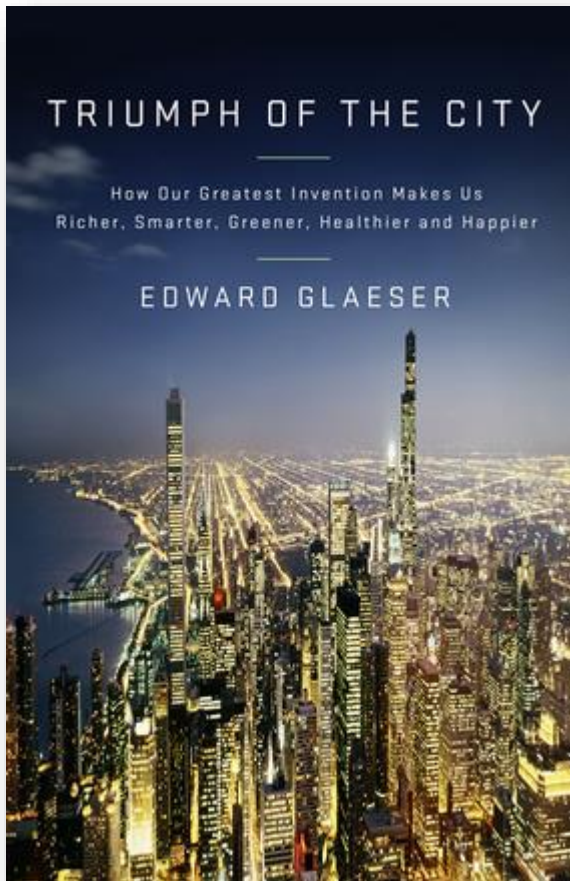
[CONTACTANOS](#)



"NUESTRO MODELO ES RECONOCIDO
A NIVEL MUNDIAL. NUESTRA APUESTA ES
APORTAR A LA CONSTRUCCIÓN DE CIUDADES
MÁS SALUDABLES E INCLUSIVAS".

- **Smart Governance** is more important than technology
- There is no single model of **success** - It is not enough to be good in one **dimension**.
- **Collaboration** is of the utmost importance

It is up to us to decide what **type** of cities we want to live in...



The **perfect** city doesn't exist...





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Email: pberrone@iese.edu

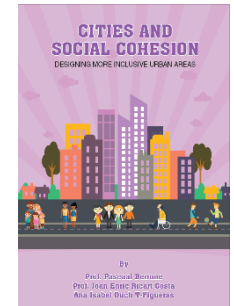
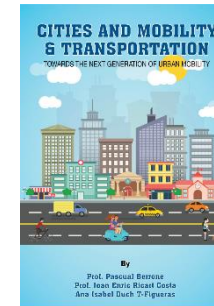
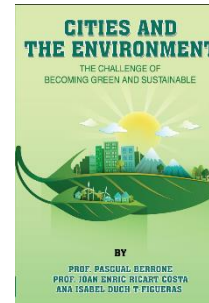
Twitter: @pberrone

www.iese.edu/cim

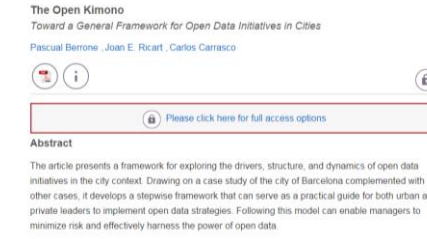
Best Practices and Case Studies

■ Mini-books Series of Best Practices:

“IESE Cities in Motion: International Urban Best Practices”



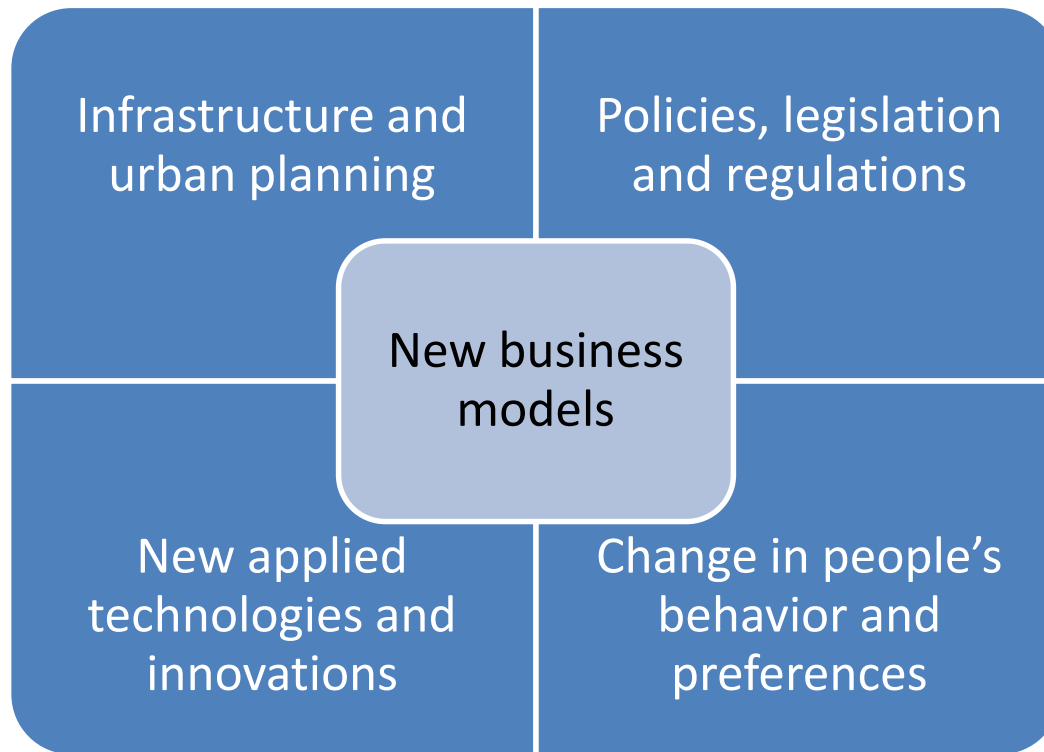
■ Publications of cities: *Open Data, Collaborative Economy...*



- Cases:
 - ✓ Barcelona
 - ✓ Vancouver
 - ✓ Malaga
 - ✓ Medellin

✓ Singapore (*in progress*)

Smart Urban Management Model



Smart Urban Management Model



Infrastructure and
urban planning

Policies, legislation
and regulations

citi bike
New Business
Models



New applied
technologies and
innovations

Change in people's
behavior and
preferences

