

Urban world

How can cities become big and successful, not just big?



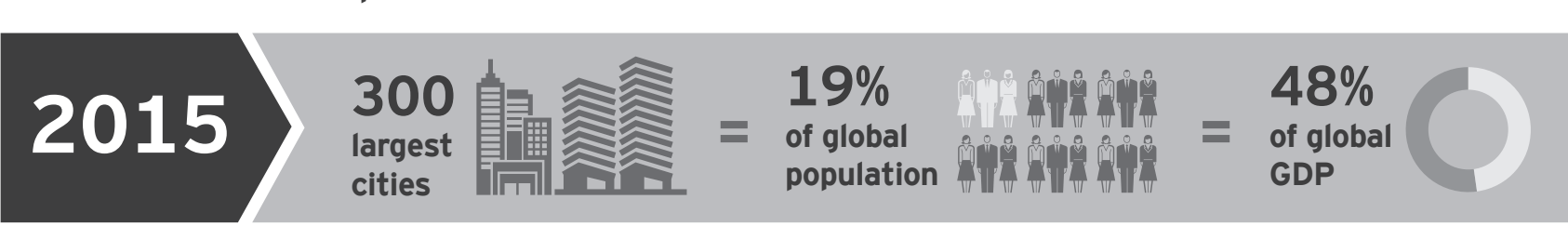
1

The global population is shifting to cities¹



2

Cities will become more powerful than nations²



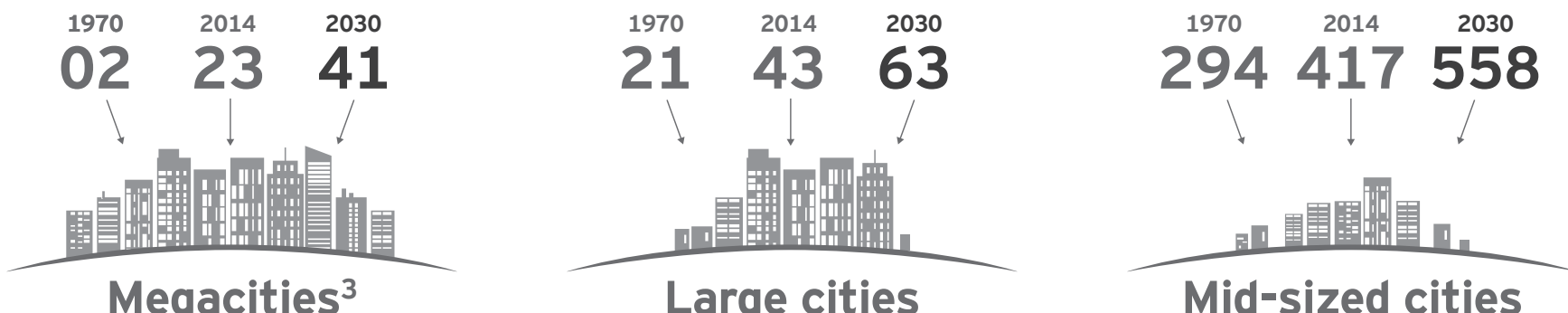
Megacities merging to form global city regions whose populations dwarf many countries²



3

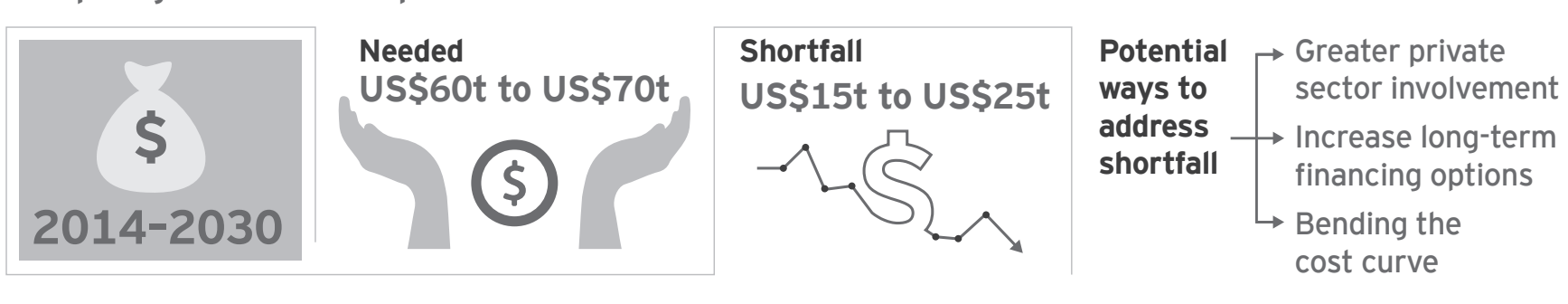
Massive urbanization creates many challenges

1. Existing cities will have to expand and new cities will have to form ...



Number of global cities 1970-2030

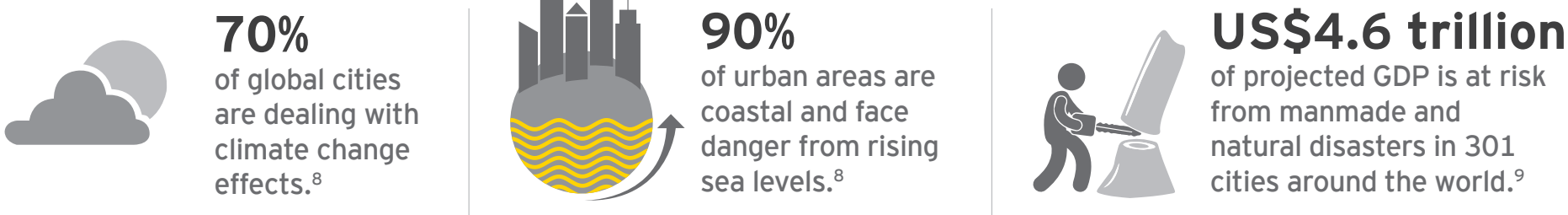
... requiring infrastructure spend ...⁴



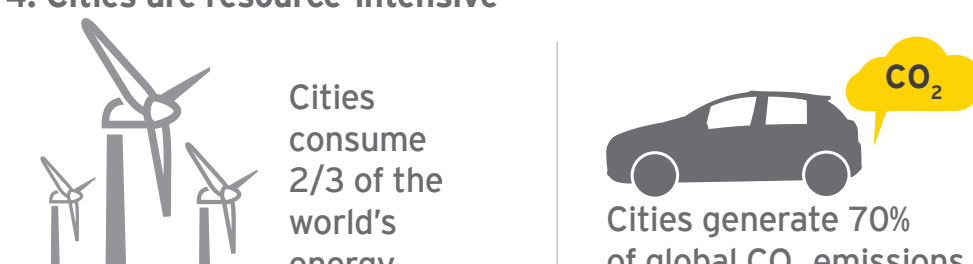
2. Cities are at different levels of maturity and require different approaches

	Innovative infrastructures ⁵	Existing infrastructures ⁶	Developing infrastructures ⁷
Model	Build from scratch or embed latest technologies and thinking	Invest in and develop infrastructure around existing constraints	Invest nationally in infrastructure to help drive economic growth
Examples	<ul style="list-style-type: none"> Masdar City, UAE Shenzhen, China Singapore Hong Kong 	<ul style="list-style-type: none"> London, UK New York, US Sydney, Australia Tokyo, Japan 	<ul style="list-style-type: none"> Rio de Janeiro, Brazil Mumbai, India Lagos, Nigeria Jakarta, Indonesia
Biggest upside	To create smart, competitive, eco-friendly cities	To stay competitive as legacy trade, commerce and cultural hubs	To become more competitive and attract foreign investment
Biggest threat	Overdevelopment Data: Current urban housing plans in China geared to accommodate 3.4 billion people - 2015 population is only 1.4 billion and expected to slow.	Aging infrastructure and sustained underinvestment Data: EY survey: 82% of public and private sector respondents said public's willingness or ability to pay for infrastructure will have a dramatic or significant impact on future of urban RE and infrastructure	Congestion, pollution and slums Data: Over 30% of city dwellers in 2050 will live in slums

3. Cities are vulnerable



4. Cities are resource-intensive



4

The upside of urbanization is innovation

Compact strategies

US\$3t in capital investment in urban infrastructure can be saved in the next 15 years by pursuing more compact strategies.¹⁰

Driverless

Autonomous electric cab in 2030 could emit up to 94% fewer emissions per mile than a conventional gasoline car.¹³

Optimization

Optimizing vehicle flows can achieve carbon and energy savings of 10% to 15%.¹¹

Resiliency

Bristol (UK), New Orleans (US), Medellin (Colombia), and Melbourne (Australia) are among the cities that have appointed a Chief Resiliency Officer.¹⁴

Cap and trade

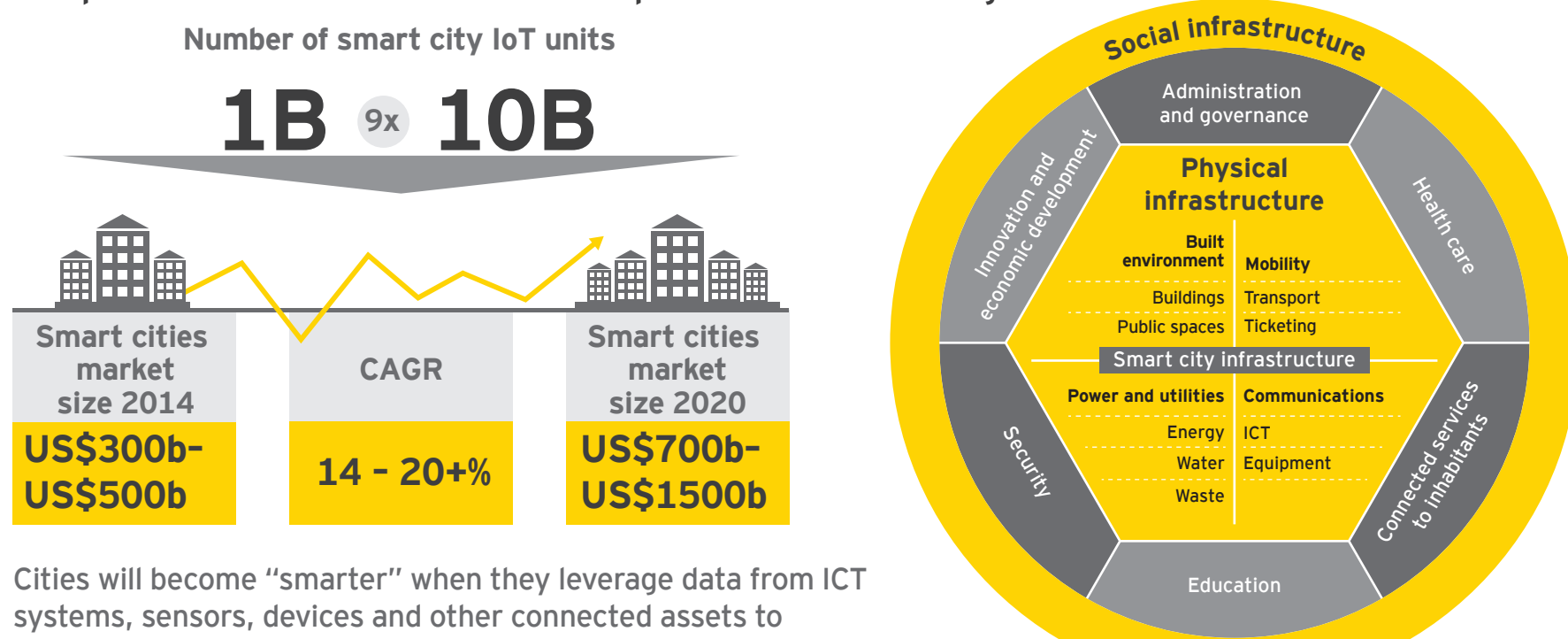
Tokyo's cap-and-trade program has achieved 25% reduction in greenhouse gas (GHG) emissions of covered facilities after its 5th year.¹²

Net zero energy

Net zero energy - where the renewable energy generated by a building in a given year equals the total energy the building uses - has become a goal for many buildings around the world.

5

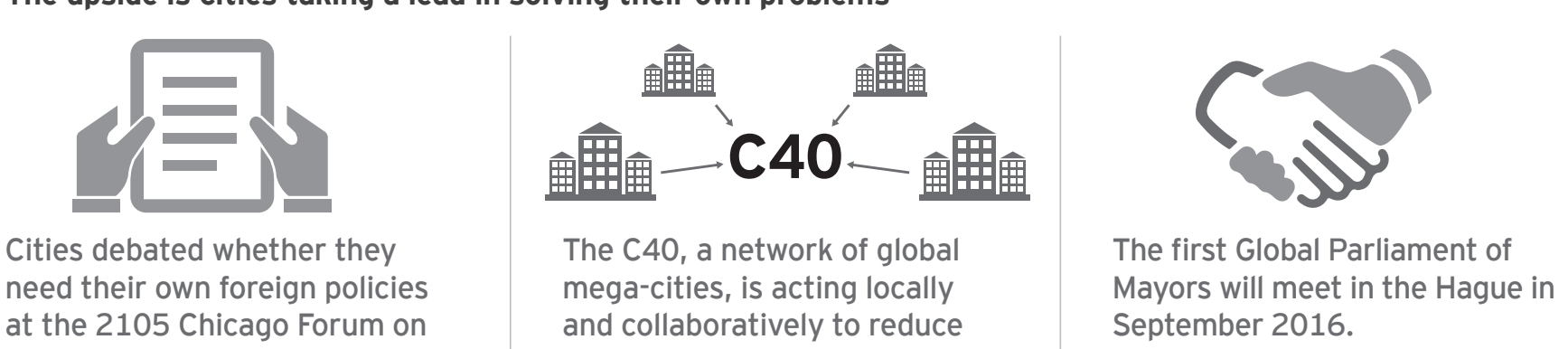
The upside is cities become "smarter" ... the promise of 10 billion things



Cities will become "smarter" when they leverage data from ICT systems, sensors, devices and other connected assets to improve decision-making across other urban challenges related to the physical and social infrastructure.¹⁵

6

The upside is cities taking a lead in solving their own problems



7

The upside of urbanization is greater private sector participation

Many governments face fiscal pressure ...

OECD countries

Government debt-to-GDP¹⁶

... making it difficult to fund infrastructure and other city projects

Private sector participation is essential...

Private sector financing | Greater regulatory certainty

Some benefits of infrastructure PPPs

- Private sector innovation and technology
- Long-term value-for-money through appropriate risk transfer to the private sector over the life of projects

1. World Urbanization Prospects, United Nations, 2014, <http://esa.un.org/unpd/wup/Publications/Files/WUP2014-Report.pdf>.
 2. State of the World's Cities 2010/2011, UN Habitat, 2010, <http://unhabitat.org/books/state-of-the-worlds-cities-20102011-cities-for-all-bridging-the-urban-divide/>.
 3. World Urbanization Prospects, United Nations, 2014, <http://esa.un.org/unpd/wup/Publications/Files/WUP2014-Report.pdf>.
 4. B20 Infrastructure & Investment Taskforce Policy Summary, B20 Australia, July 2014, <http://www.b20australia.info/Documents/B20Infrastructure%20and%20Investment%20Taskforce%20Report.pdf>.
 5. "China is Still Building Ghost Cities," The Diplomat, 19 October 2015, <http://thediplomat.com/2015/10/china-is-still-building-ghost-cities/>.
 6. Infrastructure 2014: Shaping the Competitive City, EY and Urban Land Institute, 2014, [http://www.ey.com/Publication/vwLUAssets/EY_-_Infrastructure_2014_shaping_the_competitive_city/\\$FILE/EY-Infrastructure-2014-shaping-the-competitive-city.pdf](http://www.ey.com/Publication/vwLUAssets/EY_-_Infrastructure_2014_shaping_the_competitive_city/$FILE/EY-Infrastructure-2014-shaping-the-competitive-city.pdf).
 7. Sustainable Development Challenge: World Economic and Social Survey 2013, United Nations, 2013, http://www.un.org/en/development/desa/policy/wess/wess_current/wess2013/WESS2013.pdf.
 8. Why Cities: Ending Climate Change Begins in the City, C40 Cities, 2016, <http://www.c40.org/ending-climate-change-begins-in-the-city>.
 9. Lloyd's City Risk Index 2015-2025, Lloyd's, 2015, <http://www.lloyds.com/cityriskindex/>.
 10. Cities for People: Insights from the Data, Energy Innovation, April 2015, <http://energyinnovation.org/wp-content/uploads/2015/05/C4P-Insights-from-the-Data.pdf>.
 11. The Route To Carbon And Energy Savings: Transit Efficiency in 2030 And 2050 - Final Report, Center for Neighborhood Technology, Chicago, November 2010; <https://www.transit.dot.gov/regulations-and-guidance/environmental-programs/route-carbon-and-energy-savings-transit-efficiency>.
 12. "Tokyo Cap-and-Trade Program Slashed GHG Emissions by 25% after 5th Year," ICLEI, 3 January 2016, <http://www.iclei.org/details/article/tokyo-cap-and-trade-program-slashed-ghg-emissions-by-25-in-five-years.html>.
 13. "Electric 'robocabs' would reduce US greenhouse emissions by 94% - study," The Guardian, 6 July 2015; <http://www.theguardian.com/environment/2015/jul/06/electric-robocabs-reduce-us-greenhouse-emissions-94-percent-study>.
 14. "2nd Annual Chief Resilience Officer Summit Begins November 9 in Mexico City," 100 Resilient Cities, 6 November 2015; <http://www.100resilientcities.org/blog/entry/2nd-annual-chief-resilience-officer-summit-begins-november-9-in-mexico-city/#/>.
 15. "Gartner: Smart Cities Will Use 1.1 Billion Connected Things in 2015," Press Release, 18 March 2015; <http://www.gartner.com/newsroom/id/3008917>.
 16. "Percentage of Public Debt in GDP Around the World," Global Finance, 6 May 2016; <https://www.gfmg.com/global-data/economic-data/public-debt-percentage-gdp?page=2>.