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Making Cities Work – Sustainable Urban Infrastructure

Stuart Clarkson
Chief Executive Officer - Siemens Southern Africa
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Nairobi

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Megatrends pose urgent challenges to cities

Urbanisation

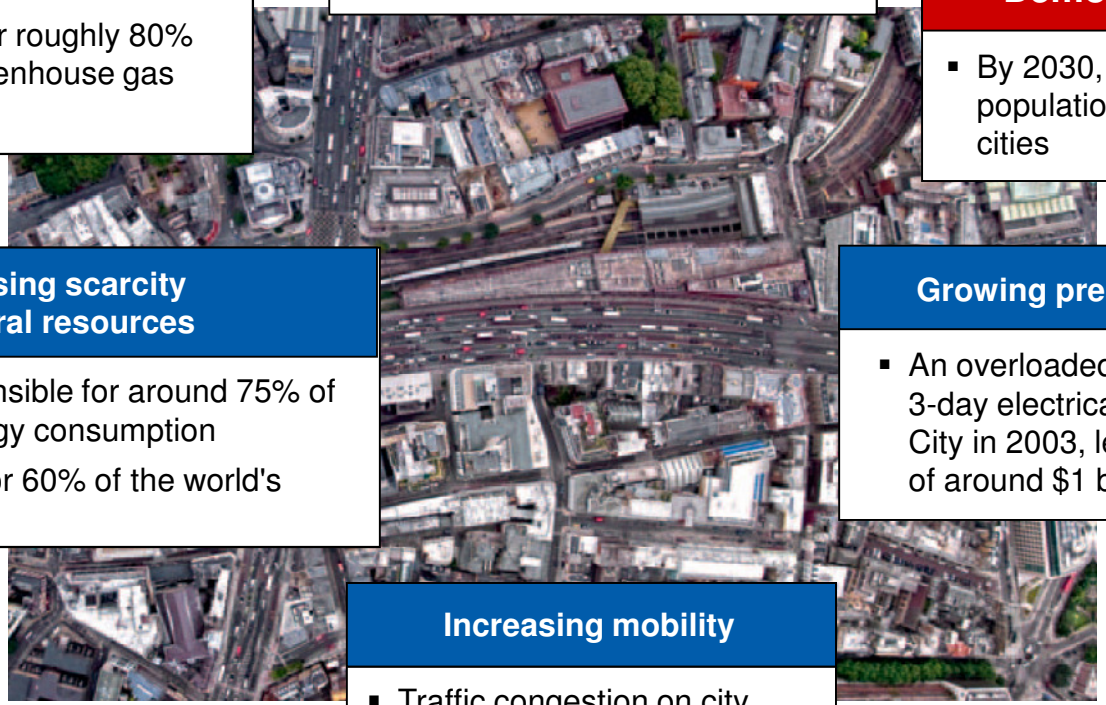
- Since 2007, 50% of the world's population live in cities

Climate Change

- Cities account for roughly 80% of worldwide greenhouse gas emissions

Demographic Change

- By 2030, 90% of the world's population growth will occur in cities



Increasing scarcity of natural resources

- Cities are responsible for around 75% of the world's energy consumption
- Cities account for 60% of the world's water use

Growing pressure on infrastructure

- An overloaded power grid caused a 3-day electrical blackout in New York City in 2003, leading to economic costs of around $1 billion

Increasing mobility

- Traffic congestion on city streets in Western Europe will more than double between 2006 and 2010

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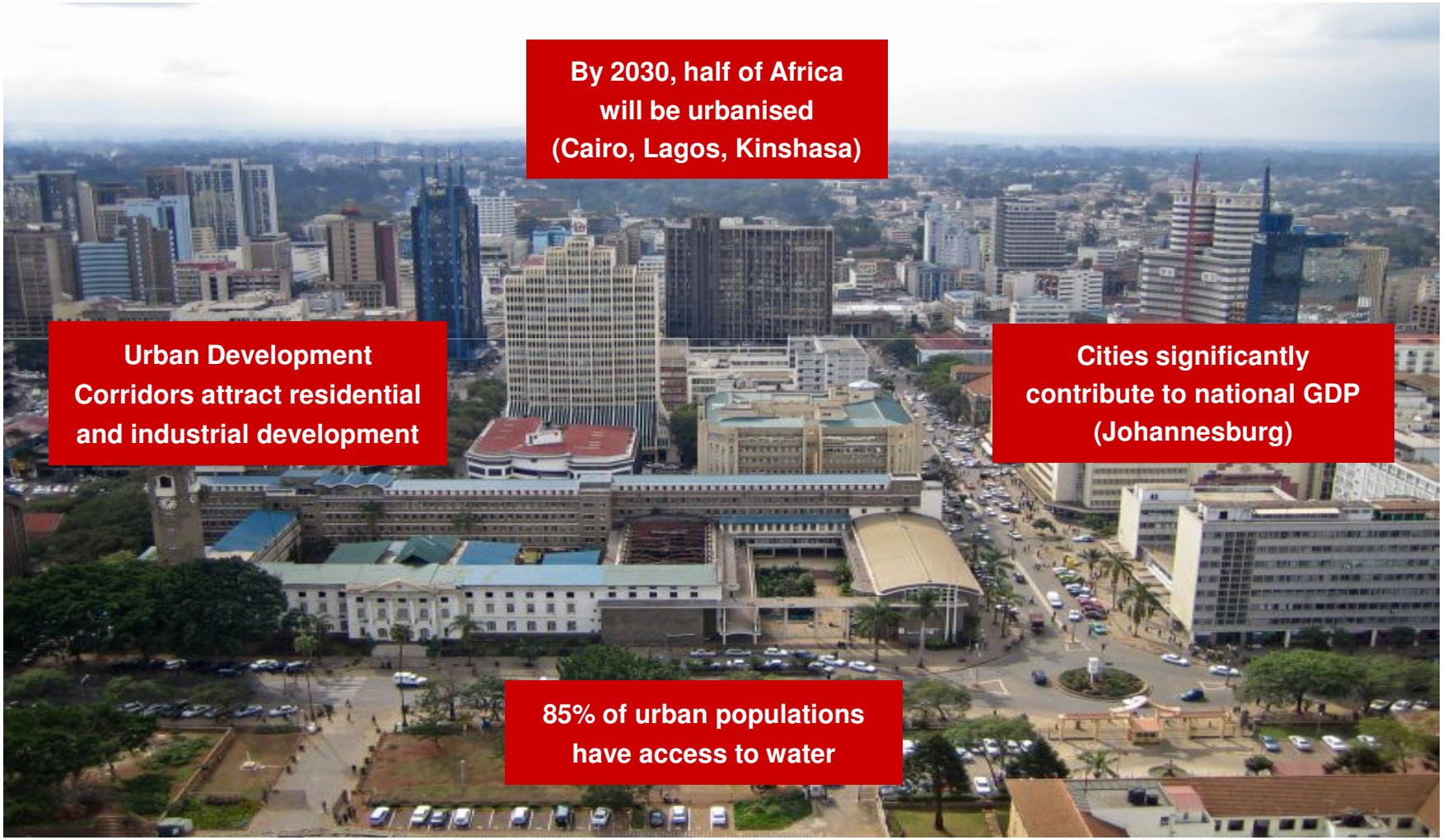
Urbanisation in Africa



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Siemens insights into "how to become sustainable", jointly developed with major world cities

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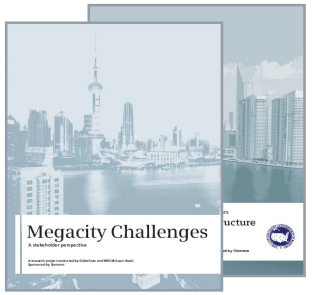
Perception studies

Megacity Challenges

- Comprehensive analysis based on interviews with over **500 city managers in 25 selected megacities**
- Urban infrastructure **trends and challenges** as well as **global best practices**

New: **The Sustainable Cities Challenge in Canada**
ICT for City Management



Comparative studies

Green City Index

- **Index compares cities** across **8 dimensions of sustainability**: CO_2, Energy, Buildings, Transport, Waste & Land Use, Water, Air, Governance
- Started in Europe**, roll-out** in Africa, Latin America and Asia

Implementation studies

Sustainable urban infrastructure series

- **"How to become a sustainable city"** with focus on measures for **resource efficiency and CO_2 abatement**
- Examples: London, Munich, Yekaterinburg, Dublin, Trondheim, ...

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Comparative Study: The European Green City Index assesses 30 major European cities

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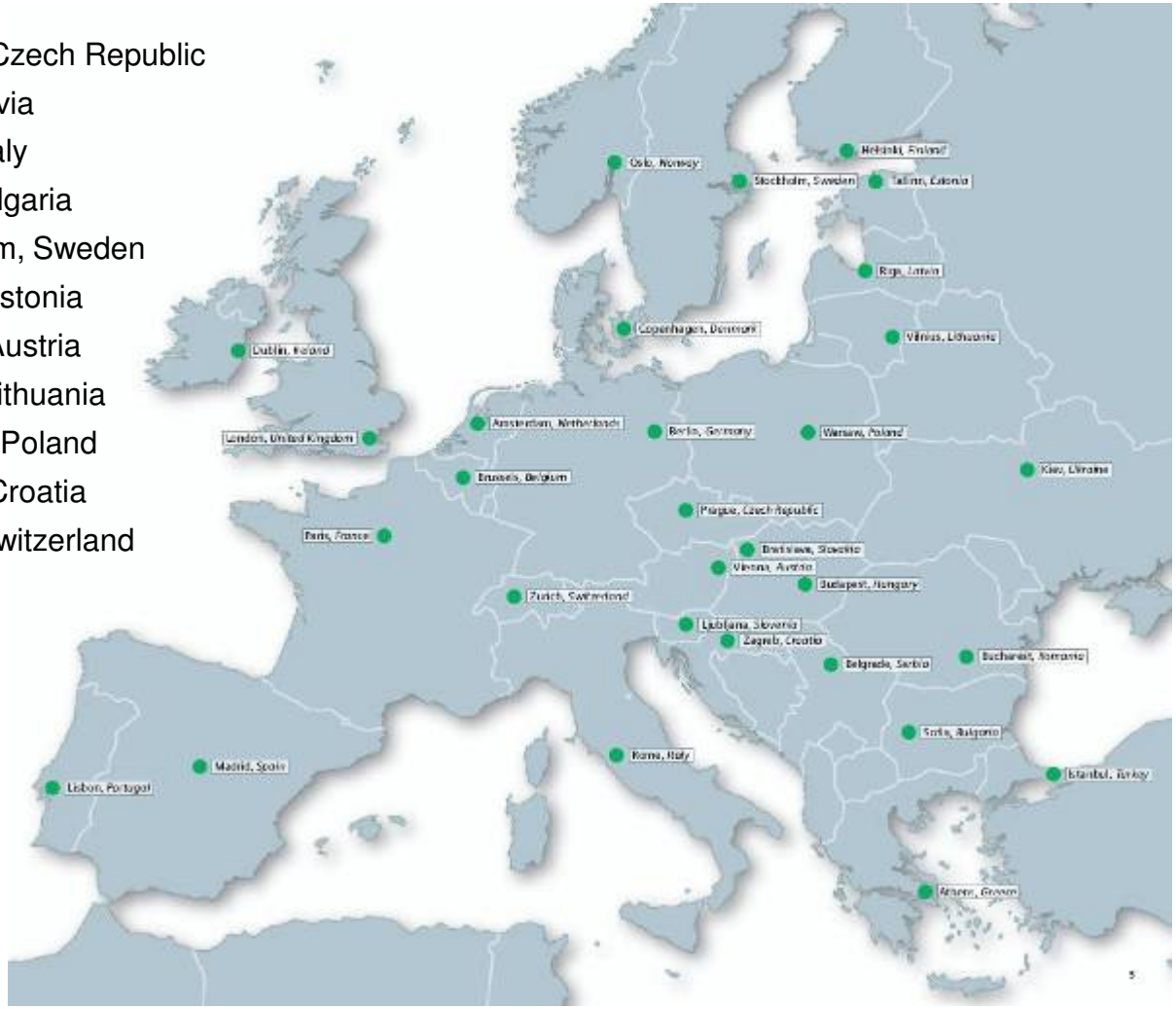
- Amsterdam, Netherlands
- Athens, Greece
- Belgrade, Serbia
- Berlin, Germany
- Bratislava, Slovakia
- Brussels, Belgium
- Bucharest, Romania
- Budapest, Hungary
- Copenhagen, Denmark
- Dublin, Ireland
- Helsinki, Finland
- Istanbul, Turkey
- Kiev, Ukraine
- Lisbon, Portugal
- Ljubljana, Slovenia
- London, UK
- Madrid, Spain
- Oslo, Norway
- Paris, France
- Prague, Czech Republic
- Riga, Latvia
- Rome, Italy
- Sofia, Bulgaria
- Stockholm, Sweden
- Tallinn, Estonia
- Vienna, Austria
- Vilnius, Lithuania
- Warsaw, Poland
- Zagreb, Croatia
- Zurich, Switzerland



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16 quantitative and 14 qualitative indicators in 8 categories were assessed

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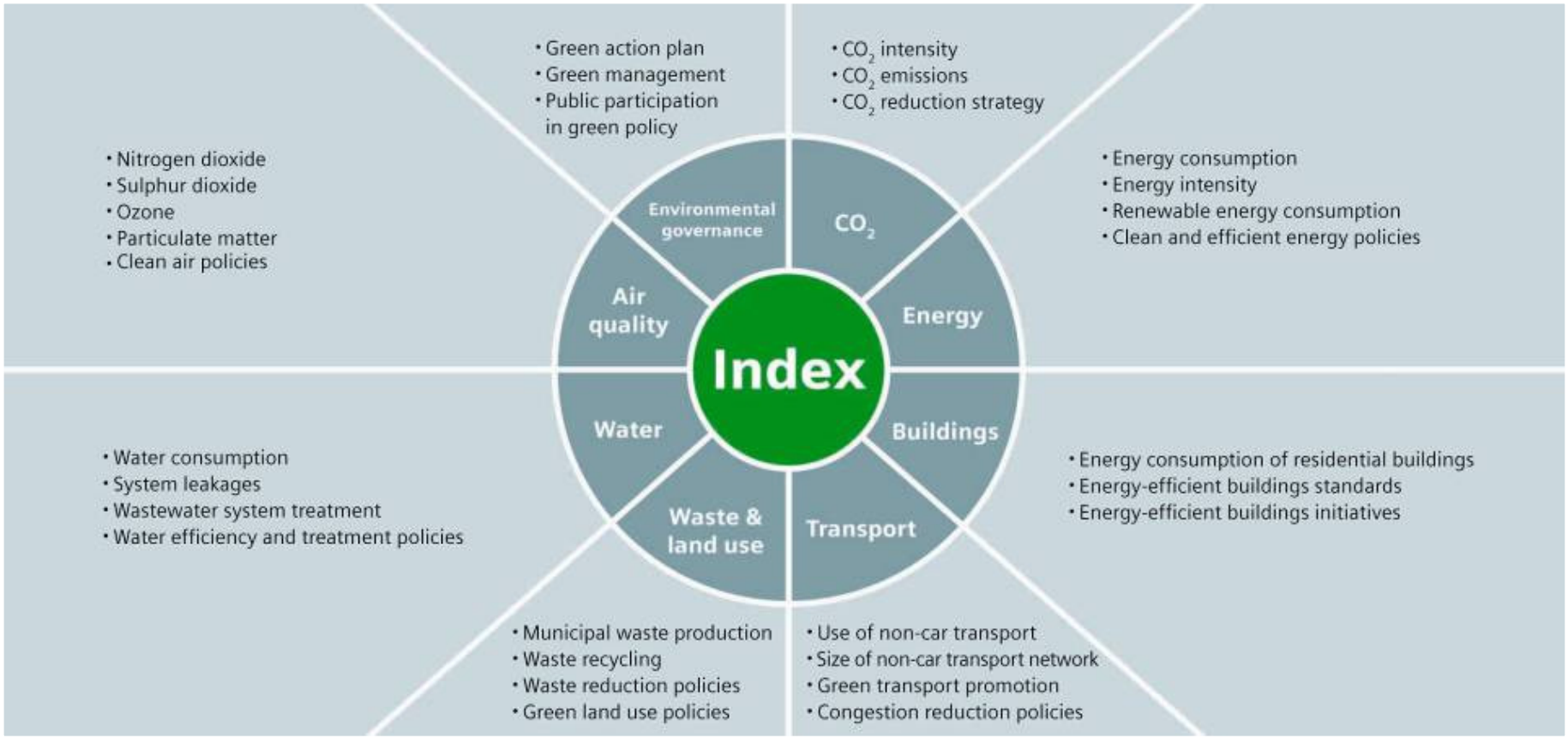

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Scandinavian countries score best, Copenhagen comes in first overall

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Overall

	City	Score
1	Copenhagen	87,31
2	Stockholm	86,65
3	Oslo	83,98
4	Vienna	83,34
5	Amsterdam	83,03
6	Zurich	82,31
7	Helsinki	79,29
8	Berlin	79,01
9	Brussels	78,01
10	Paris	73,21
11	London	71,56
12	Madrid	67,08
13	Vilnius	62,77
14	Rome	62,58
15	Riga	59,57
16	Warsaw	59,04
17	Budapest	57,55
18	Lisbon	57,25
19	Ljubljana	56,39
20	Bratislava	56,09
21	Dublin	53,98
22	Athens	53,09
23	Tallinn	52,98
24	Prague	49,78
25	Istanbul	45,20
26	Zagreb	42,36
27	Belgrade	40,03
28	Bucharest	39,14
29	Sofia	36,85
30	Kiev	32,33

CO_2

	City	Score
1	Oslo	9,58
2	Stockholm	8,99
3	Zurich	8,48
4	Copenhagen	8,35
5	Brussels	8,32
6	Paris	7,81
7	Rome	7,57
8	Vienna	7,53
9	Madrid	7,51
10	London	7,34

Energy

	City	Score
1	Oslo	8,71
2	Copenhagen	8,69
3	Vienna	7,76
4	Stockholm	7,61
5	Amsterdam	7,08
6	Zurich	6,92
7	Rome	6,40
8	Brussels	6,19
9	Lisbon	5,77
10	London	5,64

Buildings

	City	Score
=1	Berlin	9,44
=1	Stockholm	9,44
3	Oslo	9,22
4	Copenhagen	9,17
5	Helsinki	9,11
6	Amsterdam	9,01
7	Paris	8,96
8	Vienna	8,62
9	Zurich	8,43
10	London	7,96

Transport

	City	Score
1	Stockholm	8,81
2	Amsterdam	8,44
3	Copenhagen	8,29
4	Vienna	8,00
5	Oslo	7,92
6	Zurich	7,83
7	Brussels	7,49
8	Bratislava	7,16
9	Helsinki	7,08
=10	Budapest	6,64
=10	Tallinn	6,64

Water

	City	Score
1	Amsterdam	9,21
2	Vienna	9,13
3	Berlin	9,12
4	Brussels	9,05
=5	Copenhagen	8,88
=5	Zurich	8,88
7	Madrid	8,59
8	London	8,58
9	Paris	8,55
10	Prague	8,39

Waste and land use

	City	Score
1	Amsterdam	8,98
2	Zurich	8,82
3	Helsinki	8,69
4	Berlin	8,63
5	Vienna	8,60
6	Oslo	8,23
7	Copenhagen	8,05
8	Stockholm	7,99
9	Vilnius	7,31
10	Brussels	7,26

Air quality

	City	Score
1	Vilnius	9,37
2	Stockholm	9,35
3	Helsinki	8,84
4	Dublin	8,62
5	Copenhagen	8,43
6	Tallinn	8,30
7	Riga	8,28
8	Berlin	7,86
9	Zurich	7,70
10	Vienna	7,59

Environmental governance

	City	Score
=1	Brussels	10,00
=1	Copenhagen	10,00
=1	Helsinki	10,00
=1	Stockholm	10,00
=5	Oslo	9,67
=5	Warsaw	9,67
=7	Paris	9,44
=7	Vienna	9,44
9	Berlin	9,33
10	Amsterdam	9,11

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African Green City Index – a unique ranking of leading African cities – planned for 2011

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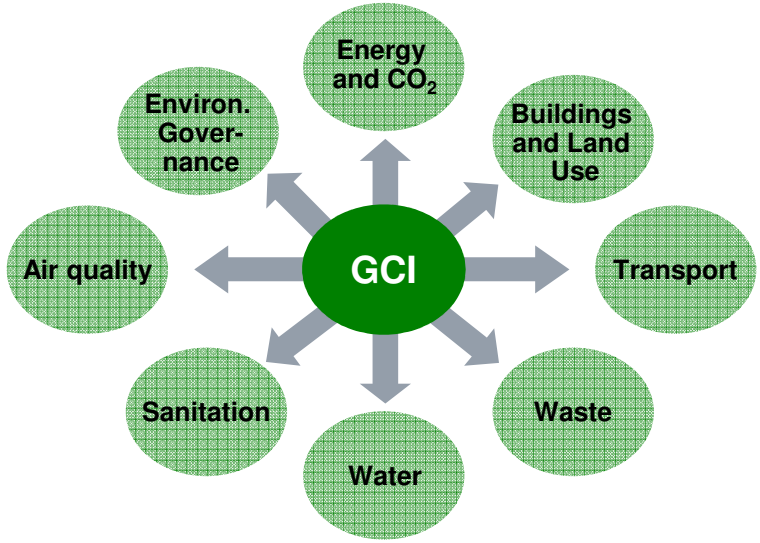
- Highlights the environmental performance and policies of 16 leading African capitals and business hubs
- Independent research partner:
  Economist Intelligence Unit | The Economist
- **Results to be published early in 2011**
- Assessment of quantitative and qualitative indicators in 8 environmental categories:



▶ **City selection determined on the basis of data availability!**

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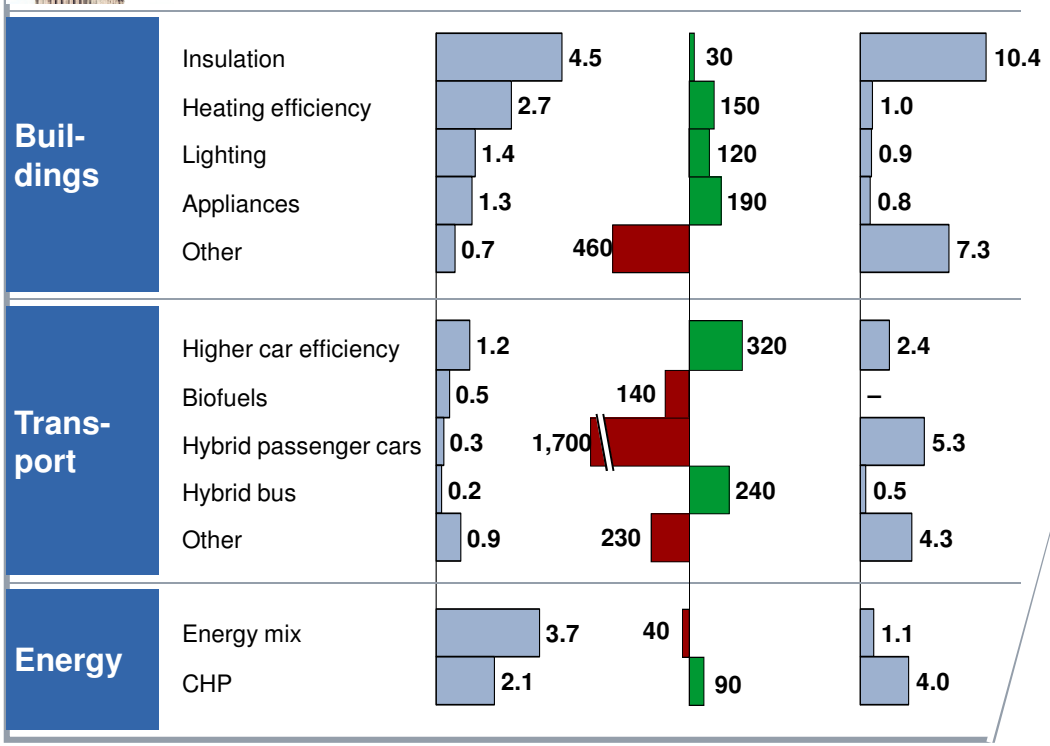
Implementation Study – Pilot London [1)]

Findings (time horizon: 2025)



Results

- Two-thirds of CO_2 reducing technologies generate a Return On Investment (ROI)
- ~75% of the abatement potential lies in the hands of individuals / businesses who make technological choices
- The total required investment is less than 1% of London's total economic output by 2025

Conclusions

- Financial prioritisation
- Broad technology expertise across infrastructure areas is mandatory to identify suitable combinations of solutions.
- Sustainability motivates city decision-makers to think and act cohesively

1) Siemens Sustainable Urban Infrastructure – London Study, a research project conducted by McKinsey, sponsored by Siemens

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Sustainable Green Growth – Siemens examples for energy efficiency in cities

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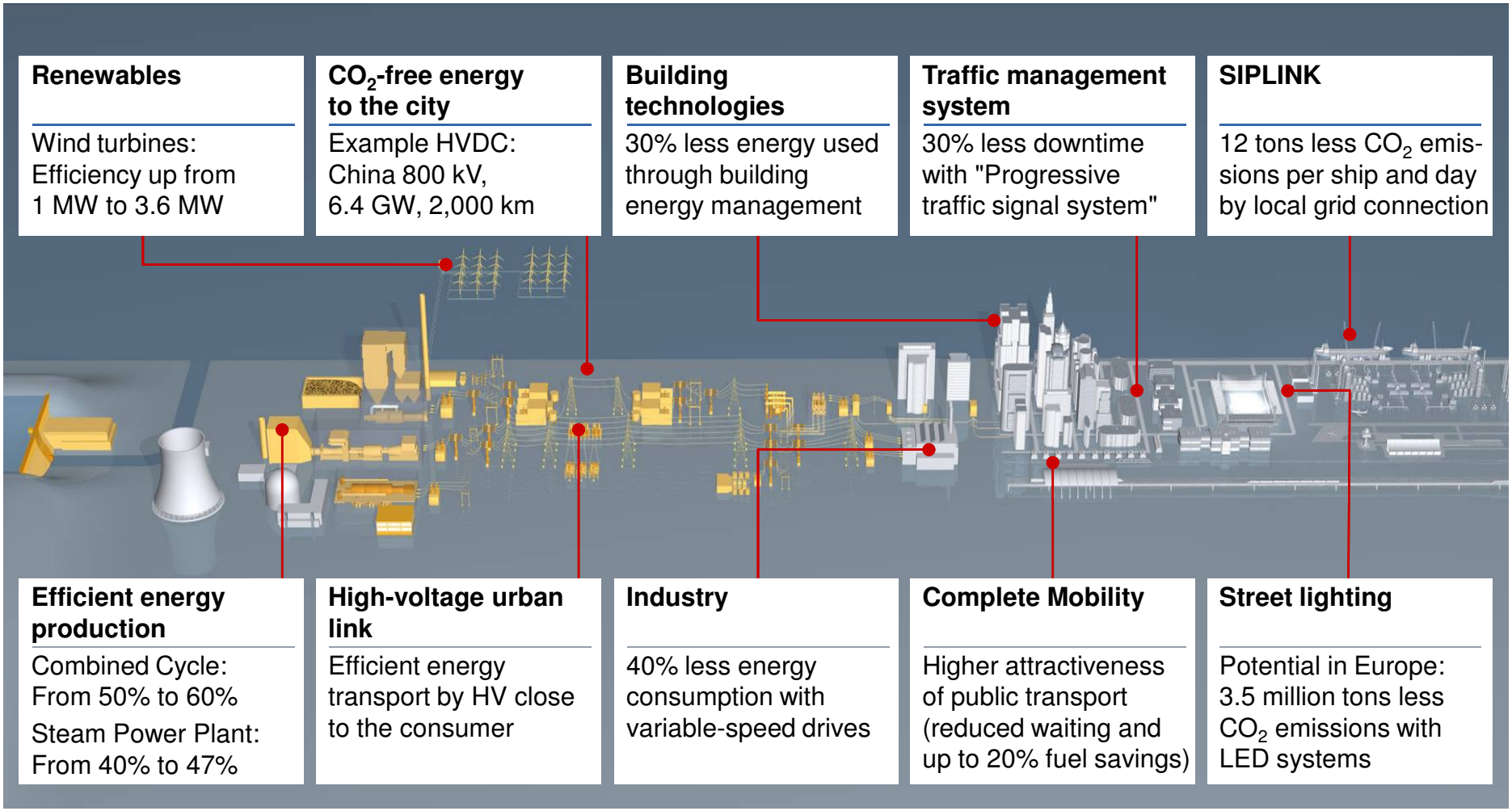
Existing technology achieves high gains in efficiency and CO_2 abatement



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Siemens products and solutions will help to abate 300 million tons of CO_2 by 2011

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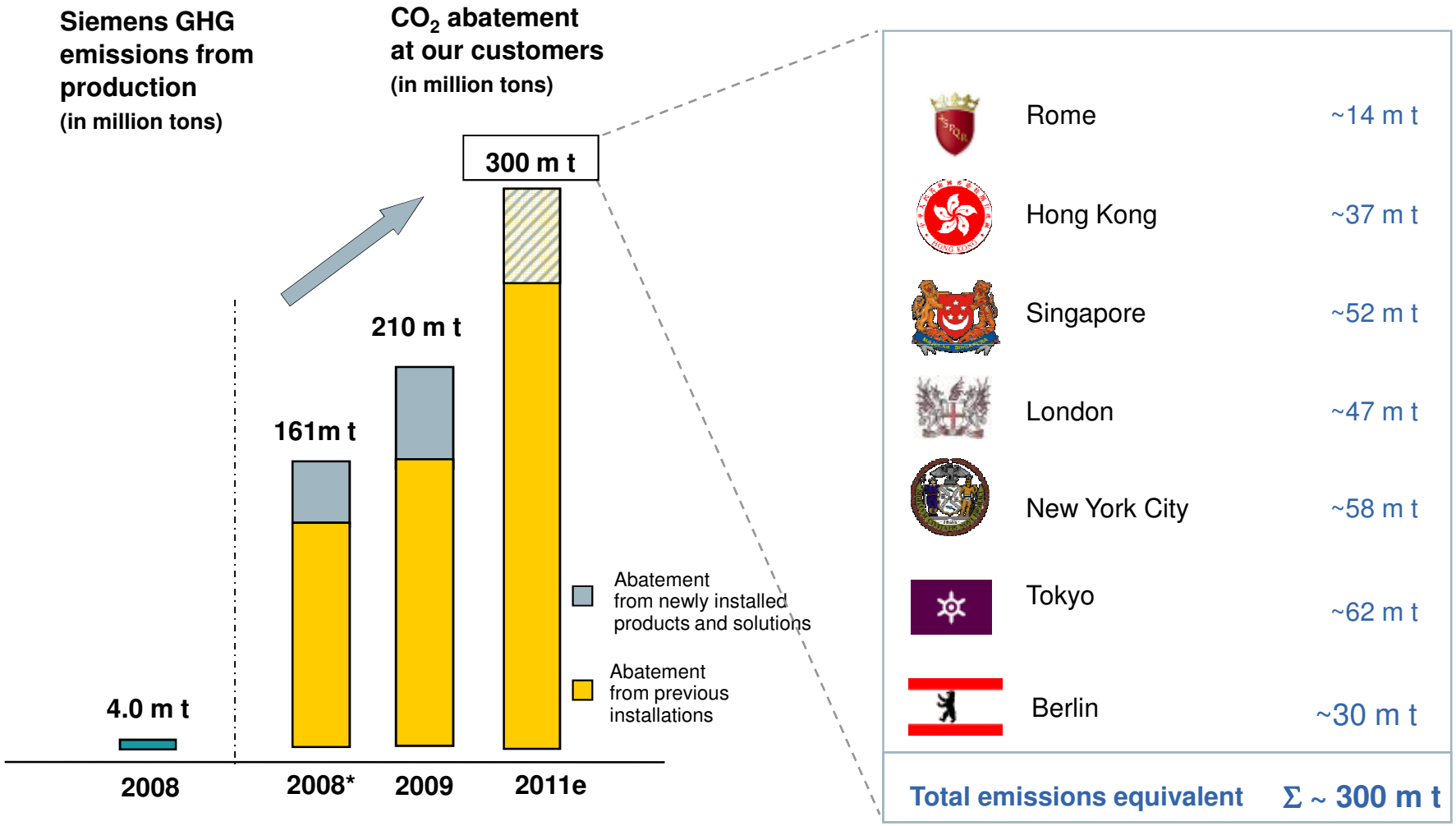

• Adjustments in 2008 to ensure consistency – changes compared to previously communicated 148 mt due to methodology improvements and inclusion of new products in fiscal 2009

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A lot has been achieved...

- Nearly all cities have **lower CO_2 emissions per head** than the overall EU average of 8.46 tonnes. The 30-city average is also well below the average, at 5.21 tonnes
- **23** out of 30 cities **have a CO_2 reduction target** of some kind, separate from any national target. Of these, 15 have a concrete, city-specific action plan in place to support this

- More than half of all citizens in these cities **(62.5%) either walk, cycle or take public transport** to commute to work
- Two thirds of all cities actively **promote** public awareness around **green modes of transport**
- The average **municipal waste per head** generated each year across these cities is 511 kg, slightly better than the EU average of 522 kg. By contrast, the US average is 760 kg and Australia is 690 kg

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... but there's still work to be done

- The average proportion of **renewable energy** consumed is just **7.3%**, a long way short of the EU's stated goal of increasing the share of renewable energy usage to 20% by 2020
- Just 14 of the 30 cities actively **promote green energy usage** through low or no taxes, subsidies or regulations
- Nearly **one in four litres of water** consumed by cities is **lost through leakage**
- **Less than one fifth** of overall waste is currently **recycled**

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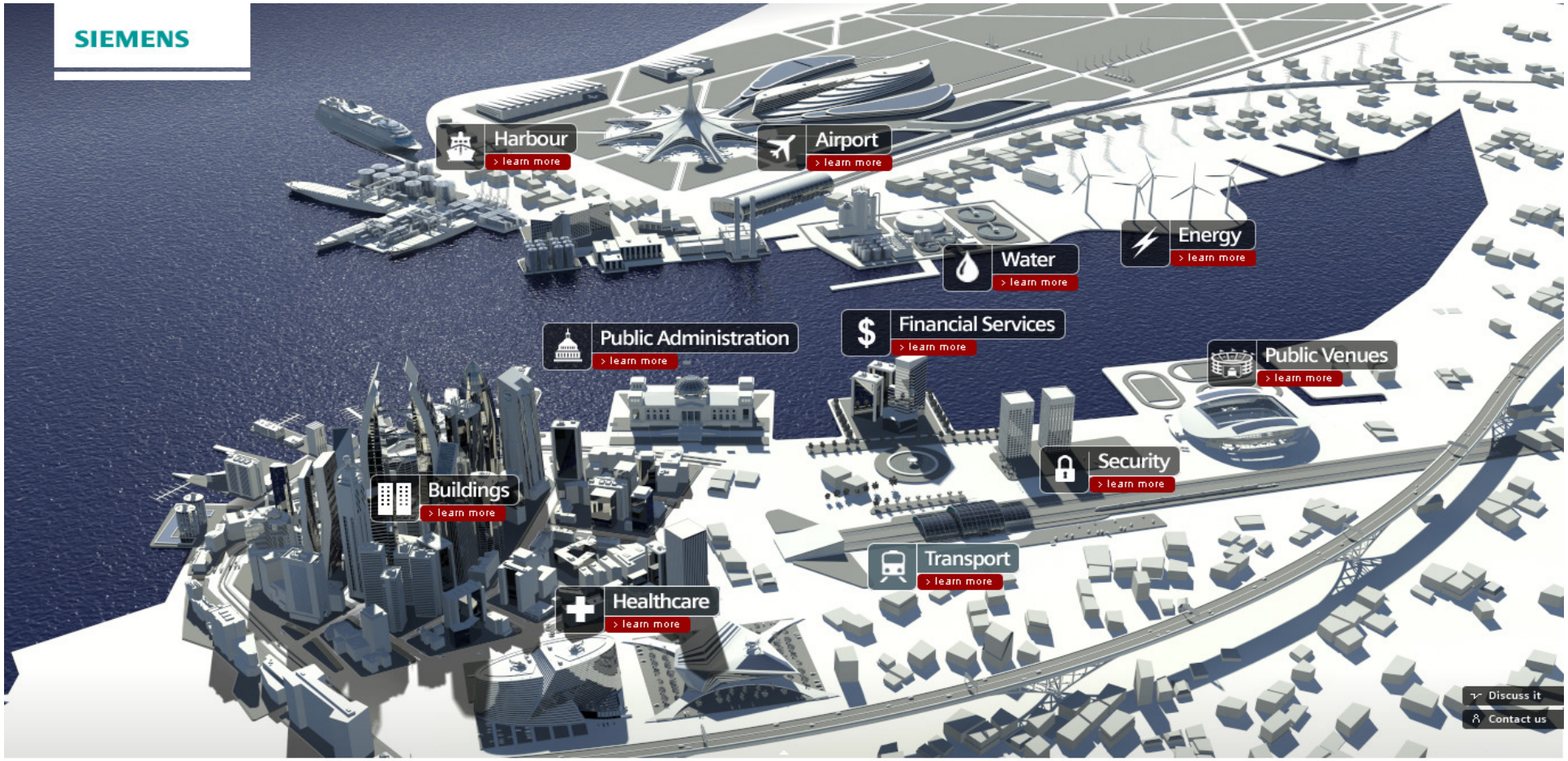
Sustainable Cities: http://www.siemens.com/cities



Urbanization & Sustainable Infrastructure

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Source: MDB Cities

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