

Creating green cities

ARCADIS | Design & Consultancy
for natural and
built assets

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Ecomondo, Rimini 8th november 2017



Introduction carolien.gehrels@arcadis.com

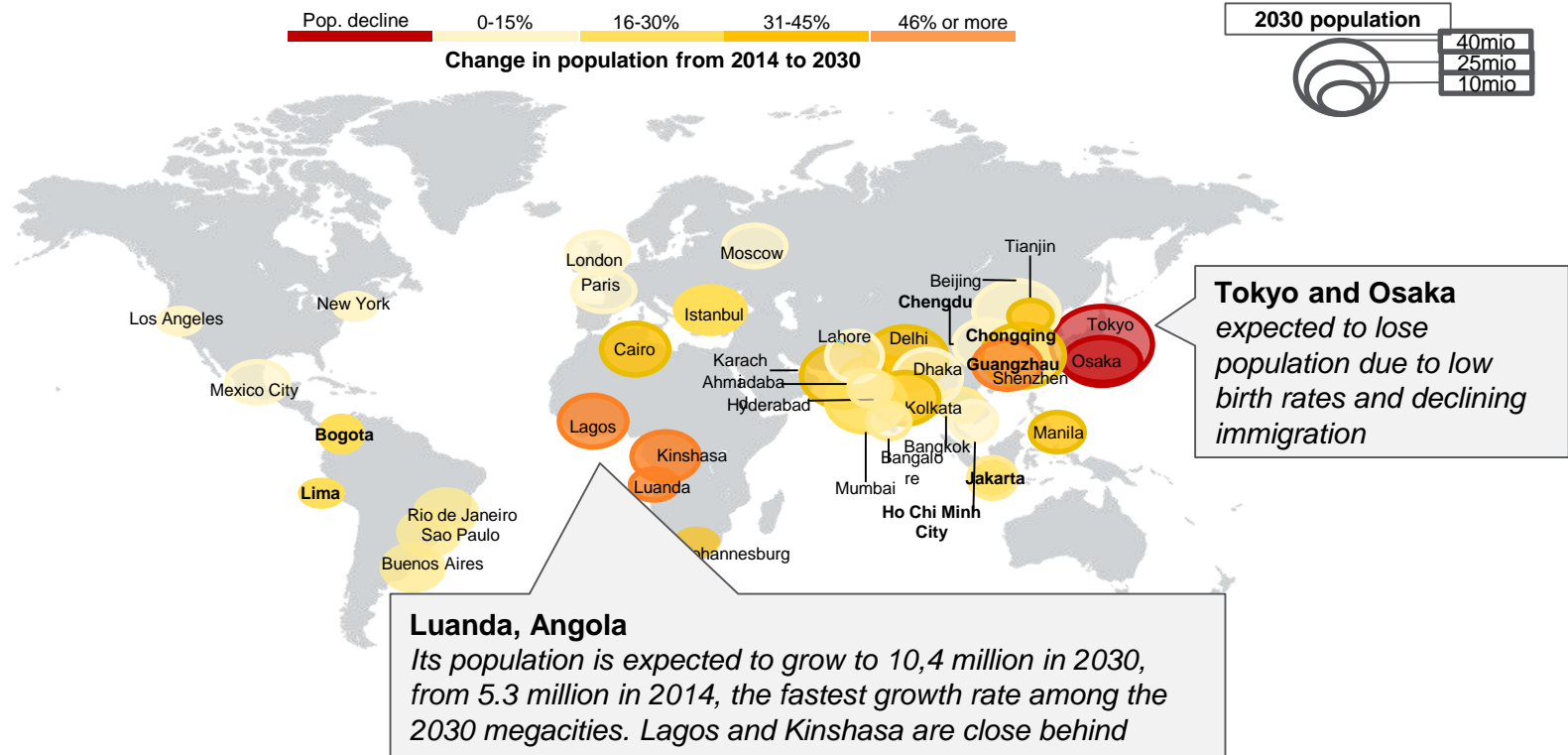
- European cities director Arcadis since 2014
- Vice Mayor and Elderman (elected positions) Amsterdam 2006 - 2014
- City marketing, networks and sustainable ecosystems development 1997 - 2006
- University of Groningen 1986 - 1992



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Cities with projected 2030 population >10 million



Urbanization trend

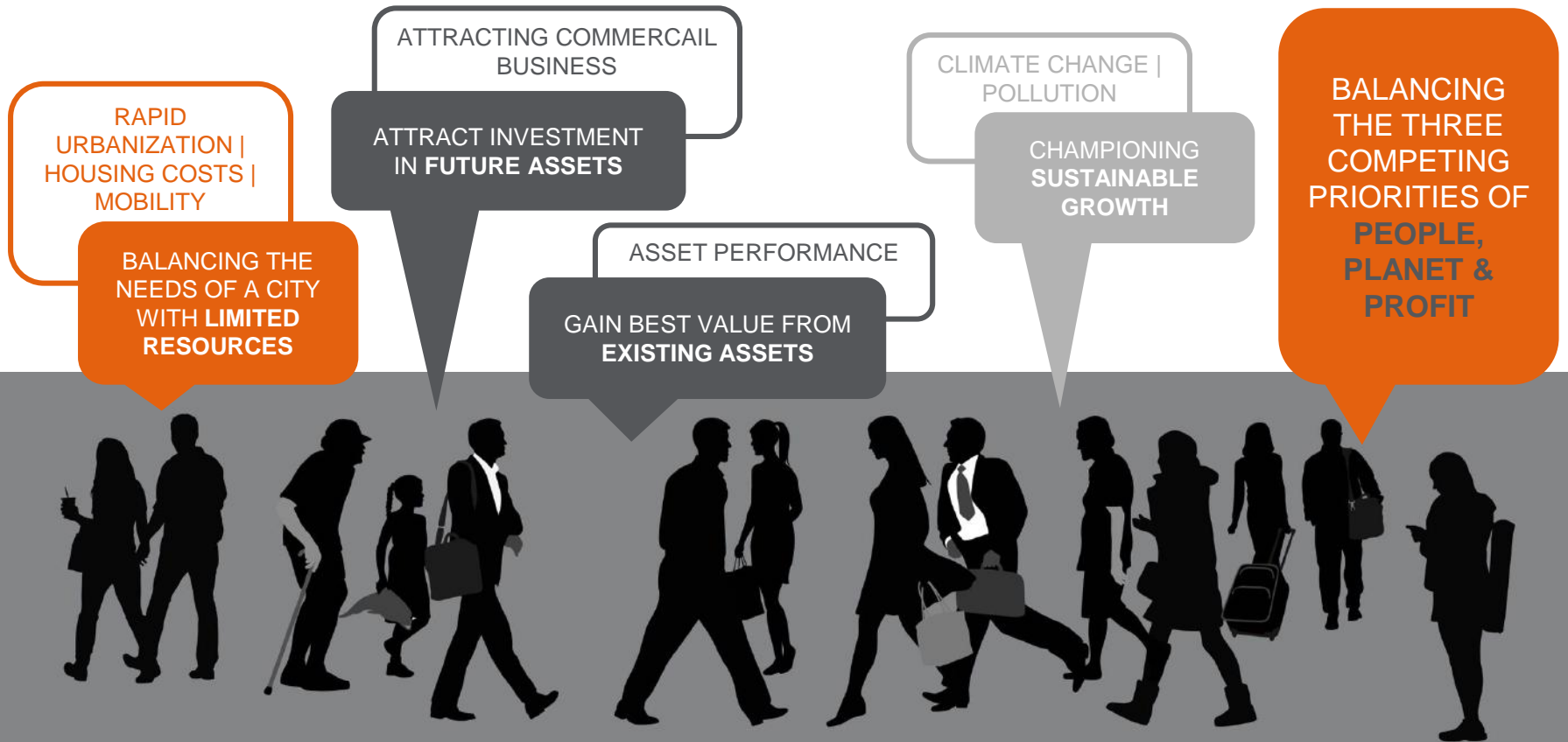
Cities are in competition

Cities are business hubs

Cities are emotional attachment areas

THE IMPORTANCE OF URBAN SUSTAINABILITY

CITIES FACE ENORMOUS PRESSURES



THE RESEARCH SCOPE

20 KEY INDICATORS CONTRIBUTE TO THE OVERALL RANKING*



EDUCATION

literacy rate | university rankings | share of population with tertiary education

HEALTH

life expectancy | obesity rate

DEMOGRAPHICS

dependency ratio

INCOME INEQUALITY

gini coefficient

AFFORDABILITY

consumer price index | property prices

WORK-LIFE BALANCE

average annual hours worked

CRIME

homicide rate



ENVIRONMENTAL RISKS

natural catastrophe exposure

GREEN SPACES

green space as % of city

ENERGY

energy use | renewables share | energy consumption per \$GDP

AIR POLLUTION

mean level of pollutants

GREENHOUSE GAS EMISSIONS

emissions in metric tonnes (per capita)

WASTE MANAGEMENT

solid waste management (landfill vs recycling)

DRINKING WATER & SANITATION

access to drinking water and improved sanitation (% of households)



TRANSPORT INFRASTRUCTURE

congestion | rail infrastructure | airport satisfaction

ECONOMIC DEVELOPMENT

GDP per capita

EASE OF DOING BUSINESS

ease of doing business index

TOURISM

international visitors per year, absolute and per capita

CONNECTIVITY

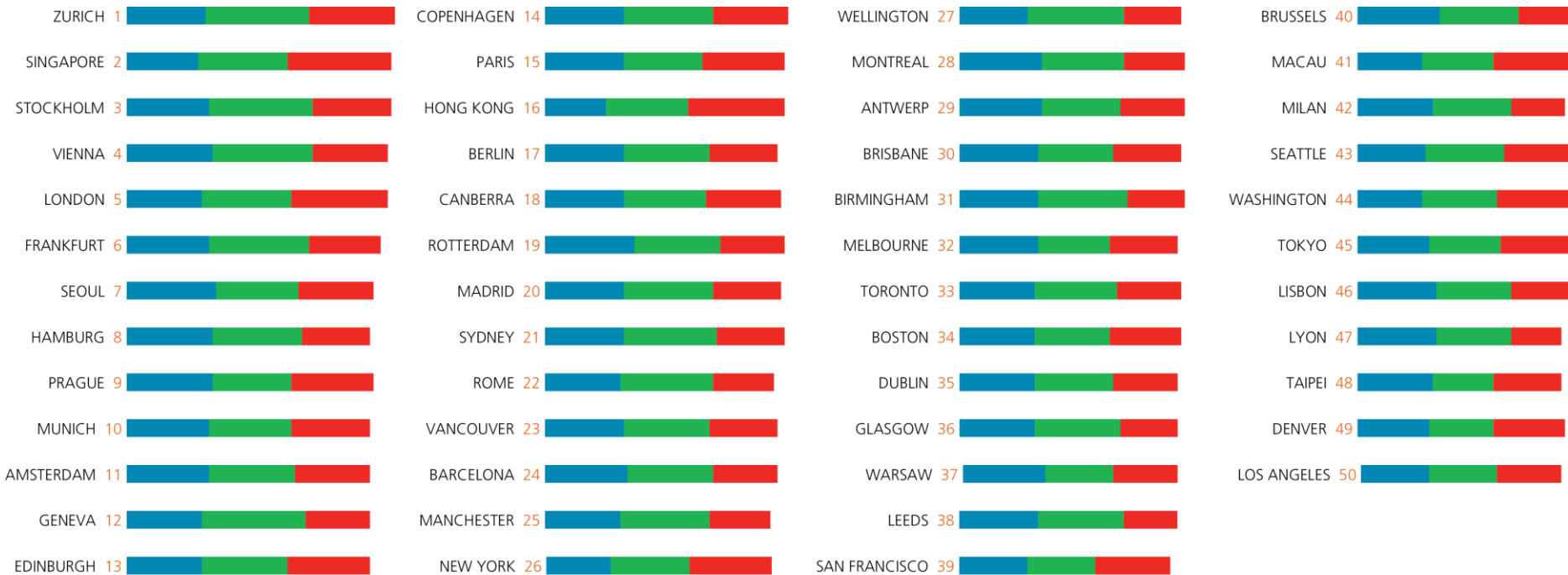
mobile connectivity | broadband connectivity | importance in global networks

EMPLOYMENT

number of people employed as a % of city population

*multiple sources – see bibliography

TOP 50 OVERALL RANKINGS 2016

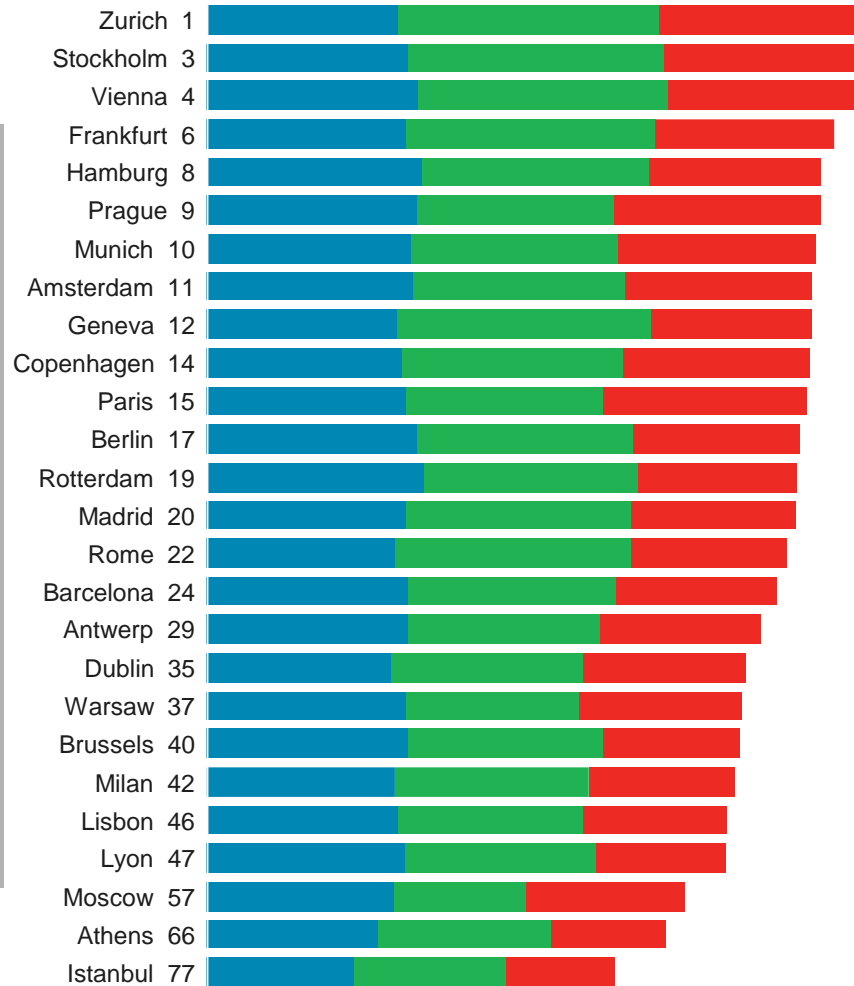


EUROPE SPOTLIGHT 2016

Nearly **A THIRD OF CITIES** (32) in the Sustainable Cities Index are based in Europe*.

Overall, central and northern European cities dominate the top positions as Zurich, Stockholm and Vienna take the top three positions.

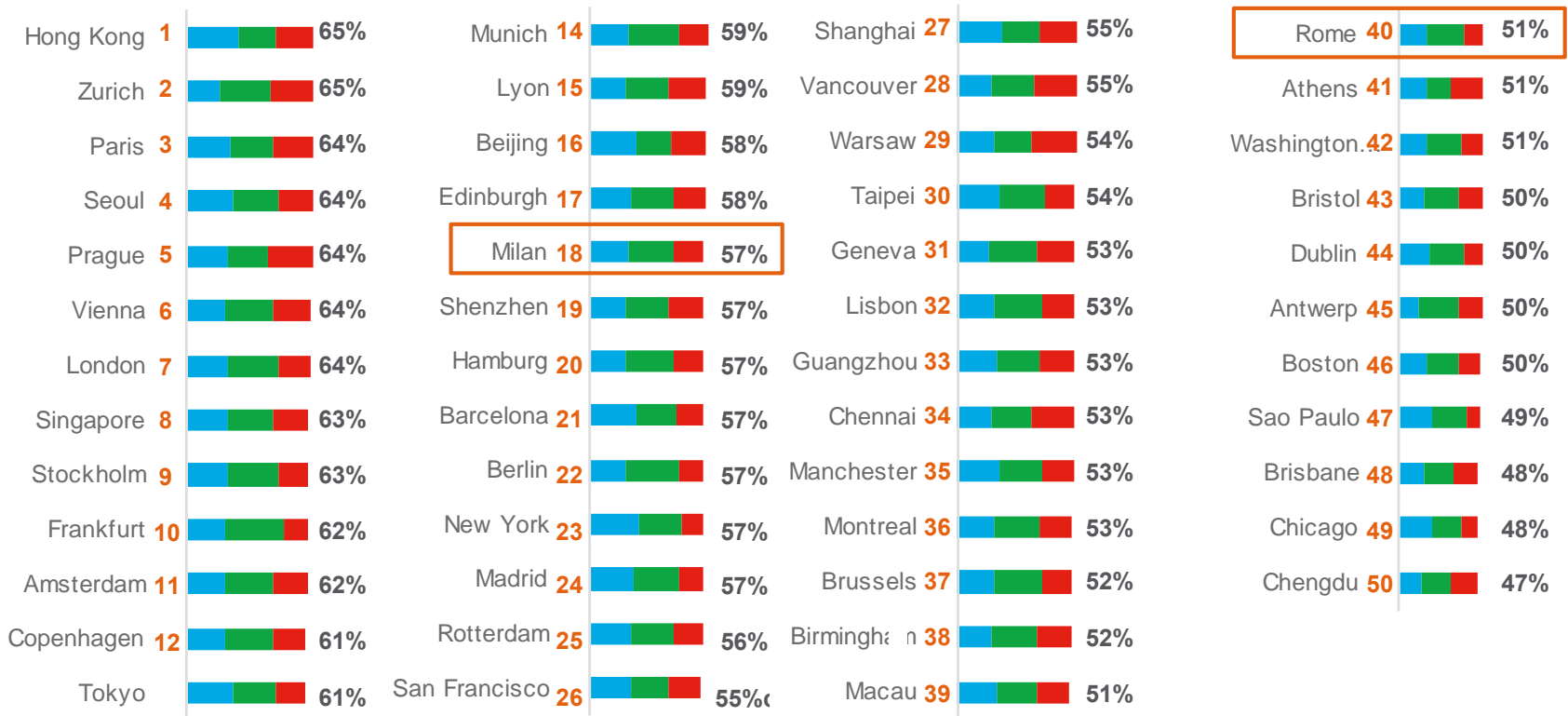
In stark contrast to their continental neighbors, the cities of Istanbul (77th), Athens (66th) and Moscow (57th) are the only European cities in the bottom half of the ranking.



*excluding the UK

OVERALL RANKINGS of sustainable mobility

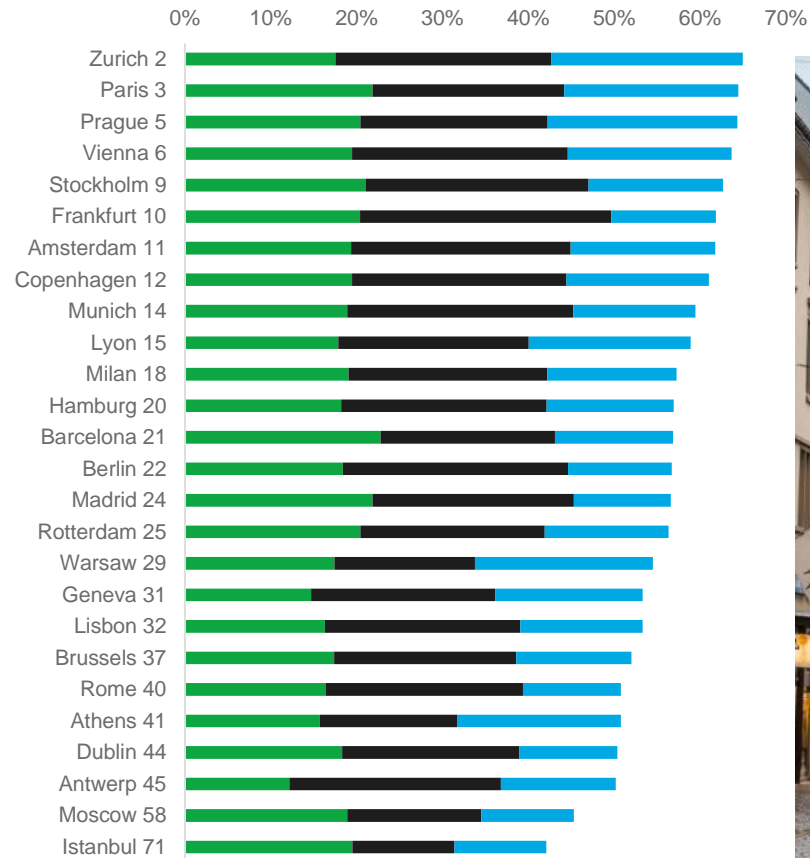
TOP 50



KEY FINDING: WEALTH, SIZE OR AGE OF A CITY **DOES NOT NECESSARILY** EQUAL SUSTAINABLE URBAN MOBILITY

EUROPE spotlight 2017

7 of the top 10 cities that dominate the PROFIT sub-index are European, having invested generously in transport infrastructure, and have widely utilized public transport systems helping to cut commuting times. All top 10 cities in the PLANET sub-index's are European – having industrialized early in their development has contributed to their low-emissions progress, including excellent bicycle infrastructure, commitment to green technology and electric vehicle uptake.



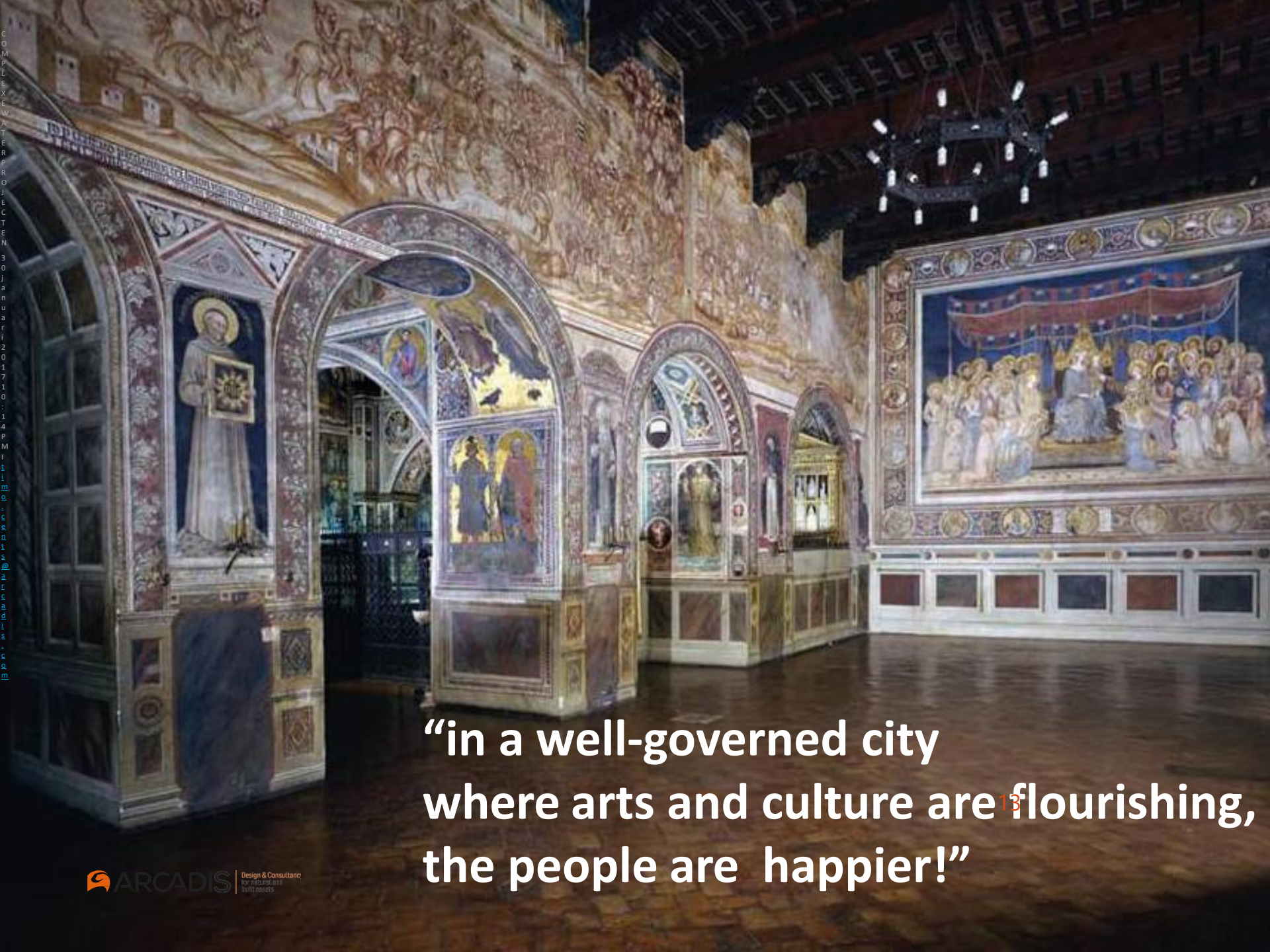
*excluding the UK

PUTTING PEOPLE AT THE HEART OF SUSTAINABILITY

DEMOGRAPHICS

The variance in median ages across the 100 cities in the Sustainable Cities Index is astonishing, ranging from just **18.7 YEARS IN NAIROBI TO 46.6 YEARS IN TOKYO**





**“in a well-governed city
where arts and culture are flourishing,
the people are happier!”**



“The purpose of the city is freedom”

Endless amount of challenges
to govern a healthy and green city



What we did for example in Amsterdam 2006 - 2014

Policy / tendering

1. Fast lane for a healthy city: doubling the parking taxes; investments in a green city
2. Huge investments in bicycle-, tram and metronetwork
3. Amsterdam Rainproof; every drop of water counts
4. Tendering processes: requirements and conditions for creative and sustainable buildings
5. AMS-institute for advanced metropolitan solutions (roboats)
6.

Permits / taxation

1. Electric cars: tax advantages parking possibilities, public charging network
2. Greening the canal boat float by new permitsystem; electric and sustainable.
3. New waste to energy plant; we sold our energy company
4. Carbon pricing / valuing water: resources efficiency
5.

Public private partnership is required (poldermodel)

What you can do to green your city

Policy solutions

1. Integrated approach urban planning and resiliency
2. Climate resilient tendering
3. Direct link between taxation and investments
4. Preparation on resources efficiency

Technical solutions

1. Clean tech
2. Build tech
3. Smart tech



We all speak the language of the Sustainable development goals

What kind of cooperation is required at the private and the public site and how to inspire the decisionmakers?



Ambitions and challenges: policy, tendering, pricing, taxation, political frames, permits, incentives, accessibility

Considerations?

- How to involve the decision makers in implementing smart solutions?
- How to bring together the technical push and decision making pull?
- Where to put the money?
- How to create a balance between people planet and profit
- How to formulate stimulating construction contracts

Why should you act?

- Reduction of CO2 output (less freight traffic)
- Less traffic delays (no freight traffic during rush hour)
- More goodwill urban users (qualitatively better information)
- Less nuisance by construction projects (they are completed faster)

Local Authority

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Clean tech clean infrastructure mobility as a service



COMPLEX WATER TREATMENT

2010-2017



Clean tech enjoyment for all generations





Build tech smart and green buildings

Headquarter Triodos Bank



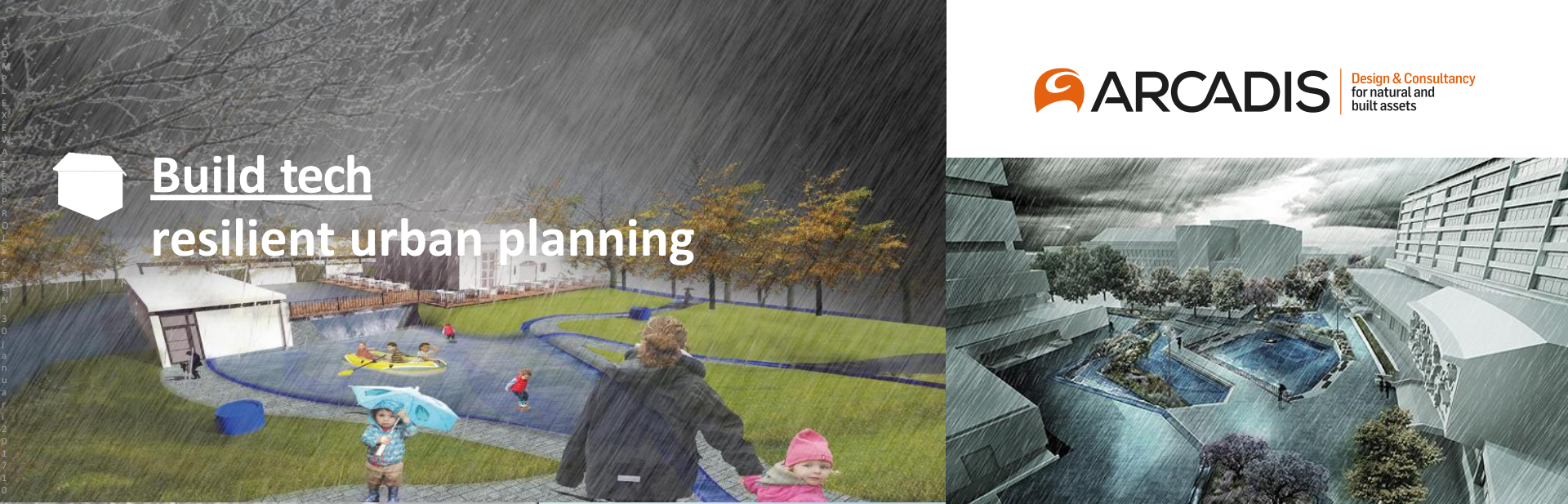
COMPLEX WATER PROJECTS
30 January 2017
www.arcadis.com



Build tech energy neutral

Newtown Odijk






Build tech resilient urban planning



COMPTON EXHIBITION PROJECT
30 January 2017 10

 **Build tech
printed buildings**



Improving quality of life





08 novembre 2017

STATI GENERALI della GREEN ECONOMY

**EUROPA, CINA E USA:
IL FUTURO DELLA GREEN ECONOMY
NEI NUOVI EQUILIBRI MONDIALI**

ore 09.30 • 12.30

**Promossi dal Consiglio Nazionale della Green Economy
in collaborazione con**

