



Our Common 21st Century Issues

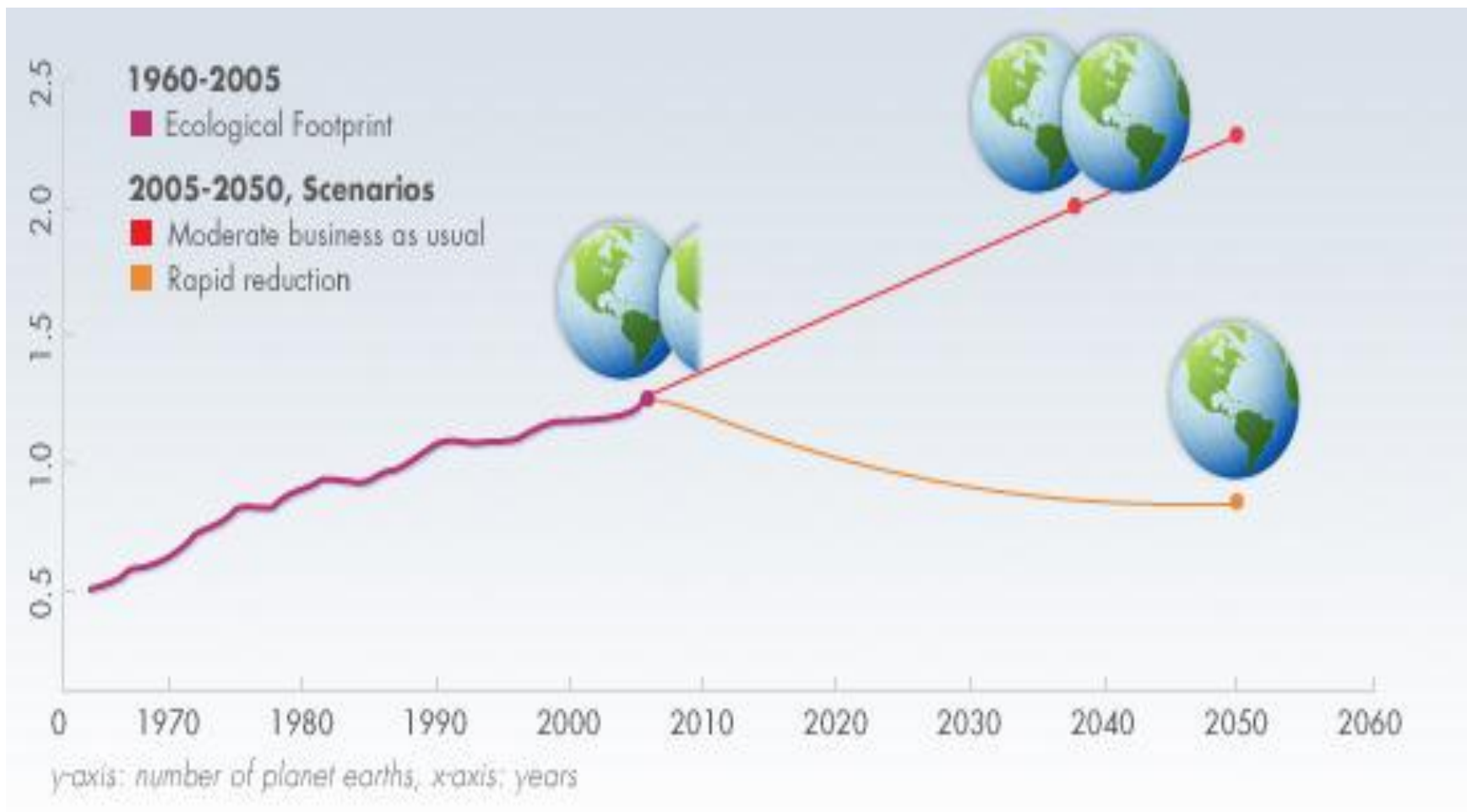
They are

- On an unprecedented scale
- Essentially interconnected
- In a process of rapid and dynamic change
- Systemic and non-linear
- Truly global and demanding cooperation
- High risk, demanding urgent action

(Martin Lees: Club of Rome)



Global Trend: Ecological Footprint



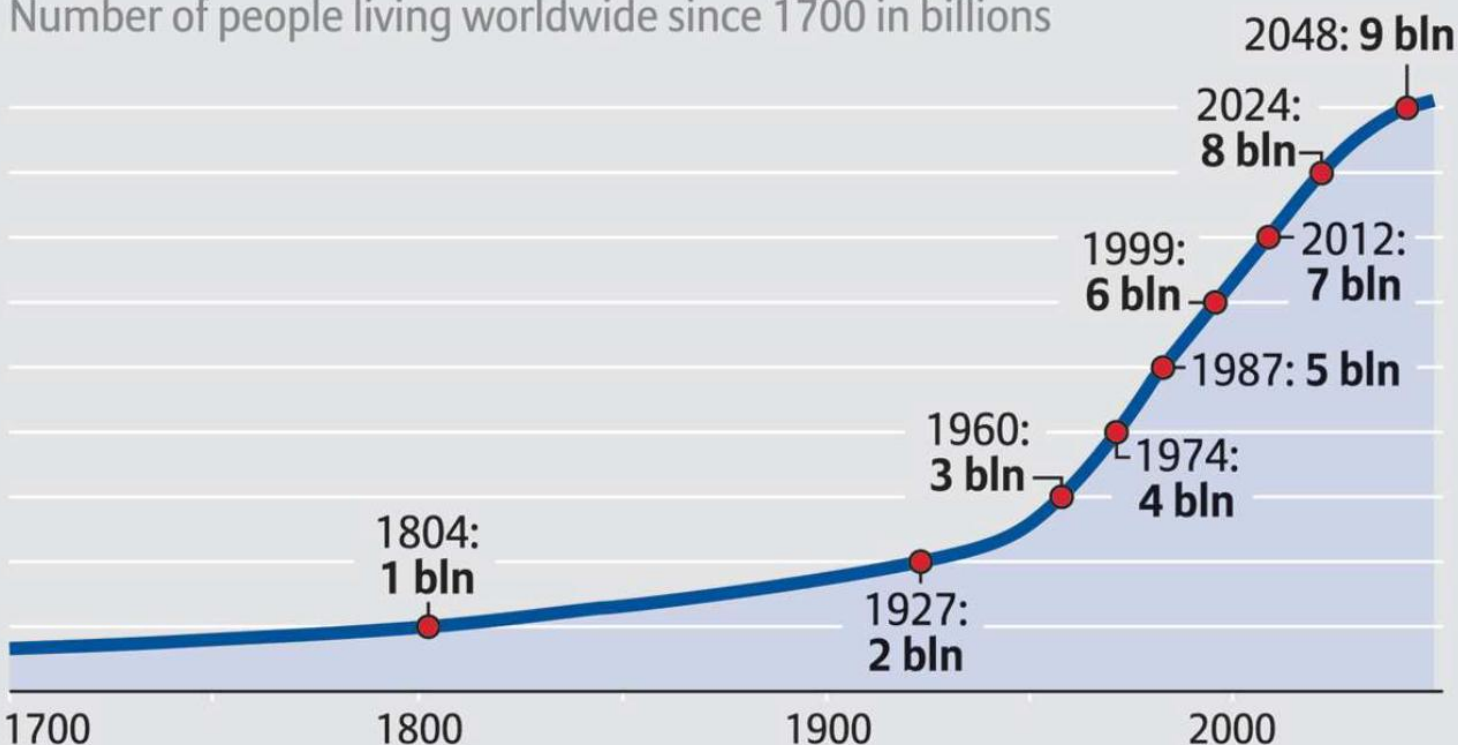
Source: Global Footprint Network, Wackernagel, Peak Everything (2009)

Demographic trends – by 2050 9bn people

POPULATION OF THE EARTH

Number of people living worldwide since 1700 in billions

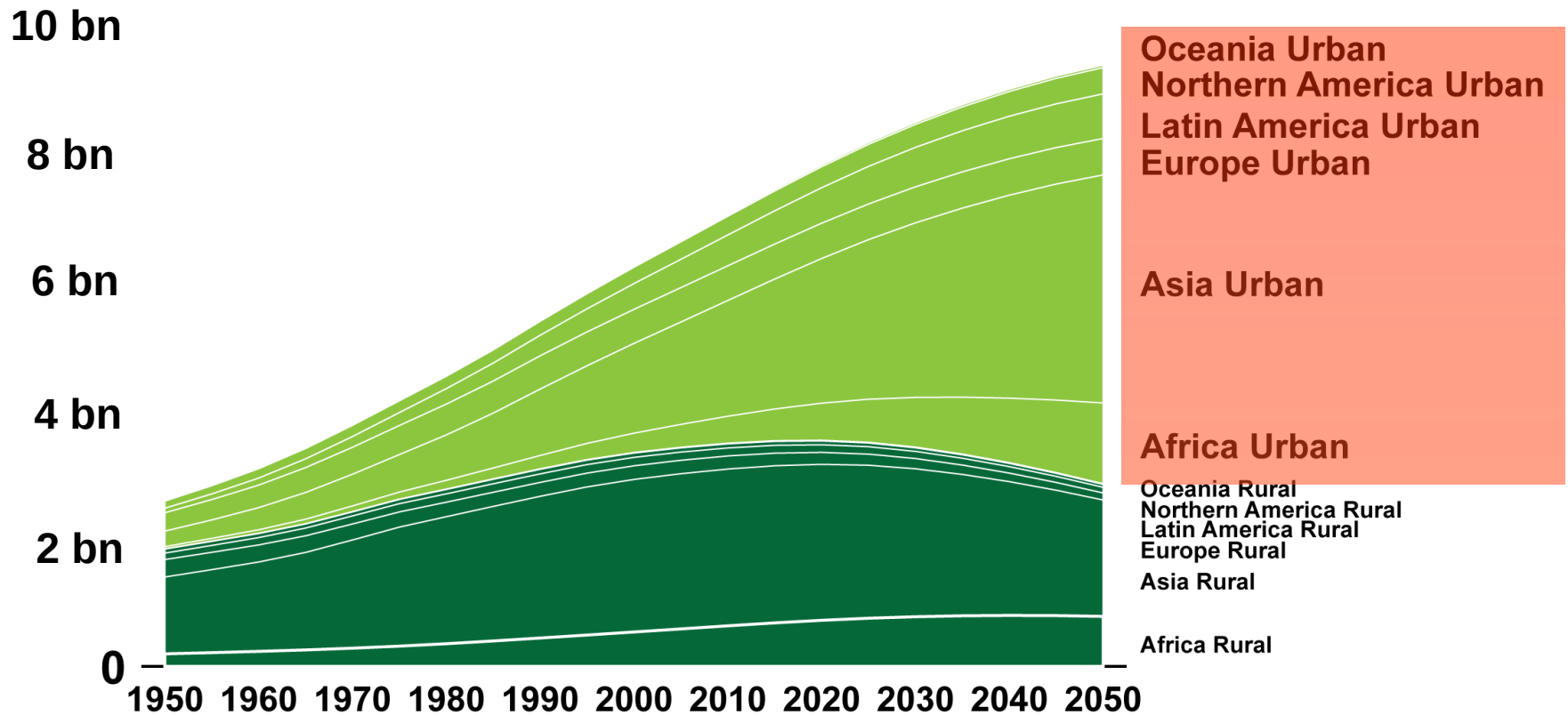
Allianz 



Source: United Nations World Population Prospects, Deutsche Stiftung Weltbevölkerung

For further information please visit: www.knowledge.allianz.com

Global Trends: Population Growth, Urbanization



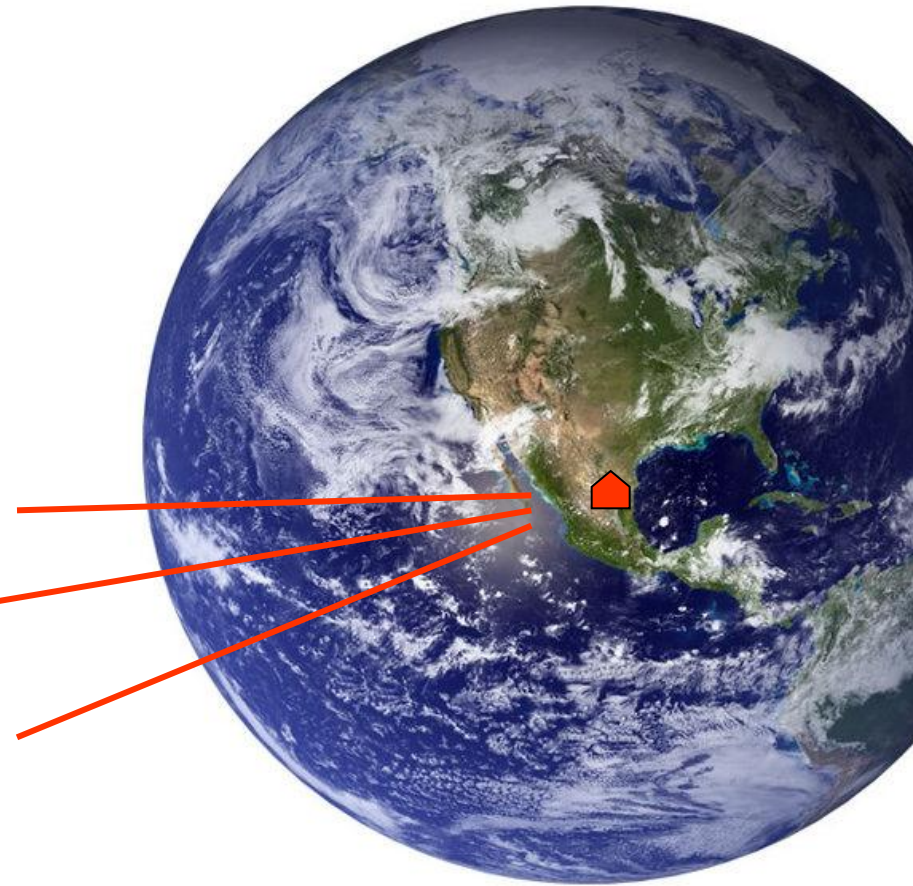
Source: UN World Population Prospects, 2006 and 2007

Cities and urban regions today

0.12% of the Earth's surface

50% of the population

75% of energy consumption
and CO2 emissions



We are part of a revolution

- 19th century: Industrial Revolution
- 20th century: Technological Revolution
- 21st century: Urban Revolution

We are becoming a planet of cities.

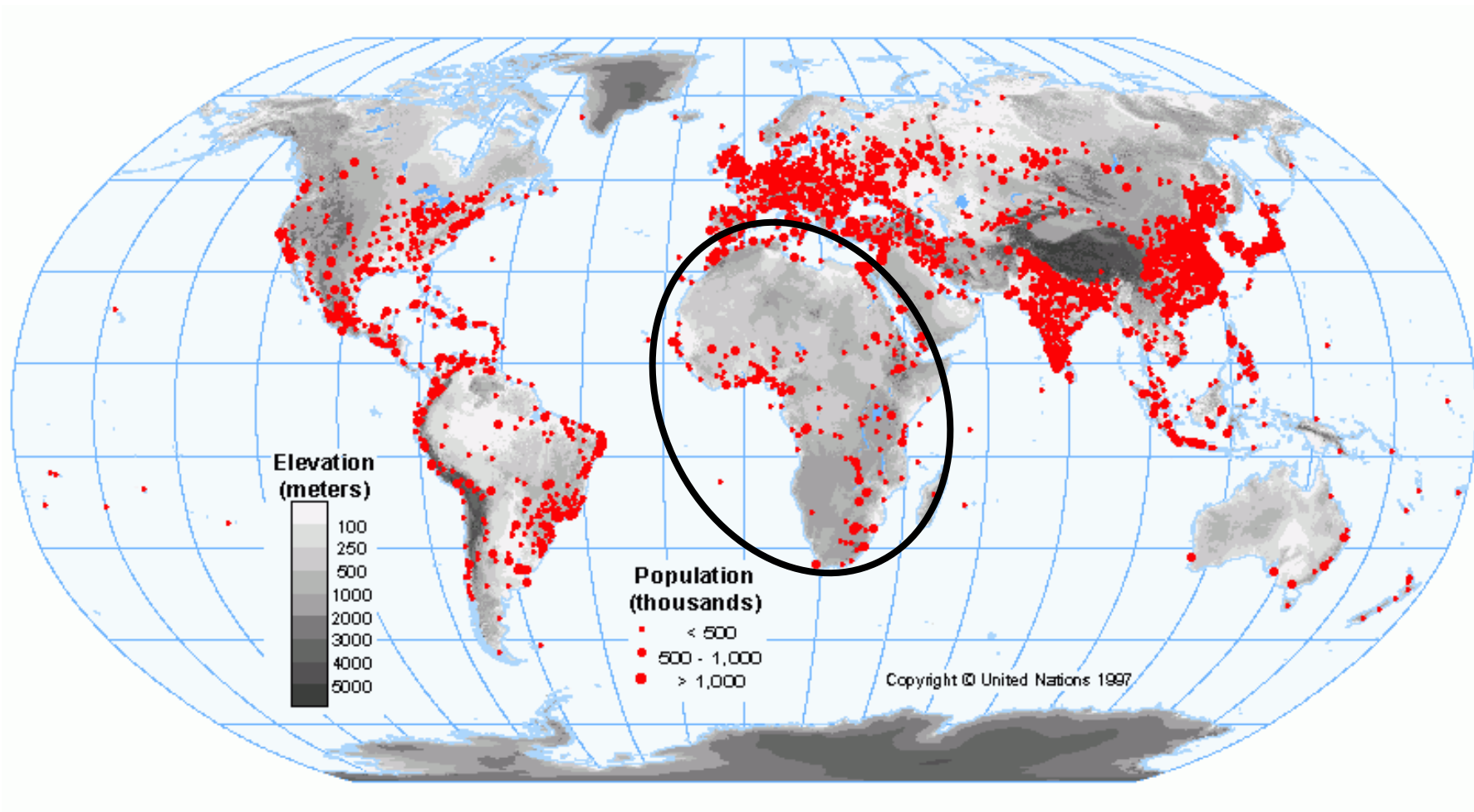
By 2050 over 66% of humans will live in cities

By 2090 over 90% of humans will live in cities

Urbanization

- Urbanization - an unbroken, unbreakable trend
- Urbanization - a positive trend
- Urbanization - a global trend
- Urban regions - where the future of economy lies

Where the cities are



Fastest growing cities

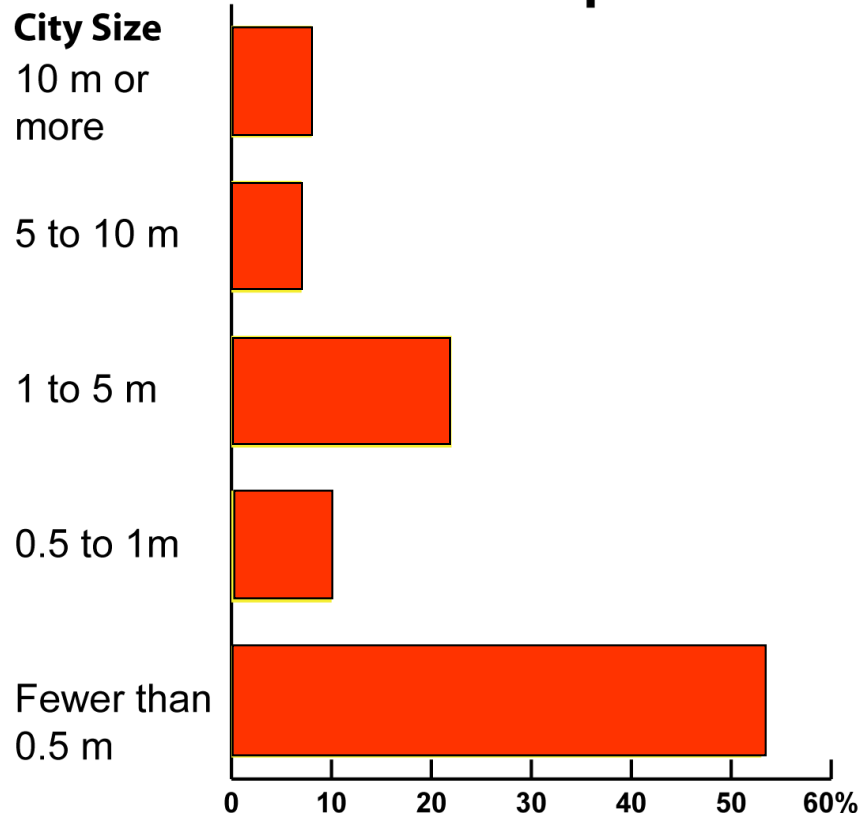
- Africa has 15 of the world's 50 fastest growing cities:

6 Bamako, Mali
7 Lagos, Nigeria
9 Dar es Salaam, Tanzania
12 Lubumbashi, Congo
13 Kampala, Uganda
15 Luanda, Angola
17 Kinshasa, Congo
18 Nairobi, Kenya

20 Antananarivo,
Madagascar
23 Conakry, Guinea
25 Maputo, Mozambique
26 Mogadishu, Somalia
31 Addis Ababa, Ethiopia
35 Brazzaville, Congo
44 Dakar, Senegal

Urbanization by city size

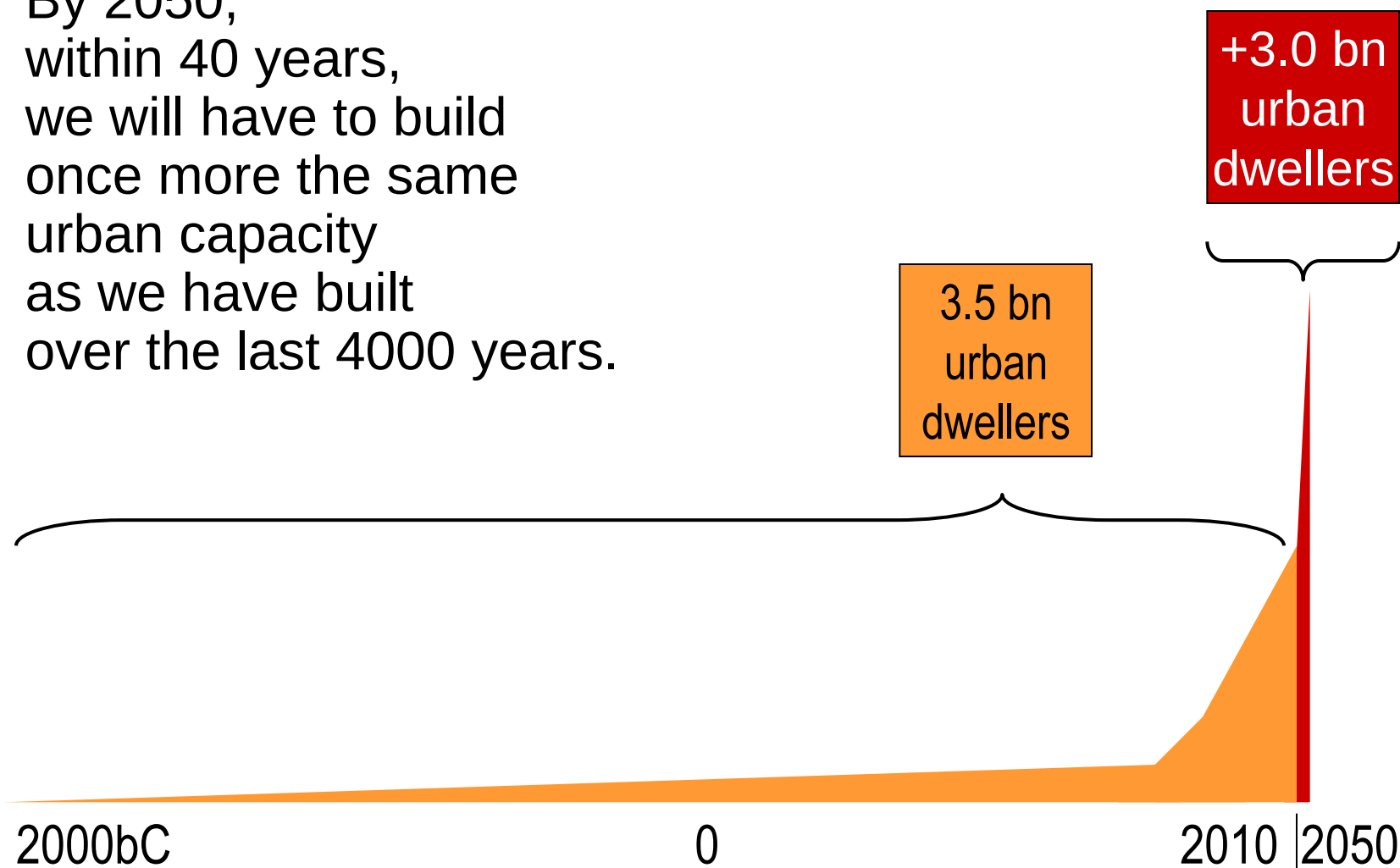
Percent of Urban Population by City Size



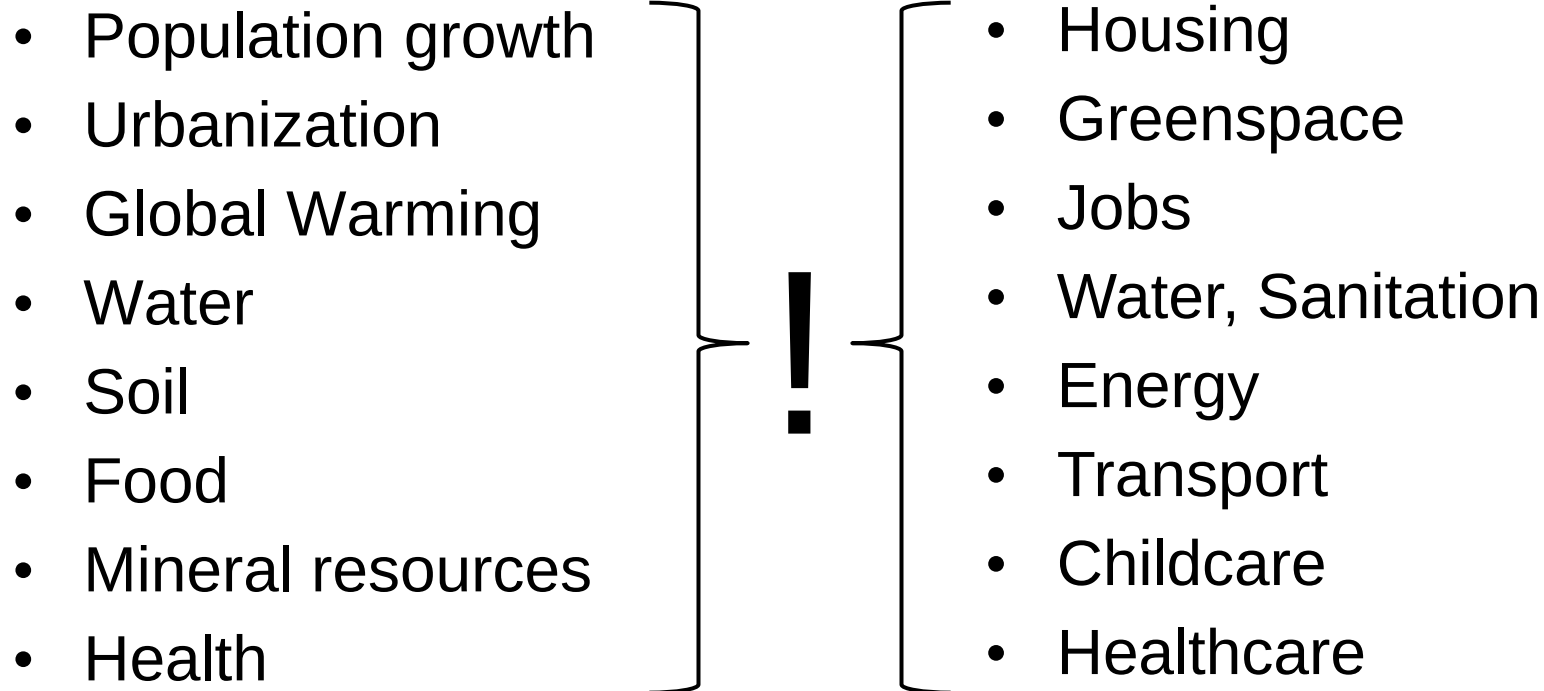
Source: UN World Population Prospects, 2006 and 2007 (year 2000)

The 100:1 challenge

- By 2050, within 40 years, we will have to build once more the same urban capacity as we have built over the last 4000 years.



Global Trends – Urban Leadership Challenge

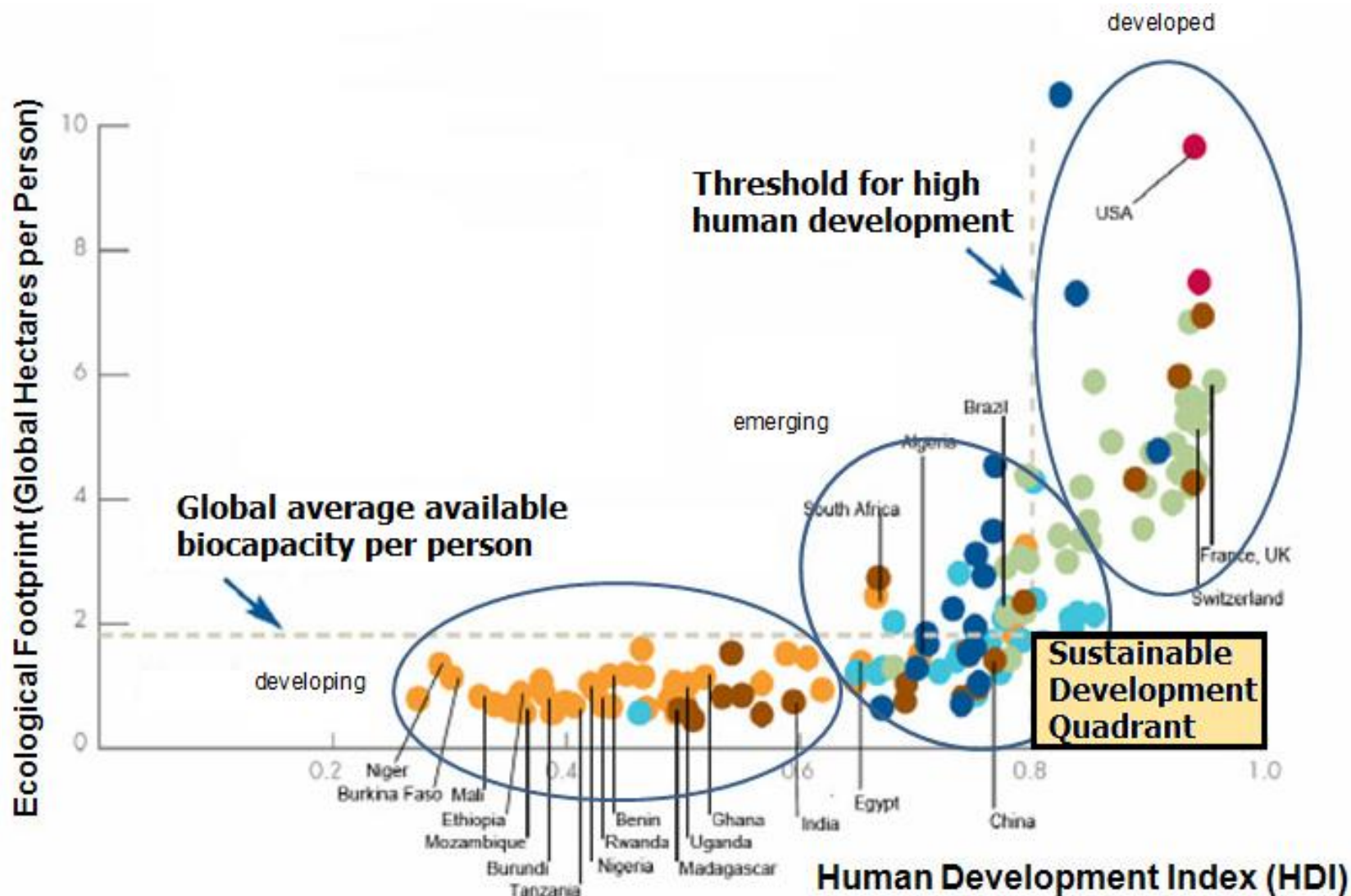




“The quest for sustainability will be increasingly won or lost in our urban areas. With foresight, political will and intelligent planning, cities can be the blueprint and map to a sustainable future.”

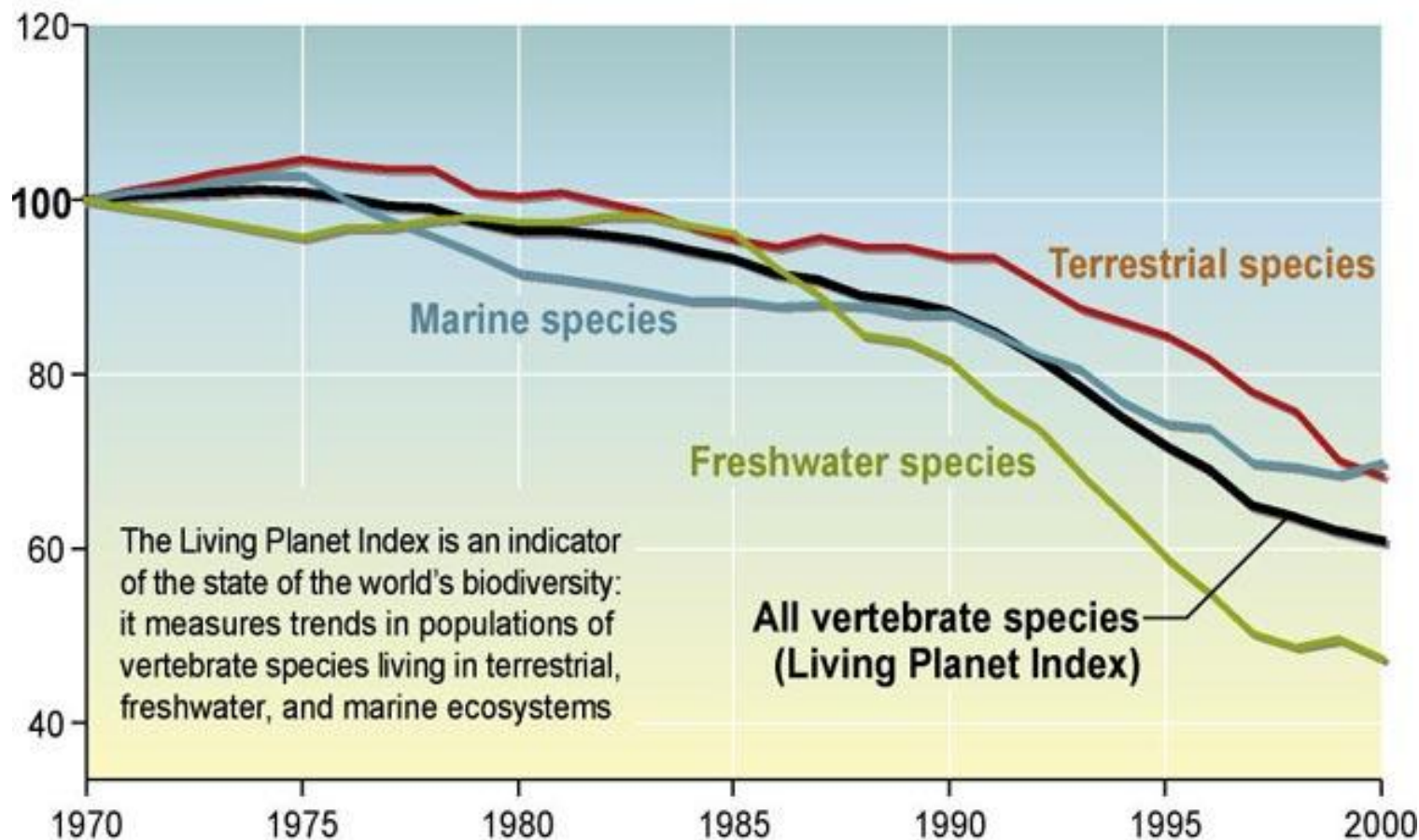
Achim Steiner
Under-Secretary General, United Nations
Executive Director, UNEP

Ecological Footprint and Human Development



Global Trend: Biodiversity Loss

Population Index = 100 in 1970

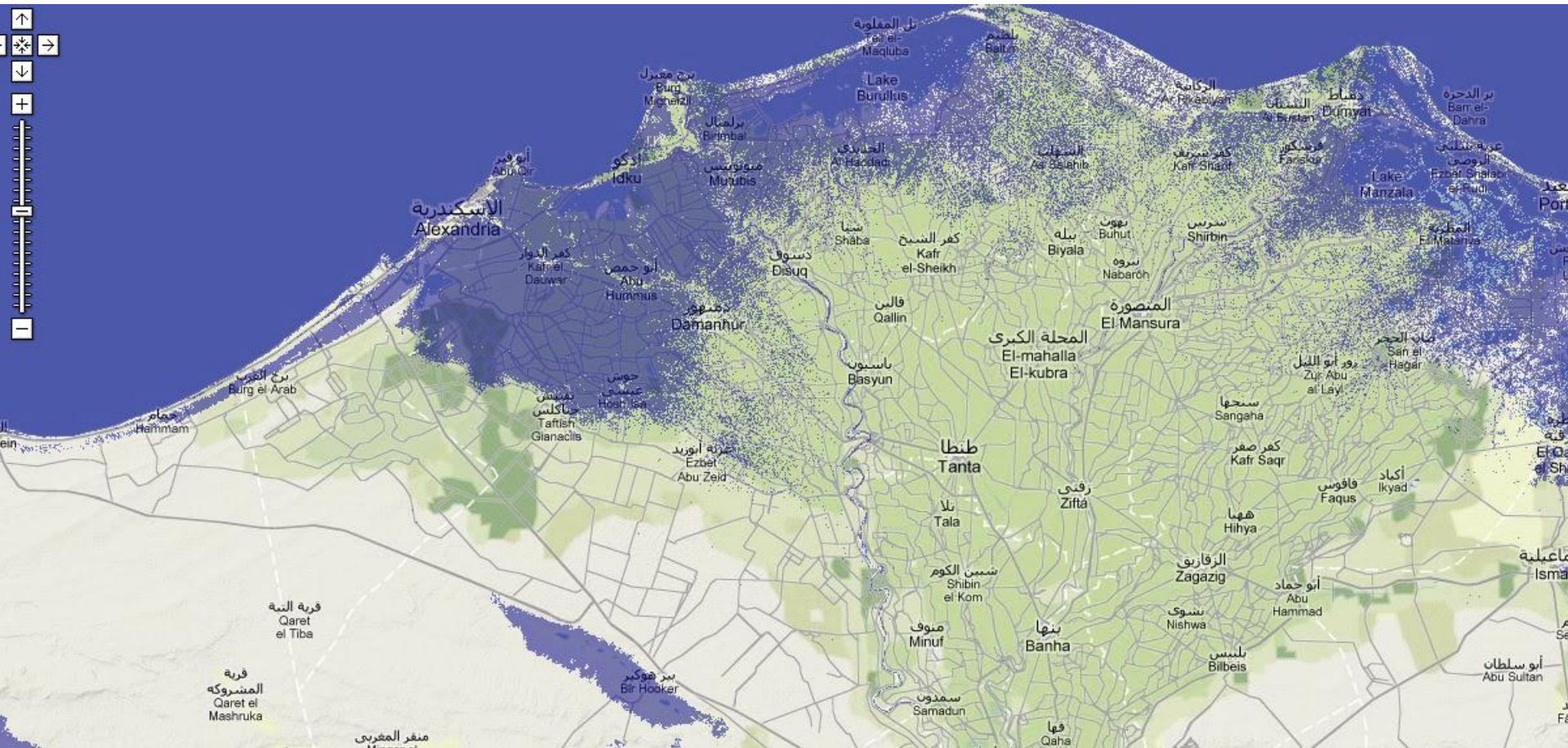


Source: WWF, UNEP-WCMC



Source: <http://flood.firetree.net/>

Egypt +1m



Source: <http://flood.firetree.net/>

World Energy Consumption and Projections (EIA)

Figure 1. World Marketed Energy Consumption, 2006-2030

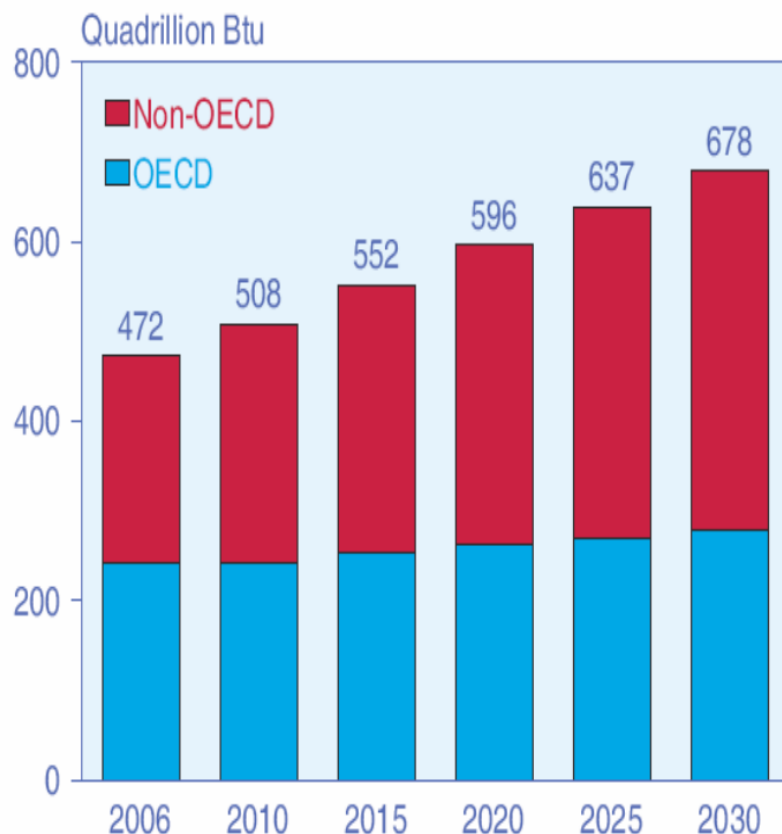
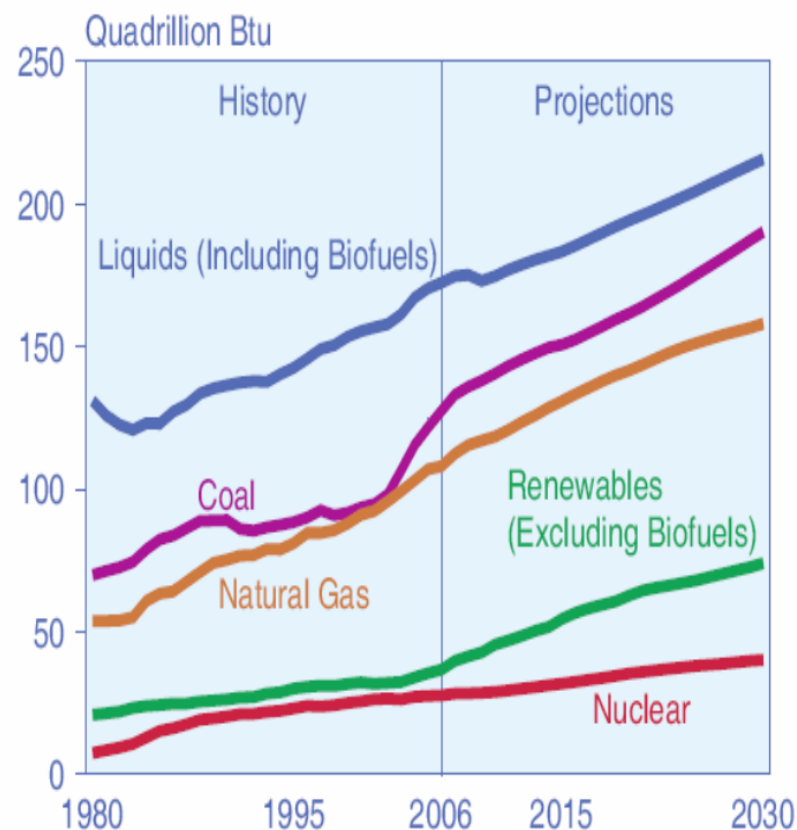
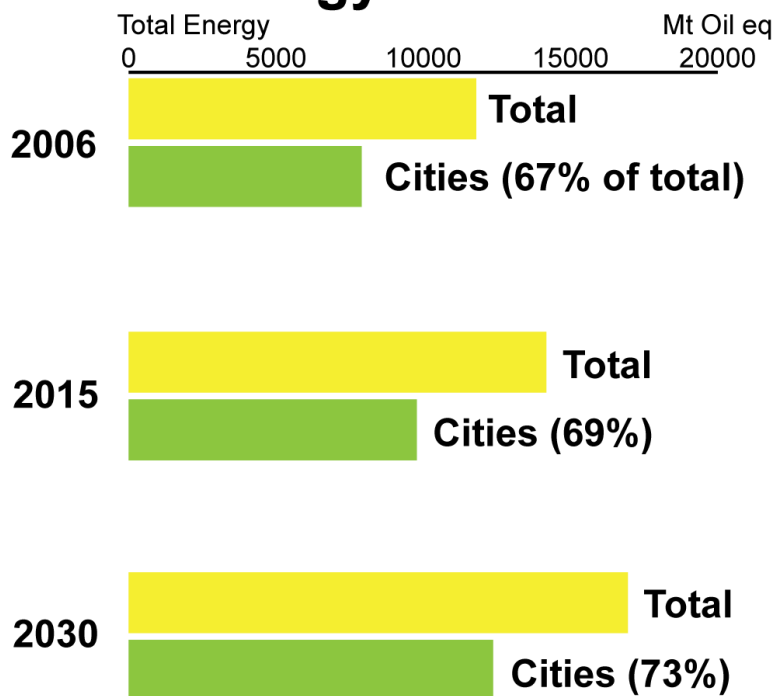


Figure 2. World Marketed Energy Use by Fuel Type, 1980-2030



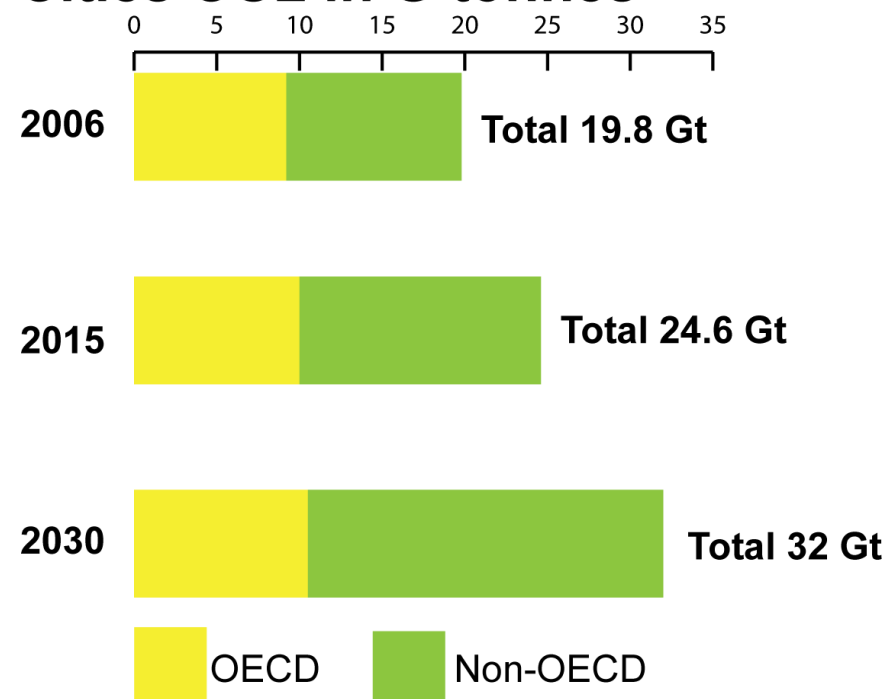
Global Trend: Cities and Energy

Cities Energy Demand



Source: OECD/IEA (2008), World Energy Outlook 2008

Cities CO2 in G tonnes



Source: OECD/IEA (2008)

Coastal Erosion



22 23 12

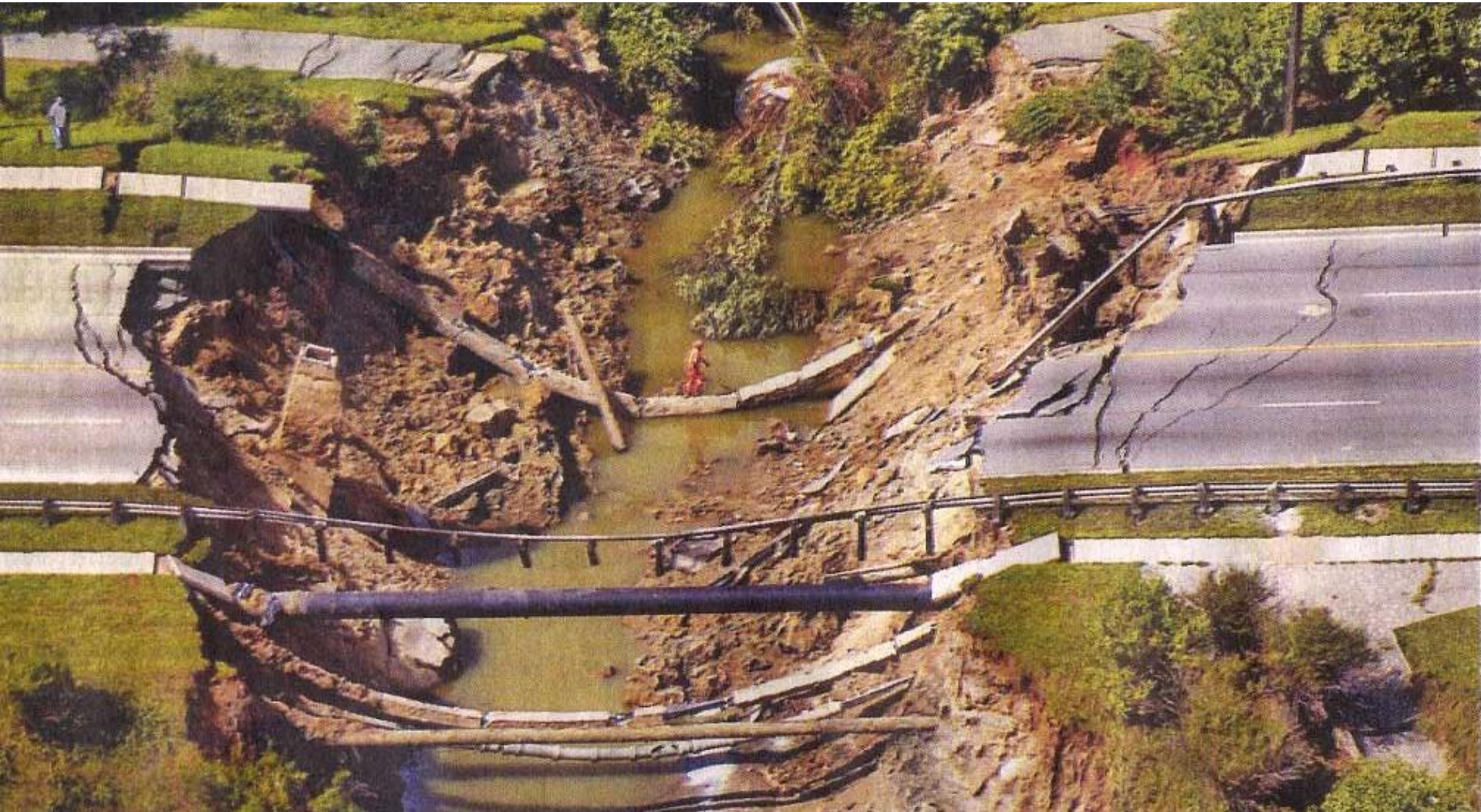
Flooding



Landslides



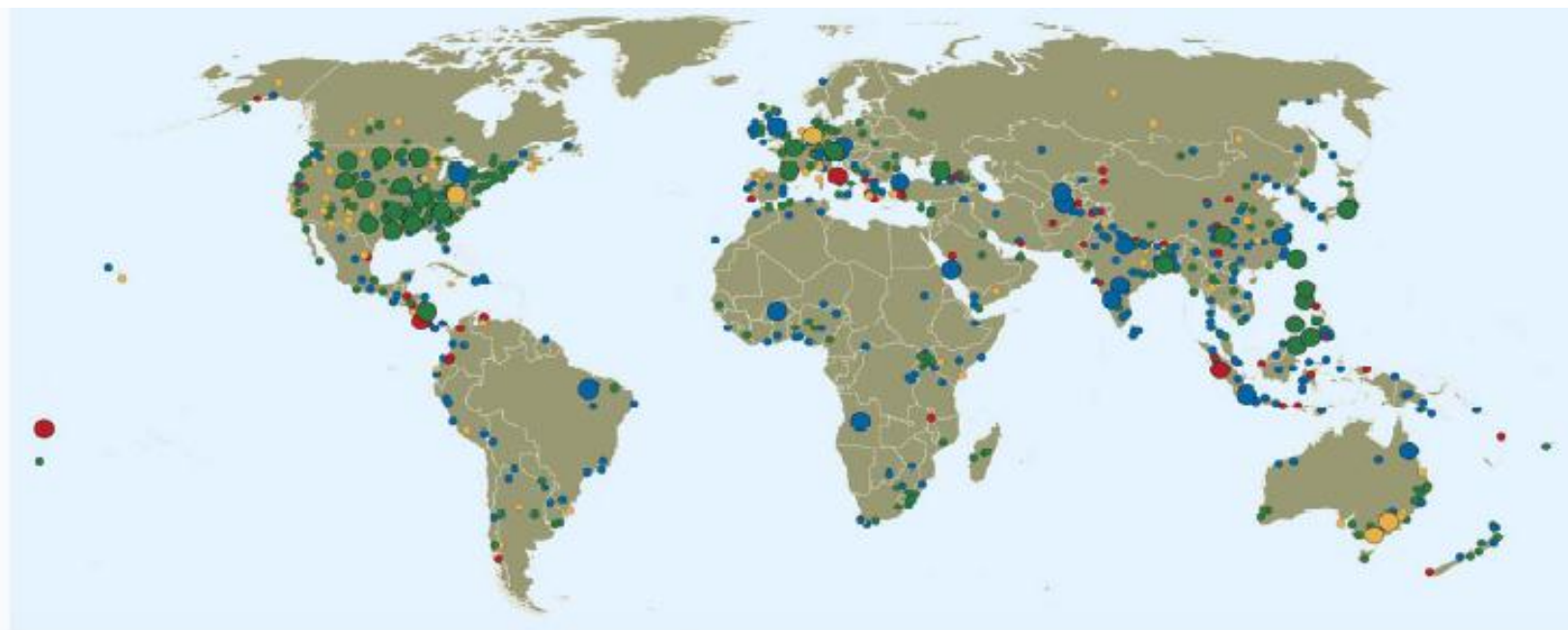
Storm Surges



Droughts



Catastrophes in 2009



2009: 850 natural catastrophes

○ Significant natural catastrophes (selection)

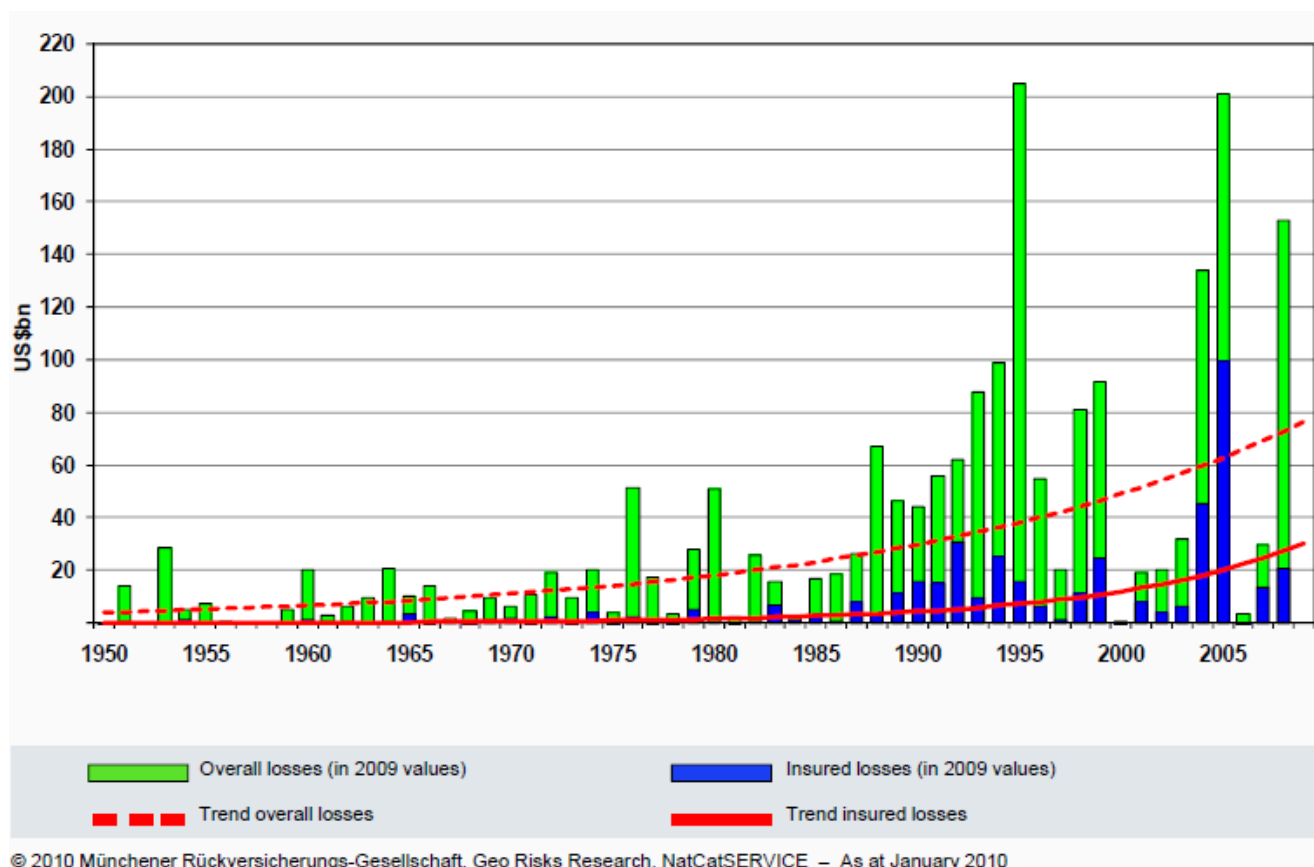
Great natural catastrophes:
2009 no event met the requirement "Great natural catastrophe"

- Geophysical events
(Earthquakes, tsunamis, volcanic eruption)
- Meteorological events
(Storm)
- Hydrological events
(Flood, mass movement)
- Climatological events
(Extreme temperature, drought, forest fire)

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Global Trend: Catastrophes

Great Natural Catastrophes 1950-2009 overall and insured losses with trend



Ecosystems under pressure

- “The resilience of many ecosystems is likely to be exceeded this century by an unprecedented combination of climate change, associated disturbances (e.g. flooding, drought, wildfire, insects, ocean acidification) and other global change drivers (e.g. land use change, pollution, fragmentation of natural systems, overexploitation of resources).”

(IPPC. 4th Assessment Synthesis Report - 2007)

● Value of ecosystem services on Global Scale

- In 1997, the global value of ecosystem services was estimated at US\$33 trillion - global GNP was only US\$18 trillion! (Costanza 1997)

● Ecosystem Services: Nature's benefits



Provisioning
services

Regulating services

Habitat or
supporting services

Cultural services



Ecosystems and Local Governments: Interconnectivity

Security
implications

Tourism

Resource
scarcity conflicts

Biodiversity

Waste
management

Migration

Housing

Education

Food security

Water availability

Energy
resources

Health

Spatial and
town planning

Stormwater
management

Transport

Policy and strategy
planning

Disaster risk
management

Coastal zones

Livelihoods

Poverty
reduction
challenges

Communication
linkages

Economic
stability

● Example: Economic Benefit of Urban Forests Location: Edmonton, Canada

- Value of **urban** forests analysed
- Cleansing air, it removes carbon from the atmosphere, storm water reduction
- 12.8 million trees: average benefit per tree US\$74.73, tree care costs US\$18.38 per tree
- Therefore, net benefit of **US\$56.35 per tree!**



● Example: Habitat Services

Location: Abu Dhabi, United Arab Emirates

- Fish landings in inner Island lagoon alone estimated at US\$272,294, and US\$28.5 million for entire UAE
- Mangrove forests important as nursery grounds for commercial fish species
- Also: habitat for other species that enable ecosystem functioning
- Restoration and protection of mangrove forests lead to storm protection and soil erosion control



● Service: Pollution Removal Location: Florence, Italy

- Cascine Park in Florence, Italy, an urban park forest
- Retained much of its pollutant removal capability of about **72.4 kg per hectare** per year for twenty years (Paoletti et al. 2011)
- Harmful pollutants removed included O₃, CO, CO₂, SO₂, NO₂ and particulate pollutants

● Service: Quality of Life

Location: Leicester, United Kingdom

- Leicester City has made an effort to promote the mental benefits of its characteristic woodlands to its citizens
- Some of the benefits include:
 - Views of trees from hospital windows help patients recover more quickly
 - Trees lining roads reduce incidences of road rage
 - Working in a garden reduces stress and anxiety
 - A walk in the park can help reduce depression

- Between 2005 and 2025 some US\$200 trillion will be spent globally on fixed urban assets.
- Most of this expenditure will occur in developing countries (engineering, infrastructure, architectural, technology, construction companies)c
- In China alone, US\$46 trillion in this period

(McKinsey & Co)

- Need to move from extractive, resource consuming systems
- Redesign and build new cities that generate substantial amounts of their own resources within the urban region (energy, food, water)
- Investment needed in the resource productivity of cities and urban systems
- Green Urban Economy



Thank you
Kobie Brand
Regional Director – ICLEI Africa

www.iclei.org