



DLR Project Management Agency

Dr. Andrea Koch-Kraft

**Future Megacities under Climate Change
a Research Programme by BMBF, Germany**

**Presentation on the Occasion of the
International Conference
Challenges for integrated water resource
management in Andean basins“**

Lima, Peru

3rd April 2014

Motivation for Research: International and National Policies

2000MDGs – UN Millennium Summit

- Goal 7: Ensure Environmental Sustainability
- Goal 8: Develop a Global Partnership for Development

2005Gleneagles

- agreements on development in Africa and on Global Climate Change

(2007 IPCC 4th Report)

2007Heiligendamm 2007

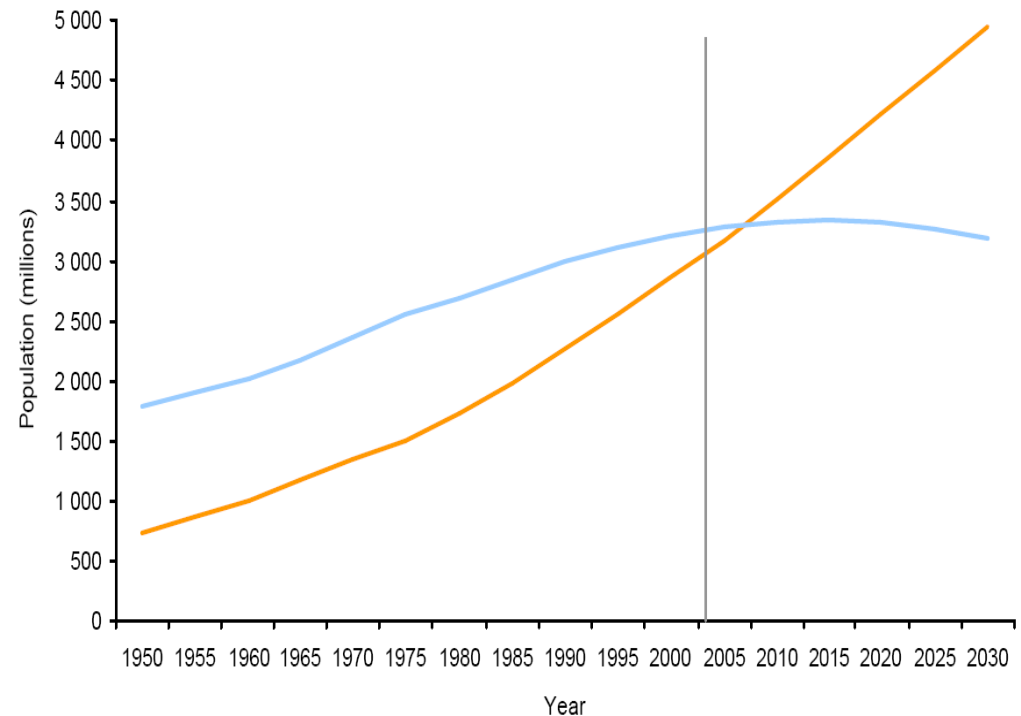
- Global Concern: Climate Protection and Energy-Efficiency – Appropriate Technologies

- 2002 National Sustainability Strategy
- 2004 FONA – Research for Sustainability - BMBF Framework Programme for a sustainable and innovative society
 - Sustainable Development of Regions
 - » Research for the Sustainable Development of Tomorrow's Megacities
- 2006 HighTech-Strategy of the Federal Government
- 2010 High-Tech Strategy 2020
- 2010 FONA II
- 2008 - 2013 Future Megacities – Energy- and Climate-efficient Structures in Urban Growth Centres

>>> Integration of emerging economies and developing countries in the international climate regime

World Population Urban and Rural, 1950-2030

- In 2007, for the first time in history more than half of the world's population lived in cities
- Each year cities grow by 60 mio inhabitants.
- By 2030 the urban population will add to 5 billion.
- The pace of growth, densification of people, resources, capital, knowledge is historically unique.



The twenty-first century was designated “the urban millennium” by former United Nations Secretary Kofi Annan in 2001

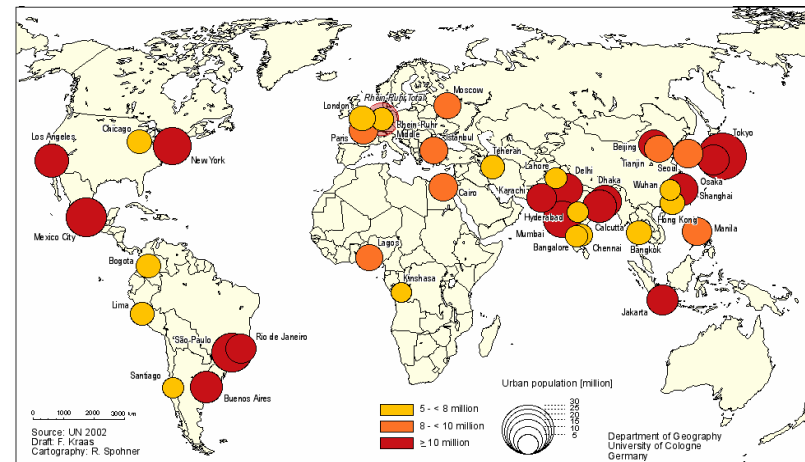
Megacities 2000 & 2015

- Africa and Asia together will account for 86% of all growth in the world's urban population
- Africa, especially south of the Sahara, is affected by the highest growth rates world wide at above 5 per cent
- By 2050 Africa's urban population will increase from 440 mio to 1,4 billion
- All over Asia 1,2 billion additional urban inhabitants
- For China & Indien – 276 mio & 218 mio. additional urban inhabitants by 2030

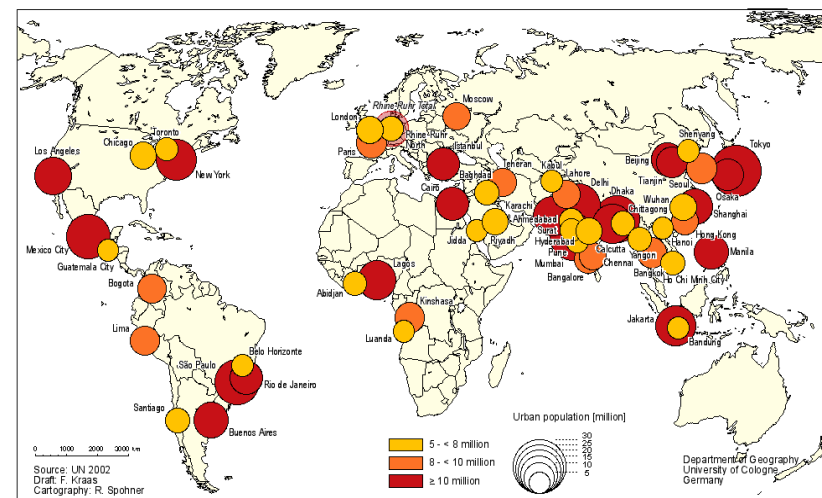
Source: World Urbanization Prospects 2011 highlights by [Department of Economic and Social Affairs \(UN DESA\)](http://www.un.org/en/development/desa/)

>>> (Mega)-Urbanisation
A fundamental trend in global change.

Megacities 2000



Megacities 2015



Global Economic Development

80% of the economic growth in emerging economies- and developing countries is generated in cities

Worldwide, a total of \$260bn in renewable energies in 2011, for India \$10,2bn

Source: www.fs-unep-centre.org/sites

China: invested \$10bn in renewable energies in 2006. Allein China wird bis 2030 in seine Energieinfrastruktur 2,3 Billionen Dollar investieren,

India:

Budget places infrastructure investment to be around Rs12-trillion, or about 13 per cent of the total budget, or about a third of the investment budget Source:

<http://www.indianurbaninfrastructure.com/?p=1514>

To meet **Africa's** infrastructure gap, \$93bn of annual investment is needed, while governments currently spend only \$45 bn. Investments driven by urbanisation will grow much faster across the continent, thus creating scope for exceptional growth in infrastructure projects, real estate, and other subsectors. This potential is still largely unknown to international investors and its profitable opportunities are yet to be tapped into. Source: www.ic-events.net/africa_urbaninfrastructure

Because of the expected investments and the in the development of urban infrastrucutre solutions fast growing urban areas are of hight interest for energy-, mobility and can be looked upon as lead markets for these technologies.

Through 2030, \$71 trillion is needed to improve just basic infrastructure worldwide, according to the Organization for Economic Cooperation and Development.

Source: <http://www.oecd.org/dataoecd/8/30/38939680.pdf>

Emerging markets expected to invest US\$6 trillion over three years

- 32% Transportation and logistics
- 27% Water and Envioronment
- 23% Energy and power
- 5% Construction
- 3% Housing
- 10% other

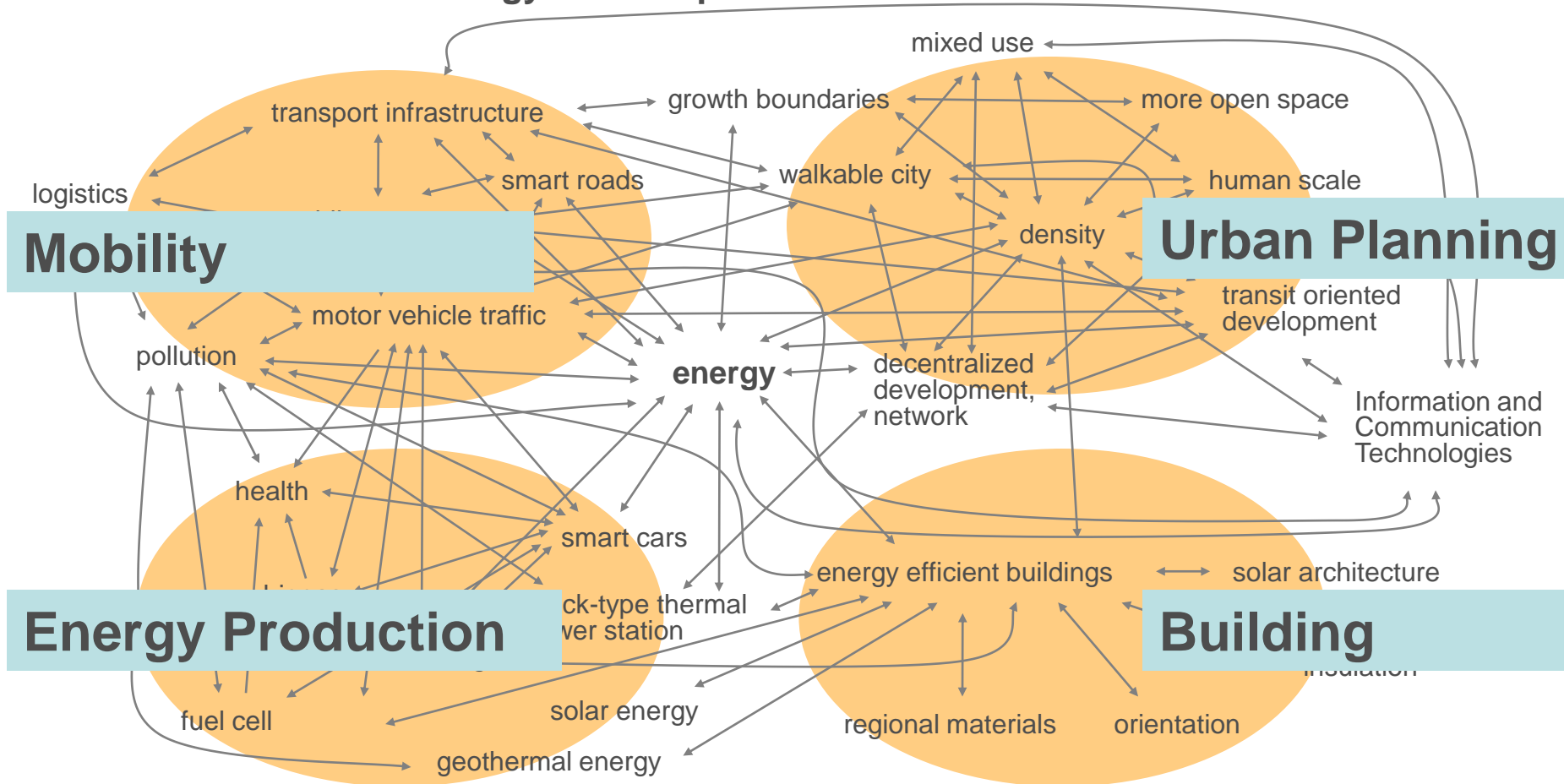
Source: AMP Capital Investors Limited

ABN 59 001 777 591 AFSL 232497: Global Medium-term Outlook for Infrastructure Investment, December 2011

**What obstacles do cities face
on the path to energy-and
climate efficiency under the
realm of sustainability?
And what role do science and
research play to overcome
theses obstaccles?**

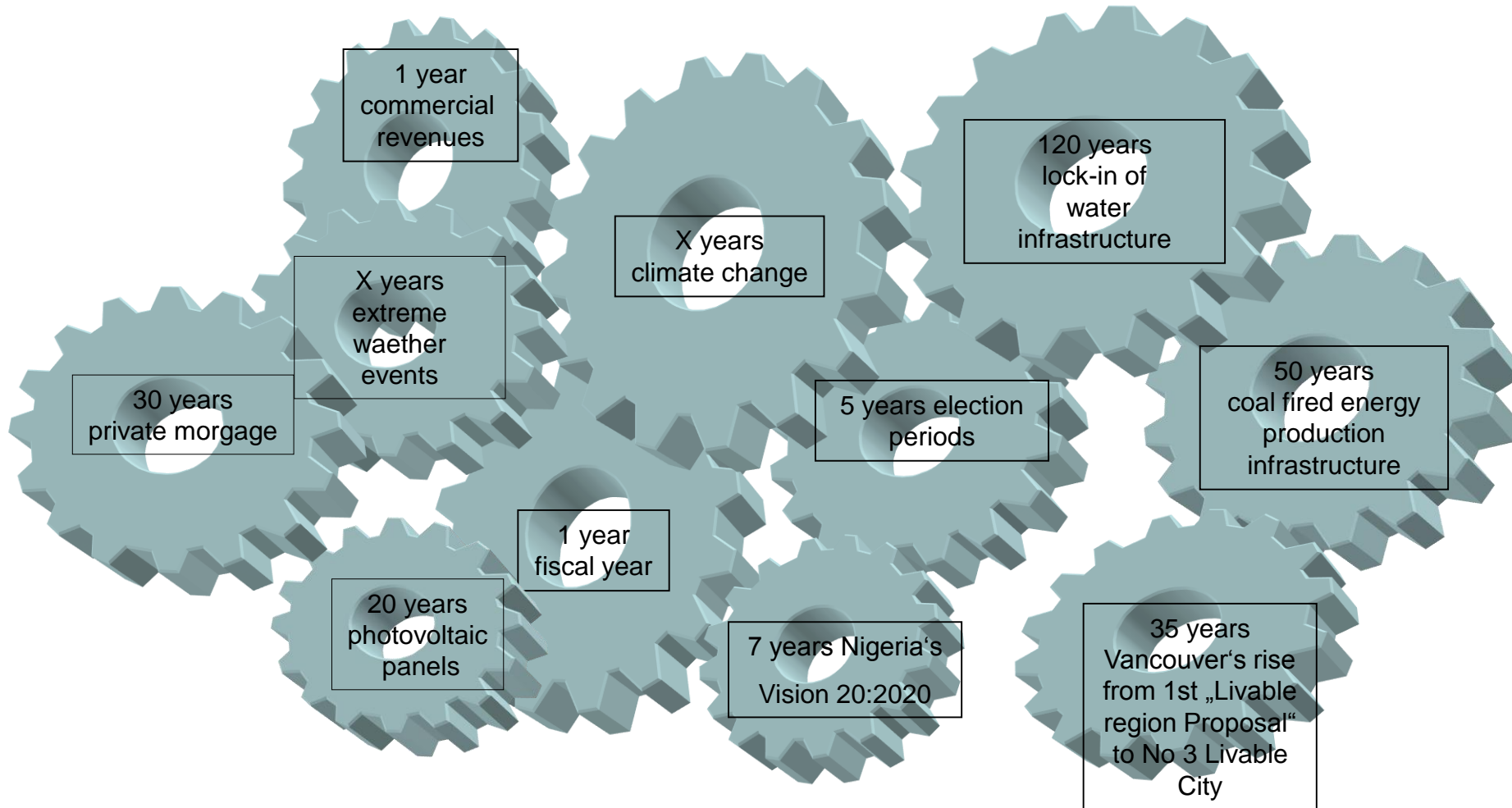
City Action – Deciphering Complexity

Parameters of Energy Consumption



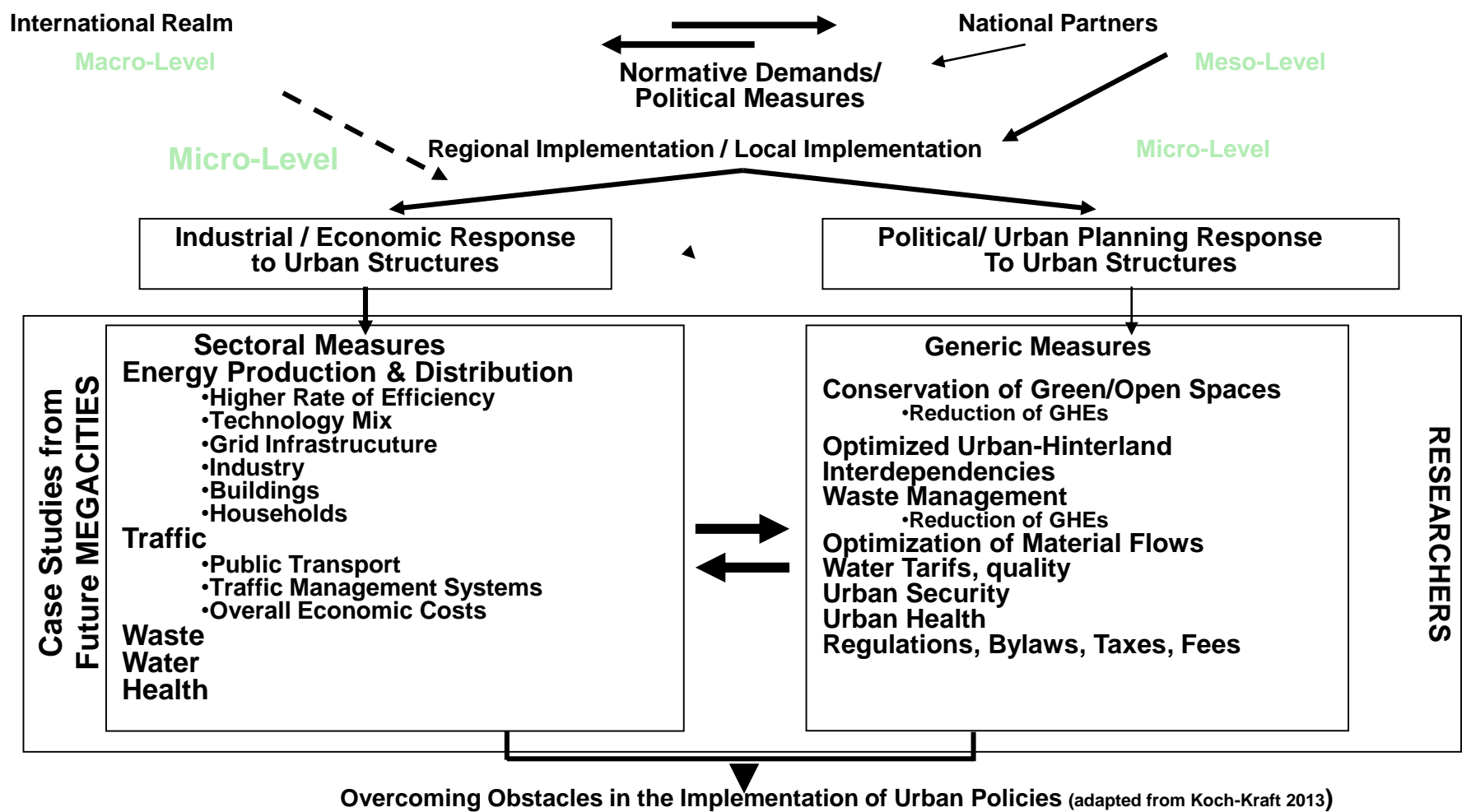
Source: Prof. Dr. J. Alexander Schmidt/ University of Duisburg/ Essen 2005

City Action – Time Frames of Different Actors

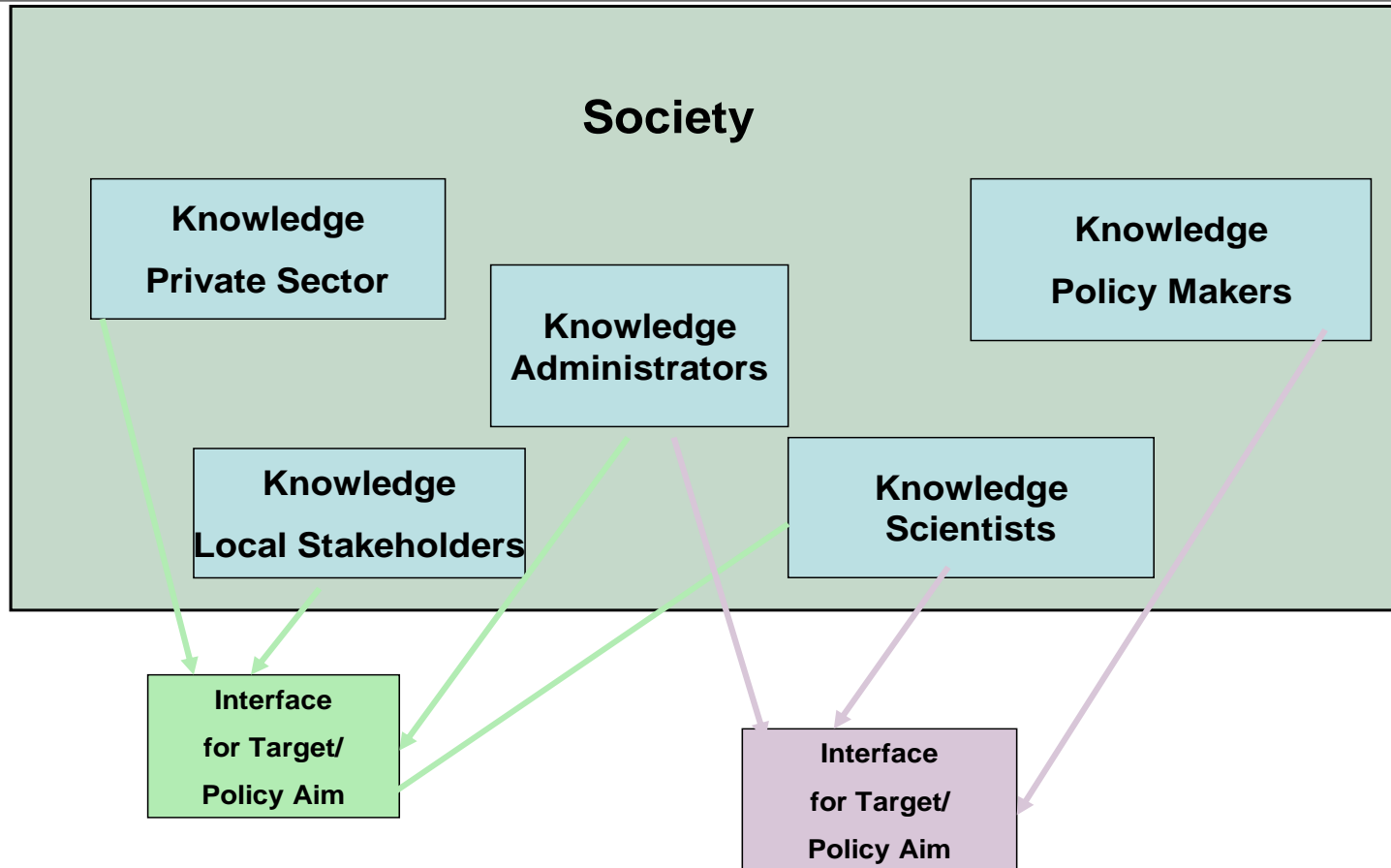


Adapted from Koch-Kraft 2013:

City Action - Implementation of Urban Policies



City Action – Finding New Alliances



Implementation-oriented science/sustainability science: Different forms of knowledge to be assembled individually and in relation to the policy- /implementation-oriented target being set by the research group
 (Source: Peter Moll, Ute Zander 2006)

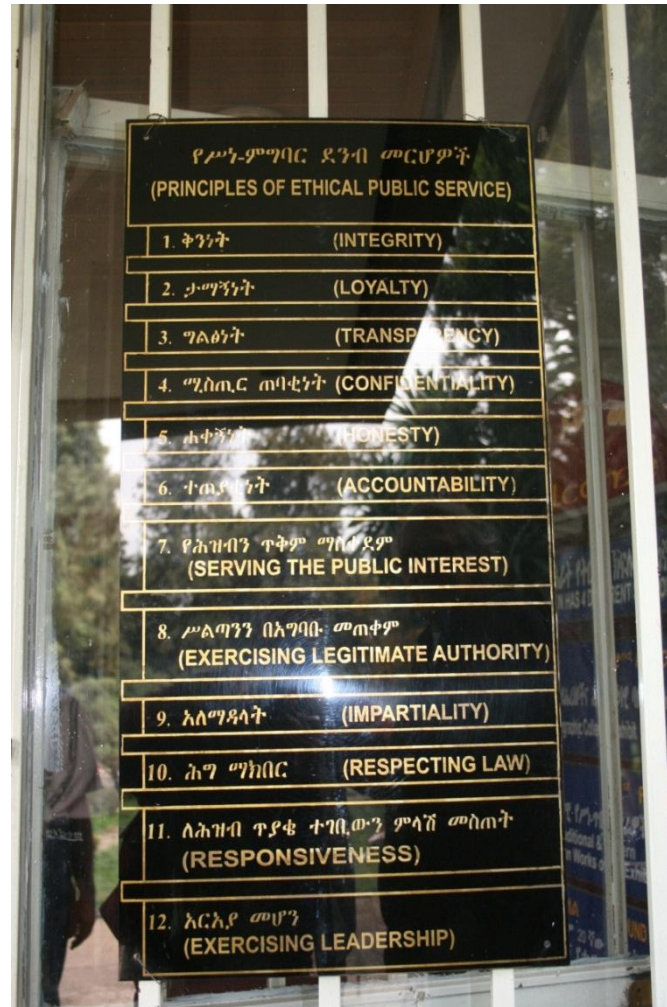
Cities and Projects



Operationalisation of BMBF's Research Priority on Future Megacities: Key Guidelines

- **Technical innovations in urban infrastructure adapted to local conditions and accepted by the citizens**
- **New ways in political decision processes, new forms of political decision making and governance**
- **New management instruments in urban decision making**
- **Tools to evaluate the effectiveness of urban planning measures**
- **Capacity building and vocational training measures**
- **New partnerships combating climate change**

People Matter



Conclusion

Teaming up, structuring our knowledge and committing us to urban development under the original definition of sustainability may convey obstacles, yet if we are willing to form new innovative partnerships, have a long breath and make this vision our mission it pays off.

**Thank you very much for your
attention**

WWW.future-megacities.org