Urban Megatrends and Challenges.
An JPI Urban Europe Study.

Johannes Riegler
johannes.riegler@ait.ac.at

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Purpose of the Study.

The Study aimed at...

• … Identifying and understanding the challenges stemming from megatrends for European Urban Areas.

• … creating a differentiated perspective of challenges for urban areas across Europe taking into account regional disparities.

• … highlighting the complex connections between the challenges and megatrends.

• … identifying research and innovation needs.

• … generating input for the JPI UE Strategic Research and Innovation Agenda.
Approaching Urban Megatrends.

- Megatrends
  - Qualitative Analysis: Analyses of Regional Differences

- Trends and Challenges on National Level
  - Qualitative Analysis: Concrete Challenges, Determining Characteristics, Interdependencies

- Need for Action / Research Needs and different Settings
  - Concept for national Focus, Research Topics

- Input for JPI UE’s Strategic Research and Innovation Agenda
- Bilateral / Multilateral Research Issues
- Call Topics
Quantitative analysis of Urban Megatrends.

- ... for a common understanding and baseline for further investigations.
- ... illustrates a **Europe-wide image** of trends and challenges influencing urban areas in the coming decades.
- **148 city regions** were part of this analyses.
- **Data Sources**: EUROSTAT (baseline data), IIASA (demography), **University Paris 1** (economy), **University of Edinburgh** (land use), AIT (intraregional distribution in the urban regions)
Quantitative analyses of Urban Megatrends.

- 148 city regions - five city region types (defined by geographical location)

Data source: PLUREL project 2007-2010
Population numbers: EUROSTAT; pop. distribution and morphology exploration: AIT

2001-2025

Figure: City regions’ future population dynamics – 2025 relative change of population since 2001 (Data: PLUREL project, IIASA, Univ. Edinburgh, AIT)

Figure: City regions’ future population dynamics – 2025 relative change of population since 2001 (vertical axe) against city size (horizontal axe - population numbers as log-scale). (Data: PLUREL project, IIASA, AIT)
Demography: The Share of elderly (60+) increases throughout Europe.

Figure: City regions' share of the 60+ age cohort 2001 and 2025 (Scenario A1) (Data: PLUREL project, EUROSTAT, IIASA, AIT)
Economic Development: The GDP per capita shows a distinct east-west and south-north upward gradient.

Figure: City regions' GDP per capita 2001 and 2025, Scenario A1) (Data: PLUREL project, EUROSTAT, Boitier et al., AIT)
Economic Development: The GDP per capita shows a distinct east-west and south-north upward gradient.

**Figure:** City regions' GDP per capita (vertical axe) against city size (horizontal axe, log-scale) - 2001 and 2025, Scenario A1), estimated trend lines for the sub-groups Eastern-Continental, Mediterranean, North-western (Data: PLUREL project, EUROSTAT, Boltier et al., AIT)
Climate Change.

- The increase in temperature will concentrate on Southern & Eastern Continental regions & those neighbouring the Alps.
- No. of Heat Days and Tropic Nights will increase rapidly mainly in Southern, and Eastern Continental regions.

**Figure:** Number of heat days (days with $\text{T}_{\text{max}} > 25$ C) – averages during 30 year periods 1971-2000, 2011-2040, 2041-2070.
Urban Megatrend Study: Conclusions.

- The megatrends **manifest differently** in space and are depending on the spatial context. (Governance System, History, Planning, etc.)
- Challenges **accumulate** in certain urban regions.
- Challenges deriving from one Megatrend may influence other challenges.
- These interactions are highly dependent on **local circumstances**.
- **Urban Challenges** can be categories:
  - Natural Environment
  - Demographic Development
  - Social & Cultural Issues
  - Built Environment and Infrastructure
  - Economic Development
  - Science & Technological Development
  - Urban Governance & Democracy
From Megatrends to Challenges

Demographic Development
- Urban growth & shrinkage
- Availability of skilled workforce
- Urban networks and connected cities
- Energy demand and CO2 reduction
- Flooding, heat periods and other natural hazards

Economic Development
- Changing lifestyles and demands
- Social cohesion & diversity
- Land use and sustainable urban planning
- Urban metabolism & environment

Climate Change
- Availability of skilled workforce
- Urban networks and connected cities
- Energy demand and CO2 reduction
- Flooding, heat periods and other natural hazards
From Challenges to Visions

Urban Challenges
- Manage sustainable urban growth and shrinkage
- Provide innovative & green environments and public spaces
- Ensuring energy transition and CO2 reduction
- Manage mobility needs and urban networks
- Achieve social cohesion and utilize urban diversity
- Take advantage of newest technological solutions
- Anticipate all these issues in new governance concepts

RDI areas
- Urban Adaptability & Dynamics
- Social Inclusion and Urban Democracy
- Economic Vitality and Knowledge Based Society
- Sustainable Infrastructure & Networks
- Urban Environment and Ecosystem Services

- The Livable City
- The Diverse City
- The Connected City
- Entrepreneurial City
- The Adaptive City
Thank you for your attention.

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