



# Knowledge-based Urban Development (KBUD), as a New Development Paradigm

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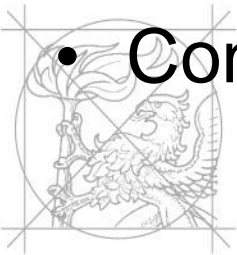
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# The framework of the presentation

- Theoretical background of the knowledge-based economy
- Concept of the Knowledge-Based Urban Development
- Practical application of the KBUD model
- Conclusions



# Knowledge-based economy

- Common expressions: “knowledge”, “information”, “innovation”, “research and development”, “knowledge-based society”
- „those economies which are directly based on the production, distribution and use of knowledge and information” (OECD 1996, page 7.)
- Number of documents (DTI Competitiveness White Paper, 1998, Kok 2003, OECD 2005, WBI 2007) and publications (Leadbeater 1999, Foray 2004; Leydesdorff 2006) deal with the description of KBE.



# Summary of the KBE

- The term knowledge-based economy arises from the realization of the significant impact of knowledge and technology on economic growth (key factor: knowledge)
- Knowledge intensity; dynamic development of high technology: → they are determining factors of growth at fields of wealth, performance and employment
- The existence of interaction between the various economic sectors
- Knowledge-based society



In today's knowledge-based economy beyond the traditional factors of production, as natural resources, capital and manpower, a new factor of production, the knowledge also shows up.



# Knowledge-based urban development

- Development trends of cities are different → towards the knowledge-based rather than the resource-driven fields of industries
- City regions focus on the development of the environment that is necessary for the highly qualified human resources
- What kind of city development concept should a city apply in order to create and improve a knowledge-based economy?



**Knowledge-based urban development**

# Knowledge-based urban development II.

- Knight (2008): such a social learning process in which the knowledge capital is utilized in the development of a sustainable urban region
- Kunzmann (2008): collaborative development framework, that provides guideline to the public, private and academic sectors
- Yigitcanlar (2011): new development paradigm, that is aimed to create economic prosperity, social order, sustainable environment and appropriate municipal governance



# Concept of the Knowledge-based urban development

Four development perspectives (Yigitcanlar – Lönnqvist 2013)

1. *economic development pillar*
2. *socio-cultural development pillar*
3. *environmental and urban development*
4. *institutional development pillar*



# Concept of the Knowledge-based urban development

## Socio-cultural development

- to improve skills and knowledge of the residents towards the personal and social development of the community

## Enviro-urban development

- to find the harmony between preservation and improvement of built and natural environment
- to create a strong, knowledge-cluster based development path, that is environmentally friendly, high-quality, unique, and sustainable

## KBUD

## Institutional development

- to form a group of local actors who - in cooperation with stakeholders - determine the common vision of future and plan the strategy needed for the implementation of it

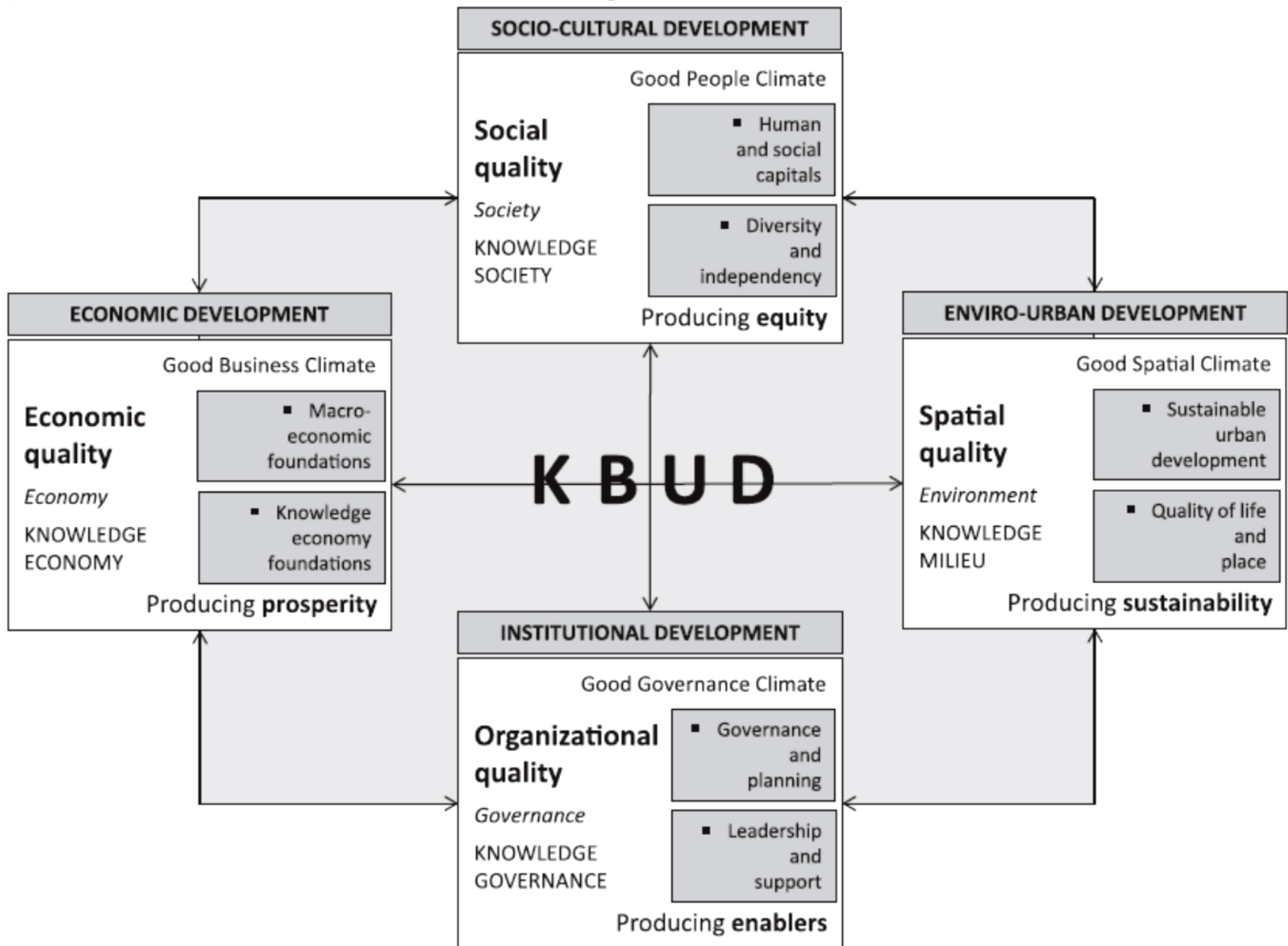
## Economic development

- to set the endogenous knowledge capital in the center of economic activities





# Concept of the Knowledge-based urban development



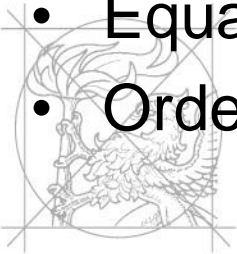
# Practical application of the KBUD model

Yigitcanlar – Lönnqvist (2013): KBUD evaluation model for Helsinki and other 8 cities (comparison)

- 4 categories of indicators: 4 development pillars
- 8 indicator sets
- 32 indicators: relevant literature

Methods:

- min-max normalization on the values
- Equal weighting
- Order of city-regions in the 4 dimensions



# KBUD performances of urban regions

	Helsinki	Boston	San Francisco	Birmingham	Manchester	Melbourne	Sydney	Toronto	Vancouver
Economic development	0.562	0.802	0.916	0.023	0.171	0.360	0.355	0.529	0.251
Macro-economic foundations	0.341	0.794	1.000	0.046	0.205	0.371	0.337	0.538	0.182
Knowledge economy foundations	0.782	0.810	0.832	0.000	0.137	0.348	0.374	0.519	0.319
Socio-cultural development	0.439	0.676	0.712	0.318	0.465	0.496	0.527	0.759	0.729
Human and social capitals	0.531	0.741	0.743	0.460	0.628	0.276	0.275	0.688	0.572
Diversity and independency	0.347	0.610	0.682	0.175	0.301	0.716	0.778	0.830	0.886
Enviro-urban development	0.588	0.462	0.312	0.487	0.413	0.263	0.241	0.486	0.467
Sustainable urban development	0.680	0.361	0.200	0.577	0.402	0.175	0.117	0.454	0.414
Quality of life and place	0.495	0.562	0.424	0.396	0.424	0.352	0.365	0.517	0.520
Institutional development	0.545	0.613	0.721	0.159	0.306	0.637	0.582	0.722	0.755
Governance and planning	0.542	0.596	0.725	0.248	0.311	0.799	0.703	0.813	0.867
Leadership and support	0.548	0.631	0.717	0.069	0.302	0.475	0.461	0.631	0.643
Knowledge-based urban development	0.533	0.638	0.665	0.247	0.339	0.439	0.426	0.624	0.550

## Conclusions (focused on Helsinki)

- 3rd place at the economic development pillar → local actors should give more attention to the development of business climate
- Worst place regarding to the socio-cultural pillar → low university reputation and lower number of skilled migrants
- Functional advantage of KBUD model: map the strengths and weaknesses of region from different aspects → base for the practical design directions



# Next steps...

- Empirical analysis of the 20 agglomeration centers
- Collect all the data based on the 4 pillars (census)
- Determine the development trends based on the result

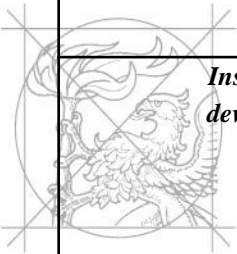


# Thank you for your attention!

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Indicator categories	Indicator sets	Indicators
<i>Economic development</i>	Macro-economic foundations	Gross domestic product
		Major international companies
		Foreign direct investment
		Urban competitiveness
	Knowledge economy foundations	Innovation economy
		Research and development
		Patent applications
		Knowledge worker pool
<i>Socio-cultural development</i>	Human and social capitals	Education investment
		Professional skill base
		University reputation
		Broadband access
	Diversity and independency	Cultural diversity
		Social tolerance
		Socio-economic dependency
		Unemployment level
<i>Enviro-urban development</i>	Sustainable urban development	Eco-city formation
		Sustainable transport use
		Environmental impact
		Urban form and density
	Quality of life and place	Quality of life
		Cost of living
		Housing affordability
		Personal safety
<i>Institutional development</i>	Governance and planning	Government effectiveness
		Electronic governance
		Strategic planning
		City branding
	Leadership and support Level of institutional and managerial leadership in overseeing KBUD	Effective leadership
		Strategic partnership and networking
Community engagement		
Social cohesion and equality		



$$I_{MEF} = \sum_{i=1}^n \frac{MEF_i}{n}; \quad I_{KEF} = \sum_{i=1}^n \frac{KEF_i}{n}; \quad I_{HSC} = \sum_{i=1}^n \frac{HSC_i}{n};$$

$$I_{DI} = \sum_{i=1}^n \frac{DI_i}{n}; \quad I_{SUD} = \sum_{i=1}^n \frac{SUD_i}{n}; \quad I_{QLP} = \sum_{i=1}^n \frac{QLP_i}{n};$$

$$I_{PL} = \sum_{i=1}^n \frac{GP_i}{n}; \quad I_{SP} = \sum_{i=1}^n \frac{LS_i}{n}$$

where  $I$  corresponds to the indicator score and MEF, KEF, HSC, DI, SUD, QLP, GP and LS subscripts represent the indicator sets. After that, the indicator domain scores are calculated by the following equation:

$$I_{EcoDev} = \sum_{i=1}^n \frac{EcoDev_i}{n}; \quad I_{SocDev} = \sum_{i=1}^n \frac{SocDev_i}{n};$$

$$I_{EnvDev} = \sum_{i=1}^n \frac{EnvDev_i}{n}; \quad I_{InsDev} = \sum_{i=1}^n \frac{InsDev_i}{n}$$

where  $I$  corresponds to the indicator score and EcoDev, SocDev, EnvDev and InsDev subscripts represent the four development indicator categories .  
As final step, this formula was used:

$$I_{KBUD} = \sum_{i=1}^n \frac{KBUD_i}{n}$$

Where  $I$  corresponds to the indicator score, KBUD corresponds to the KBUD composite indicator and KBUD<sub>*i*</sub> corresponds to each of the development indicator category scores

